Electric Railway Journal

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

Vol. XLIX NEW YORK, SATURDAY, JANUARY 27, 1917 No. 4

STRAWS SHOW THE DIRECTION OF THE WIND

The news pages of this paper are a pretty good barometer of the activity along different lines of electric railway endeavor. A striking feature of these columns recently, especially in the department of Traffic and Transportation, has been the number of important steps taken by railway companies to improve public relations. In several cases it has been the appointment of publicity agents, in others it has been the advertising for suggestions for needed improvements in the service, in still others the establishment of employees' magazines, or of schools for instructing the men in courtesy, or of other means for allaying public criticism. More and more is there in evidence a recognition of the necessity of better public relations, not as a means for obtaining privileges from the public as compensation, but because such a policy is part of the duty of every public utility. The increasing amount of attention being given to this subject is naturally gratifying to us as we have been consistent advocates of such a policy for years.

THE FUNDAMENTAL MOTIVE

The fundamental motive of all successful campaigns toward better public relations must be that the public is entitled to good service and fair treatment. It may be that the company considers that it is not receiving fair treatment from the public, but this is no excuse for a neglect of its own duties. Let the company carry out its part of its written and unwritten bargain to supply good service, and if the public recognizes that this is being done we believe that it will reciprocate with fair treatment to the utility. Concrete instances often point a more easily understood moral than general statements, and several such are mentioned in this week's issue. One of these relates to the city of Buffalo. Here a complaint by a certain newspaper that good service was not being given was answered by a general request to the public for any constructive criticism on the transportation furnished. The daily paper could do nothing but make its criticism concrete, and submitted twelve ways in which it suggested improvements might be made. The company promptly issued a statement entitled "How We Meet Criticism." In this it acknowledged that some of the points were well founded and explained the physical conditions which had prevented their earlier correction. It then agreed to make such changes as were immediately practicable, promised to introduce such others as could be carried out and, where actual opportunities for improvement were beyond the power of the company, presented an explanation of the reasons therefor. Such a policy cannot but have its effect. Still other instances of the way in which proper publicity can make the position of a public utility clear to the public are given in a contributed article, also in this issue.

USELESS REPAIRS TO STREET PAVING

A trip over a large city property recently disclosed the surprising fact that repairs to pavement were being made at points where battered rail joints had destroyed the surface but that no attention was being paid to the joints causing the trouble. Presumably no recognition had been given to the hopelessness of maintaining pavement adjacent to loose joints, whose working in a vertical plane is generally sufficient to displace even the most rugged class of surfacing for streets. The cause of such bad spots ought to be obvious enough, especially when it is not uncommon to find that, when all of the joints in a stretch of track are weak, the paving surface is badly broken up at regular intervals along the rail, each disturbed area having a radius of a few feet that centers exactly on the joint. The remedy ought to be equally obvious—the repair of the joint. Certainly it cannot be that repairs to paving at such points are anything more than patch work, and patch work of such a kind invariably means wasted money. Since the primary cause of the trouble has not been removed, there can be no doubt that the repaired pavement will promptly return to its original condition and that the expense for labor devoted to relaying the pavement, even though this might be small in amount, could far better have been applied to the renewal of a few of the worst track joints.

LOCOMOTIVES IN SUBURBAN SERVICE

The probable purchase, in the near future, of locomotives rather than multiple-unit equipments for the New Haven's suburban service brings up a phase of the locomotive versus motor car problem that is worth consideration. This is that when locomotives are used to haul suburban trains during the morning and evening peaks, the same motive power may be used for through trains of passenger coaches during the rest of the day (provided the schedule may be so arranged as to permit it) and thus the service factor of the costly electrical equipment may be raised. Normally, of course, the motor car is considered preferable for this class of traffic because it is not unusual for suburban equipments to make only one round trip each day owing to the limited duration of the peak loads, and because a train of multiple-unit cars costs less than a train of

trailers with a locomotive, first cost being, of course, of greatest importance where such low service factors exist. If, however, sufficient freight, or through-passenger traffic that cannot be handled in motor cars, exists during the hours when suburban traffic is at a standstill, it is easily conceivable that the locomotive may furnish the more economical, or less expensive, type of motive power.

SOMETHING TO TALK ABOUT

The paper on the training of motormen for the Chicago Elevated System, published elsewhere in this issue, sets forth the long and thorough training to which all motormen on the system are subject before being intrusted with the responsibility of train operation. This training is an extremely important matter on the elevated roads in view of the disastrous results which might follow dependence on careless or irresponsible motormen. The splendid record of the Chicago system reflects the wisdom of this long-term student period, and the company's patrons must feel a sense of safety in the knowledge that such competency is required of the men in whose hands their lives are daily intrusted. But do the people know about it? Isn't such activity on the part of the transportation companies to safeguard their passengers—not only in Chicago but elsewhere—of popular interest? The fact is that it is just this sort of thing that makes a good "human interest" story, although it is only one of the many phases of electric railway operation in which the companies profit by a better knowledge of their work on the part of the public.

SPECIFICATIONS FOR MEN!

Why not? Time and again experience has shown that when material not up to specifications is used in a machine or structure costly accidents happen, early replacements are required, and in the end the final cost is as great or greater and the final results less satisfactory than as if good material had been used in the first place. The organization of men necessary to operate a railway can be likened to a machine, and from the very nature of its structure and functions it is necessarily a delicate machine. For satisfactory operation the parts must be well balanced and carefully co-ordinated. The better the individual units which compose the machine conform to a properly specified ideal, the better will be their team work or co-ordination. The elimination of the physically unfit, the mentally incapacitated and the careless reduces the number of accidents and makes for better service. The elimination of the faultfinder, the grumbler and the restless type of individual decreases the strike hazards and promotes good public relations.

A purchaser usually feels that he can afford to pay higher prices for material that conforms to specifications than for material which does not. The same thing might indeed apply to labor. A part of the savings in accident claims, strike losses and replacement costs might well be paid out as wages to competent employees who, by good and faithful service, have made such savings possible. The higher rates of pay thus afforded would attract a higher and more stable class of men to the service.

We recognize that the caliber of a man cannot be calipered, and that when labor is as scarce as it is at present employment officials are glad to be able to find material of any kind. It seems to us, however, that the present tendency, as evidenced by a number of papers and discussions at recent association meetings, to exercise great care in the selection of recruits for the operating department is a far step in advance of the older and more haphazard methods.

HANDLING WAY MATERIALS

That way engineers are alive to the possibilities of saving money by judicious use of mechanical devices is clear enough from the number and tone of the articles which this paper has been printing recently. The fact is that there is no more prolific topic of conversation around the way department of any railway. In this issue there are four articles on the subject, all prepared with the idea of showing for the benefit of the industry in general the results which have been obtained by applying certain definite and fundamental principles on particular properties.

We hope that before this discussion is closed there will be at the disposal of managers and way engineers all of the information which they will need in answering these questions while solving problems in materials handling or planning to perform a given special or routine operation: (1) What is the general practice on a job of this sort? (2) What apparatus is available for performing it? (3) Among available devices which is most economical for this case? (4) What savings are to be obtained by using the best available equipment? (5) Shall we purchase this equipment or build it or some makeshift for it ourselves?

So much for the particular job, but there is another angle from which the subject can be viewed, as suggested by such questions as these: (1) What devices are way departments finding useful generally? (2) Could any of these be used profitably on this property with our present organization? (3) If not, could the organization be modified so as to permit the use of such devices? and so on.

Some of the principles referred to in the first paragraph stick out prominently in this discussion. First, there is no question as to the expensiveness of human labor considered merely as mechanical work. Man-energy costs at least $2 per kilowatt-hour. But some investment in machinery is necessary if cheaper energy is to be utilized, and the economy of this machinery depends upon the number of hours per year during which it can be used. Power plant engineers use the term "load factor" in a somewhat analogous connection. The term "service factor," as used on the preceding page in a discussion on rolling stock is quite applicable to machines used by the way department. The second principle, then, is that machines must be

kept busy if they are to be profitable. There are, of course, some instances when the possible savings are so great that a machine will pay for itself in a short time. In the run of cases, however, sensational savings are not to be expected and the general principles of economics apply.

The securing of high service factor implies adaptability. Hence we note the popularity of the mobile crane car or derrick car which can perform many functions, as is splendidly illustrated elsewhere in this issue. There is here, then, a third principle, namely, that in general the equipment which is most adaptable to a wide variety of uses is likely to prove most economical.

The present discussion started with the storage yard. It could not be confined there, and has broadened out to include labor-saving devices in all divisions of the way department. While the way department engineers "have the floor" they had better bring out all the available data. Later they must yield their place to other departments that are of equal importance in the operation of electric railways.

PREVENTING RAILWAY STRIKES

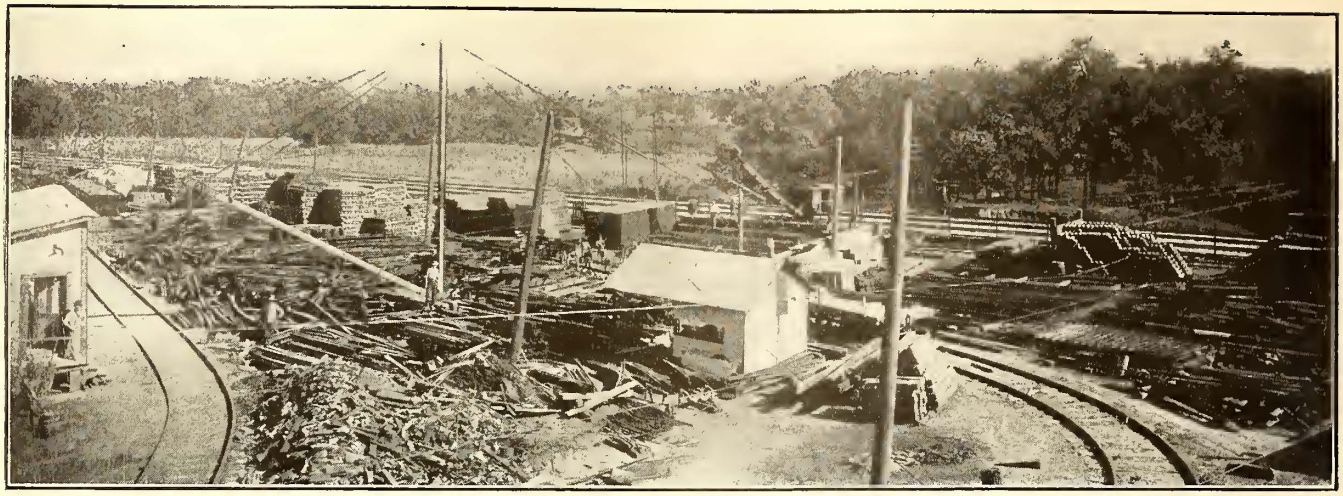
Out of the maze of discussion during recent months on the subject of strike prevention, there has at last appeared from an official source a proposition that should be carefully studied by electric railway officials. We refer to the labor plan, published in full on another page, of the Public Service Commission for the First District of New York. Confronted last August and September with the threat of an unparalleled tie-up of electric railway transportation in the metropolitan district, this commission has made a careful investigation into what it deems the defects of the existing public service law, and has now presented for constructive criticism a tentative statement of its recommendation for legislation.

The advantages which the commission itself asserts for the plan would seem to indicate that an earnest endeavor was made to consider the rights of all parties concerned—the railways, the employees and the public. For example, fair wages and working conditions would be determined by the companies and their employees, under the eye of an impartial and non-voting appointee of the commission, or by a wage board organized by the commission and composed half and half of company and employee representatives, or else by the commission itself. All questions of wage-fixing, etc., not settled by mutual consent would be referred to a wage board, but it is provided that applications to such a body should not be made until reasonable opportunity had been given for the companies and employees to reach a mutual understanding, the wage board or the commission being the judge of the reasonableness of such opportunity. The final approval of the settlement by any method would rest with the commission. The plan thus seems to allow a wide and fair latitude for the private settling of industrial disputes upon the basis of facts instead of coercion, commission supervision being reserved only to protect the rights of the public. In connection with wage increases it is supposed, of course, that the right of railway owners to a fair return would be preserved.

The questions of unionization and discipline appear to have been handled in a liberal manner. In the first instance it is provided that ten or more employees might form an association or union or branch of any such existing body, and that all such organizations (together with the unorganized men) would share in the membership of the wage board in a reasonably proportionate way, provided every six months they filed with the commission their rules, officer and membership lists, and a written consent to abide by all awards. The plan thus allows freedom of organization and collective bargaining, but it assures to any internal brotherhood and all unorganized employees an appropriate participation in wage and other adjustments. In regard to discipline, this would primarily be left, as it should be, in the hands of the employer, deserved redress, however, being obtainable on review from the wage board or commission.

From the point of view of the public, the most important part of the plan is the limitation on the right to strike. Not only does the idea of enlistment for public service find approval in the provision for an express or implied contract of service for one year (terminable upon thirty days' notice), but the right of the public to uninterrupted service is further recognized by the prohibition of strikes pending wage and other determinations. After the findings the employees would supposedly be bound both by their contracts of service and by their registered pledge of obedience to any award made. How to enforce such provisions is, of course, the crux of the problem. The plan provides that any violation would be classed as a misdemeanor punishable by a fine. Before such a punitive clause is adopted, however, the commission would do well to ascertain, if possible, how effective it would be in the case of the average employee. Might it not be desirable that all union organizations parties to such an agreement be required to file a bond, so that a better hold would be had on them for damages?

It is evident that the proposal in its fundamentals is designed to assert the public right only with a full recognition of the public obligation to both employers and employees. According to newspaper reports, however, the leaders of organized labor have been quick to denounce the plan, a move not unexpected in view of their general opposition to any system that will take from them their chief duty of fomenting strikes. Yet we believe that the public is becoming more deeply conscious of its right to continuous service, and the plan of the New York commission is a fair sign of the times. For this reason it behooves electric railways not only in New York City but throughout the country to examine the proposal carefully for unjust or impracticable provisions. The approaching hearings in New York will be on a subject of vital importance to the future prosperity of the industry, and every possible constructive and helpful suggestion is needed.



HANDLING WAY MATERIALS—STORAGE YARD CONGESTION DUE TO FAULTY USE OF EQUIPMENT

Handling Way Materials Economically

Practice of Kansas City Railways and General Principles Involved in Cutting Cost of Handling and Transferring Material

By A. E. HARVEY

Engineer Maintenance of Way, Kansas City (Mo.) Railways

THE cutting of cost in the handling of material in storage yards is an exceedingly important process. There are many points involved which, unless carefully considered, may be overlooked by the uninitiated in an attempt to cover them, and may cause unnecessary expense.

The most important point to consider in this connection is the keeping of the equipment which may be required for the work in proper balance with the amount of work to be performed. In other words, large sums of money should not be expended in the purchase of expensive machinery which may be used only a few days in the year. The interest, depreciation and upkeep of machinery of this kind will frequently amount to much more than the increased cost of handling material by other methods. Again, in the purchasing of machinery for purposes of this kind the selection of equipment that can be used for only one particular purpose and in one location should be avoided as far as possible. Machinery standing idle earns nothing, and the most economical results will be obtained in using machines that can be utilized for many purposes and kept constantly at work.

Material Should Be Handled as Little as Possible

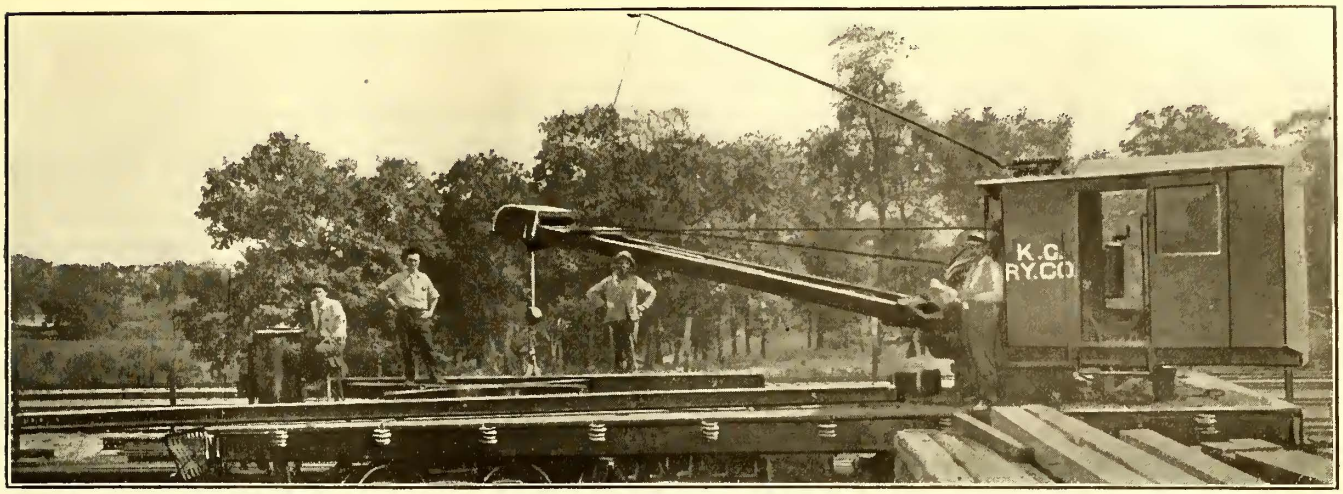
A third point, which in the estimation of the writer is more important than either of the others, and one which more than any other is overlooked by engineers, is the proper timing of the receipt of material for storage. The most economical proposition is that all material received should be transferred directly from the steam railroad cars to the cars of the traction company and delivered immediately upon the work, thus avoiding one handling.

The way in which this principle is applied in the handling of cement on the Kansas City properties is as follows: We used last year a total of 440,800 sacks of cement. Our storage capacity would take care of two cars only. The cement house was kept as full as practicable, but all orders were filled directly from cars. Seldom was cement transferred from the cars to the house, except where there was a small portion of a carload left at the end of a day's work which could be transferred to the house and thus release the car. Occasionally cement was taken from the house to fill the orders when for any cause there was a delay of a day or two in the receipt of material, but it was found that the amount of storage provided was ample to cover such emergencies. The net gain during the year on account of not having to rehandle this material would amount to about $2,000.

Co-operation with the Purchasing Department Is Necessary

This ideal condition, of course, cannot be made to apply in all cases, but should be approached as closely as possible. This proposition necessitates close co-operation with the purchasing department. It involves the ordering of material at the proper time, governed largely by expected or possible delivery, and the careful following of such orders to see that the material is delivered at a certain time, so as to correspond to the progress of the construction work. Of course, the statement may be made that in these days it is impossible to specify and govern the actual delivery of material of almost any kind, on account of manufacturing and transportation conditions. But one can do the other thing, namely, regulate the work to conform to the delivery. Under this method, the store yard should act only as a reservoir to carry a sufficient amount of any commodity to tide over a break in the regular delivery, and take up a portion of the deliveries which may be made in advance of the requirements. The distinct advantage of this method of handling the store yard is not only in the saving of extra handling of the material made necessary by storage, but the space required for storage is decreased and money invested in stores is materially decreased.

In track work these matters, of course, can apply most generally to such materials as granite block, brick, stone, sand, drain tile and cement. Upon metals, where the deliveries are dependent upon manufacturing conditions at the mills, such as the time at which certain



HANDLING WAY MATERIALS—USEFUL DERRICK CAR ON KANSAS CITY RAILWAYS

rollings of rail are to be made, the time cannot be so closely gaged, and it is frequently necessary to store a considerable amount of materials of that class.

DIRECT TRANSFER OF MATERIALS TO JOB ECONOMICAL

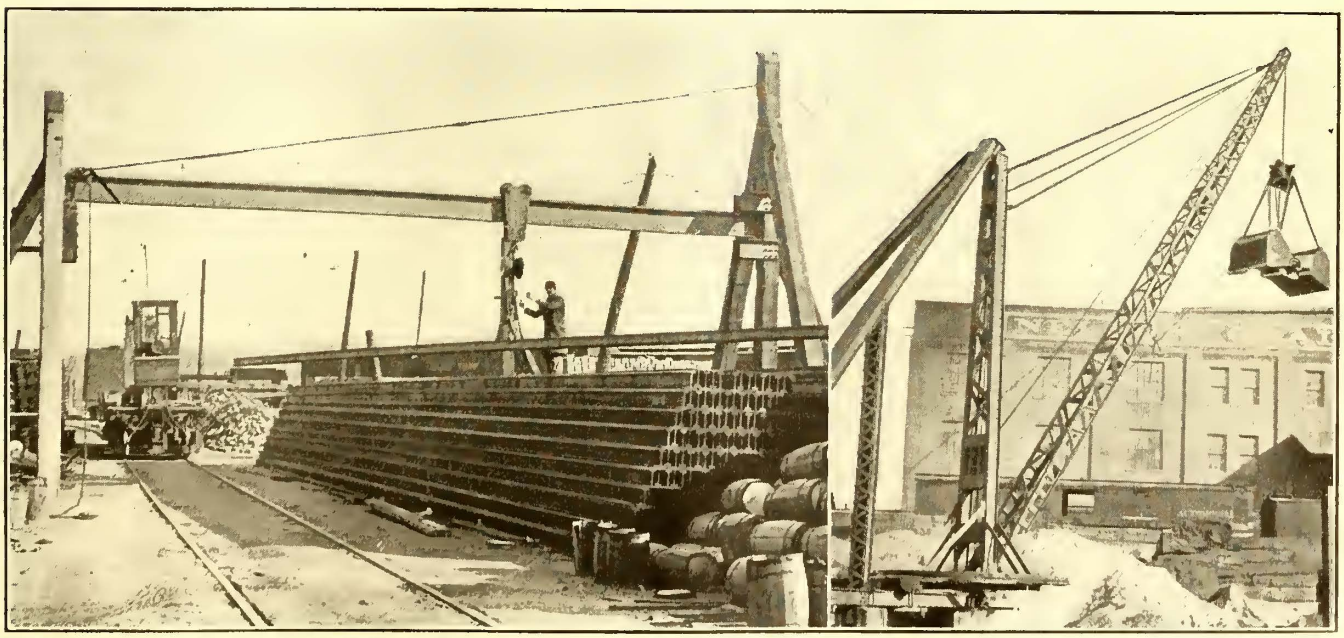
In Kansas City this policy in the handling of supplies has been followed partly through necessity on account of the limited storage capacity of the yards. There has been no material delay to any work on account of failure to receive standard material, however, and it is safe to say that in the past year 80 per cent of the granite block received has been handled and delivered by direct transfer to motor cars. More than 90 per cent of the brick received, 95 per cent of the cement, 80 per cent to 90 per cent of the sand, and all of the crushed stone have been handled in this way.

Taking these items in the volume used in Kansas City last year, the saving to the company in direct handling of this material amounted to $3,200 or more. The total actual saving may have been double this amount, for when material is unloaded from railway cars for storage more than the passing of material a short distance from car to car is involved. It must be moved back a sufficient distance from the track to provide proper storage space, and this distance has again to be covered in the reloading.

When one stops to consider that this procedure results in a saving of one handling of all material involved in the construction and reconstruction of 10 to 15 miles of track in this case, he must concede that it is a more important item in cutting down materials-handling costs than the difference in the cost of handling a comparatively small amount of material with expensive machinery instead of manual labor. The management of a store yard by such methods and under such conditions does not mean that it is not economical to use modern equipment in handling material wherever practicable. Care should, however, be taken in the selection of such equipment, and first cost, operating and maintenance cost should be carefully balanced with the requirements.

MACHINERY CAN BE USED EFFECTIVELY ALSO

The machine best adapted to the handling of material in the store yard of a street railway, and one which can be put to the most universal use, in some form of hoisting machine that can be used in any part of the yard. Such a machine is perfectly practicable, as the heaviest material which it must handle will be a large piece of special work, or crossings, or perhaps a clam shell for use with stone or sand. It has distinct advantages over fixed derricks on account of its large radius of action. It should be so constructed that it may be utilized upon the main tracks, in which case it will earn far more



HANDLING WAY MATERIALS—SIMPLE DEVICE FOR THE RAIL PILE; STIFF-LEG DERRICK MADE FROM BRIDGE MEMBERS

money than any fixed derrick. It can be utilized 100 per cent of the time in earning money for the company, whereas a derrick for the handling of sand, special work, or miscellaneous material of any kind can be utilized only for the material that lies within the radius of its arm, and will probably stand idle more than 95 per cent of the time.

An accompanying illustration shows a derrick car that has given excellent service in Kansas City. The days and nights are not long enough for this machine to accomplish all the work that might be assigned to it. It can be used anywhere in the yard, in transferring and unloading material in the streets, in placing special work, in picking up scrap or other material, in picking up and transporting machines and in doing a thousand other things incidental to track construction.

If, however, there is sufficient work to keep a machine busy continually within the confines of the store yard, it would be better to use a slightly different type of machine, such as a locomotive crane. A machine like this, of less speed, carrying a longer boom and having a greater lifting capacity, is usable in any part of the yard. At the same time it has all the advantages that could be derived from a boom derrick.

An Effective Device for Handling Rail

The handling of rail in the yard is in itself a difficult and expensive job, ordinarily involving the use of a large gang of men. In this work the sliding, pulling and dropping of rail, with the tendency to kink or break it, should be guarded against. Rail cannot safely and to advantage be handled with a boom derrick or with a crane car. It is a material that ordinarily must be received and stored at such time as it can be secured, and a permanent arrangement for handling it is frequently justified.

Another illustration is shown of an arrangement that has proved exceedingly satisfactory and economical. It consists only of two uprights, 12 in. x 12 in., properly braced, between which an I-beam 50 ft. long is suspended. The beam is fastened with a pin at one end and it is hinged at the other. When in use the I-beam is swung across the rail pile and the car of rail and is secured by means of the pin. Rail is lifted from the car and transferred to the pile, or vice versa, by the use of a differential pulley. This can be done with a force of not more than five men. The cost of transferring is 7.3 cents per ton, as compared with the 53 cents per ton which was the cost when the rail was dragged out of the car and skidded up onto the pile. This device also gives us a more economical pile as the rail can be carried higher and the amount of required storage room is thus reduced.

This form of derrick is, of course, fixed and limited in its use and is necessarily in service but a small percentage of the time. It is, however, an economical device on account of its low first cost and the low cost of maintenance and operation. Its use is justified where a derrick costing $5,000 or $6,000, for the same service and where used only for such service, would be barred on account of its first cost and the cost of maintenance.

The Use of Derricks

In the handling of such commodities as sand and stone there is undoubtedly a vast advantage in the use of machinery. For this purpose we have made good use of a stiff-leg derrick built up of second-hand bridge members and operated by means of an electric hoist. A photograph of this is shown herewith. The volume of material handled at this place in sand and stone amply justifies the use of a fixed piece of equipment. A large storage capacity is supplied within the radius of a boom, but a very large percentage of material may at the same time be transferred directly from the railroad cars to the motor cars of the company. The cost of transferring sand or stone or its reloading with this equipment amounts to 1 cent per cubic yard for sand and 2 cents per cubic yard for stone.

This is an illustration of the proper use of equipment of this kind where the material handled is of but one or two classes. An improper use of equipment of this kind is shown at the top of page 150. Here the derrick is seen in use in handling and storing special work and material of that class. The congestion that occurs within the range of this boom is conspicuous in this picture. Frequently material that might be required first was stored at the bottom of the pile. This derrick has been replaced with a crane car, which has resulted in more methodical and economical storage.

Summary and Conclusions

While the use of modern equipment is beyond question economical, it should be reiterated that a grave mistake may be made in the selection of equipment and the investment of large sums which will be earning for the company but a very small percentage of their time. These, as has been pointed out, are expensive in maintenance and depreciation, and in some cases in operation, requiring special men with them at all times. Therefore, in the selection of equipment for use in the yards, that which can be most generally used should be chosen. A machine may be a mechanical wonder, but if usable only from 5 per cent to 10 per cent of the time it is economical only during that time.

The arrangement of tracks, also has a very important bearing on cutting costs in material yards. In fact, the trackage arrangement is the basis upon which the entire scheme for handling material should be built. It should be such that, whatever facilities there are for the handling of material, the material can be transferred directly from the original cargo to the motor cars, or into storage, without the necessity for moving cars. The arrangement should also provide for convenient handling from storage to the motor cars. A first-class track arrangement, laid out in accordance with this principle, supplemented by the use of a locomotive crane, and with such fixed hoisting arrangements or derricks as conditions may justify, will provide a yard where material may be handled and transferred in the most economical manner.

Bulletin on Troop Transportation

The gigantic task of transporting troops to the border during the mobilization in June and July, 1916, is described in a bulletin issued by the American Railway Association, New York, which contains extracts from the recently published report of the Quartermaster-General of the United States Army. To move the first 100,000 guardsmen to the border, the railroads furnished 350 trains made up of 4900 locomotives, 3000 passenger cars, 2000 stock cars, 1300 box cars, 800 flat cars and 400 baggage cars, rolling stock which, if combined in a single train, would have been 90 miles long. Troops were carried from 608 to 2916 miles, distances greater than on any European war front, with only one accident, and that a slight one.

The National Safety Council announces that the proceedings of the Detroit meeting, which were covered in abstract in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 28, 1916, page 930, are ready for distribution. Members can secure at a nominal cost reprints of the electric railway and other section proceedings for distribution to employees.

Practical Results in Publicity Campaigns

Circumventing the Misguided or Unscrupulous "Reformer"

By CHARLES T. HEASLIP
New York City

[*Two instances are cited. In one the president of a gas company received his inspiration from the readiness with which his story was understood by a friend at his club. The same statement of facts was given to the public and the municipal ownership advocate lost his following. In the second the representatives of the company "took the stump" to neutralize the oratory of a political spellbinder.*]

TWO years ago a sincere but radical reformer attacked the validity of the franchise of a company that supplied gas for light, heat and power purposes in a small but rapidly growing city. The attack came at a time especially inopportune for the company, as its officials were trying to borrow money for extension work absolutely necessary to keep the company's service abreast of the growth of the community. With the franchise under fire, however, it was impossible to negotiate the needed loan, as capital always fights shy of a company whose franchise rights are being questioned.

Now the franchise had been granted in the old days, before it was the custom to limit such grants to a period of twenty or thirty years, and the company claimed that it was perpetual. But in order to halt the attack being made upon it, and incidentally to avoid expensive litigation, the company offered to waive that claim if the city would grant it a new and more modern franchise. Accompanying this offer the company submitted a draft of the kind of franchise which it would accept. This provided for generous discounts to consumers and for a revision of rates at five-year intervals.

Under ordinary circumstances the city officials would probably have accepted the company's offer, as the suggested franchise was both fair and modern. Moreover, the company itself had an exceptionally clean record in the community. But its reformer foe was rapidly blackening its reputation. As stated before, the reformer was sincere, but a radical; and illustrating that the first essential to being a radical is to eliminate all sense of fairness from one's system, he had raised the cry of "Stop Thief!" against the company.

Originally this cry had been based upon his assumption that the company's old franchise was invalid and that it was stealing rights from the city for which it should pay, but even the company's offer to buy a new franchise did not induce him to withdraw his charges. The proposed measure, despite its discount provisions, did not provide for rates which, in his estimation, were sufficiently low. Therefore, the company was still a thief; the city should take over the plant and conduct its own gas business. As a result of this tirade the city officials, most of whom were up for re-election, were afraid to consider the company's offer until they could see just how seriously the public was going to regard the reformer's charges.

While the matter was hanging fire the president of the gas company chanced to meet the president of the local Civic League one afternoon at the Elks' Club. Conversation turned to the subject of the franchise, and within five minutes the Civic League man was listening with interest to the public utility official's presentation of the company's case.

When the latter had finished the Civic League man said to him:

"Harry, I wish you'd attend the next meeting of our league and tell the members the same story you've told me. We've been thinking of endorsing the municipal ownership movement started by Harris (the reformer), but before any vote is taken on the matter I want the league thoroughly to understand the company's position I think it would make a difference."

The president of the gas company accepted the invitation and on his way home that afternoon he did some hard thinking. He was a conservative man, and not in the habit of discussing company affairs outside his office; but his chat with the head of the Civic League had been an eye-opener. The Civic League executive was a social economist with ideas on the rights of corporations that differed materially from those of the corporation man. Yet they had been able to meet amicably in a club and discuss the gas company's case with perfect intellectual honesty and without calling each other names. On the one hand one man did not think that the other represented predatory wealth, and on the other hand the second man did not think that his companion represented predatory poverty. Moreover, at the conclusion of their chat the Civic League man had shown that he was not only interested in the public utility man's view on the rights of the gas company, but that he stood ready to respect them.

As the president of the gas company pondered this fact it suddenly dawned upon him that he had been able to accomplish what he had, not because men are more logical, tolerant or amiable in a club than on the street, but because he had trusted his one-man audience and had stated the gas company's case implicitly. And in doing so, he had made it vital, human and interesting.

"If I can do that with one man," he soliloquized, "I ought to be able to do it with the whole town."

Following out this line of reasoning, he engaged the services of a publicity man and told him the same story that had won for him the interest and respect of the head of the Civic League.

"Your job," he said to the publicity man, "is to get that story before the public in the most effective way possible. Do it any way that's legitimate, but get it over!"

In carrying out these instructions the publicity man gave his employer a job by arranging for him a personal speech-making campaign which took him before every club and civic organization in the town. Arrangements were made with the newspapers to give this "stumping tour" all the free advertising that its legitimate news features warranted.

Then, with public attention focused on the gas company, the publicity man supplemented the speech-making campaign of the president with a series of "Franchise Talks" in the advertising columns of the newspapers. These occupied a quarter page in each paper daily, and told the company's story in chapter form, each chapter setting forth an individual phase of the company's case. They were written in a frank, friendly, man-to-man tone and the public read them, partly because they were interesting and visualized the efforts which the company was making to earn a square deal from the community,

and partly because the public is always ready to hear the other side of any controversy.

As this combination campaign progressed the city officials began to receive resolutions from the clubs and organizations before which the president had spoken, urging them to accept the company's offer. Gradually these communications increased in volume. Then came letters from individual citizens to the newspapers, supporting the company's cause, letters from business men urging the people to show by their attitude on the franchise that they belonged to a fair-minded community and were not prejudiced against capital merely because it was being attacked by a politician or reformer.

To make a long story short, the municipal ownership agitation, which had in the beginning threatened to become a real menace to the company, gradually subsided; the city officials accepted the offer made by the company, and within a period of two months the new franchise was granted.

Two significant deductions can be drawn from this incident. One is that if a public utility official will trust the public as he trusts an individual friend or acquaintance, it will not take him long to secure a degree of understanding between his corporation and the public that is of tremendous value in times of stress. The other is that it is possible for a corporation with an honest theory of its own existence and conduct to secure fair play from the public even when a reformer or politician has raised the cry of "Stop, Thief!" against it—providing, of course, that the company uses intelligent methods.

The question may now arise as to what constitutes "intelligent methods" for a company that is under fire. Does it always mean advertising plus speechmaking on the part of the company's chief executive, or are there other ways of convincing the public that a corporation is not necessarily a thief just because a reformer or politician sees fit to tack that appellation to it?

It has been the experience of the writer that the answers to the above questions depend largely upon local conditions. One fact which stands out, however, is that the company under fire should waste no time in getting its case before the public.

This has been proved again and again during the past few years by the failure of eleventh-hour truth-telling campaigns on behalf of companies that have failed to see the handwriting on the wall and have let the politicians get ahead of them.

For the companies whose officials are ever on the alert, however, the task of checking an anti-corporation agitation that threatens to become dangerous is not impossible, pessimists to the contrary. A frank "public-be-told" campaign in the newspapers can nearly always be made to produce effective results, but its benefits may be materially increased if the company officials will supplement their "straight story" in the press by every other legitimate method of gaining an audience that opportunity affords.

A Politician Discomfited

I remember, for instance, a campaign which I helped a Southern lighting company to conduct against a typical political demagogue who was a candidate for a place on the board of aldermen on an anti-corporation platform. He had selected the lighting company as a stepping stone to office because its franchise expired the following year and the new one proposed was to be the subject of a referendum vote of the people.

Under the proposed franchise the domestic service charge for electricity was to remain at the same figure which the company was charging—10 cents per kilowatt-hour. In a river town fifty miles away, where coal was cheaper and the expense of manufacturing current was less, the domestic service charge was only six cents per kilowatt-hour. Seizing this chance to draw the "deadly parallel," the politician made his campaign upon pledges of "six-cent electricity for our town."

When I arrived on the ground the company had already started to present its case to the public through a series of newspaper advertisements, but a preliminary canvass taken in the mill district of the town showed that the company's political foe was making more converts there than the company. An investigation by one of the company officials and myself showed that, like a number of anti-corporation candidates, he was a great believer in the doctrine of rant. He ranted about the tyranny of capital in general and that of the local lighting company in particular. He almost wept when he told his "dear brothers" how they were paying four cents a kilowatt-hour more for their electricity than was "justified," and how that four cents, which "multiplied itself into thousands of dollars during the course of the year," all went into the "capacious pockets of the greedy lighting corporation."

At that stage of his speech an illuminating incident occurred. One of his listeners, a quiet-looking man with shrewd gray eyes, made so bold as to heckle him.

"Look here, friend," he said, "what do you mean by this here kilowatt thing?"

The question startled the candidate and he sparred for time.

"So you want to know what a kilowatt is, eh?"

"I surely do," affirmed the heckler.

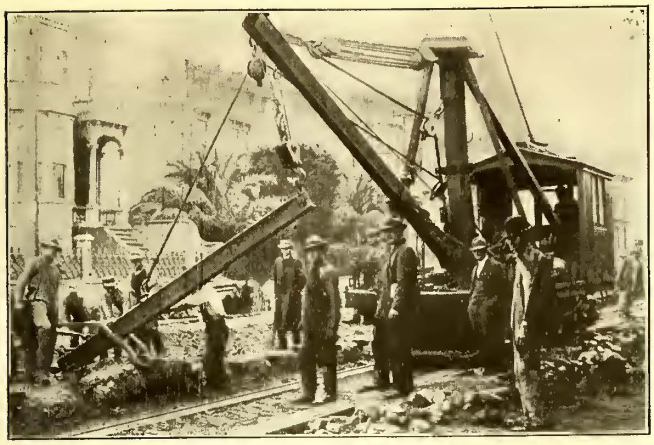
An inspiration came to the candidate and he grabbed it.

"A kilowatt, my friend," he said, "Hell—a kilowatt is something this robber company is charging you 10 cents for when you ought to be getting it for 6!"

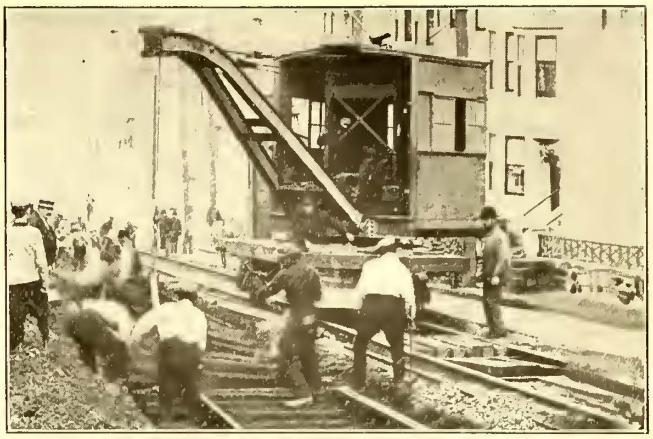
The answer raised a laugh and the speaker took advantage of it to hurry on to less dangerous ground. But a brief survey of the audience tended to indicate that he had underestimated the mentality of some of his listeners. Both the company official and myself were convinced that there was an excellent chance for the company to discount the vituperative arguments of the candidate with a personal campaign of honest explanation and reasoning. The upshot was that we decided to follow the candidate with a corps of clever and good-humored spellbinders who would speak at each place after him and riddle his accusations against the company with simple and specific explanations of the points raised against it.

In carrying out this idea we kept one man with our political foeman on all of his speechmaking tours. This man reported the candidate's speeches to our spellbinders and also gave them valuable information as to the character of the audiences which they would face in each place and the probable questions which would be hurled at them. The company induced two of its best solicitors, who were popular chaps and good "mixers," to take the stump for the franchise, and they succeeded in securing fair play for the company all through the candidate's district. As a result, the company not only secured a favorable vote on the measure, but its political opponent was defeated on the very platform on which he had expected to win.

Electric street-car service was inaugurated in Matanzas and Cardenas, Cuba, on Dec. 17. The *Diario de la Marina* says that much enthusiasm greeted the opening of the new car service, and it is believed that the tramways will assist greatly in the development of these cities.



MATERIALS HANDLING IN SAN FRANCISCO—DERRICK CAR PULLING UP OLD CABLE CONSTRUCTION



MATERIALS HANDLING IN SAN FRANCISCO—FIVE-TON CRANE CAR REMOVING OLD TRACK

How Construction Materials Are Stored and Handled in San Francisco

By B. P. LEGARE

Chief Engineer Maintenance of Way & Construction United Railroads

IN San Francisco we are using methods of handling and storing materials which have been developed gradually to fit the requirements of our particular problems. In looking over the article by R. C. Cram in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 23, 1916, I find therein but little in common with our system. However, the very fact that two railway systems can rarely utilize identical methods creates a need for a variety of information on this subject, and is in itself a good reason for compiling and publishing the methods of various companies in solving their material-handling problems.

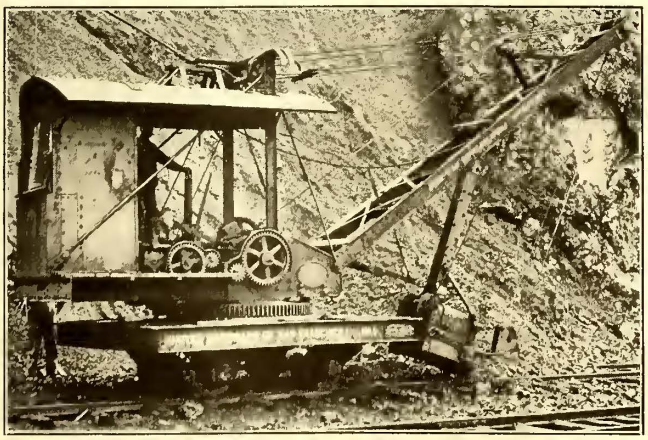
The United Railroads employs no one yard where materials are delivered for general distribution. This is partly because materials are received by rail and by water at different points of delivery, and partly because considerable area for storage purposes is not available near the center of the system. However, by adhering to a system for handling each class of material it has been found possible economically to conduct the accounting and checking of materials at the same time that their convenient distribution is facilitated by the use of the several storage points.

The Brannan Street yard is located near the center of the United Railroads' system, and although of small area it is found well suited for storing materials which are most frequently called for, as well as all materials which are delivered to the company from barges, this location being only a short haul from the waterfront.

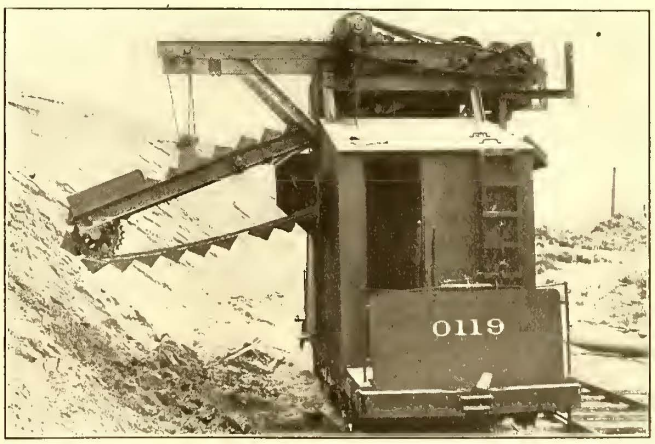
In this yard are stored all old and new ties, cement, brakeshoes, barreled asphalt, trolley wire, track bolts, crossarms, pole fittings, etc. A single track traverses the yard along the center line, whence materials are delivered to cement shed or storehouse on either side. The rear portion of the yard is reserved for storing ties.

This company finds it most economical to use no mechanical equipment in handling ties, although common labor costs as much as $2.50 per nine-hour day. The ties are loaded from boats directly onto flat cars by slings, and in the Brannan Street yard the ties are passed by hand, one at a time, from the cars to men on the ground. They are then stood up on end in the tie storage space. Thus it is never necessary to take the time to pile them up, and when taking them from storage a man never has to bend over to pick up a tie.

Old ties when brought into this yard from reconstruction work are dumped on the opposite side of the track from the new ties. The old ties are later sorted, and those considered unfit for further use are sawed



MATERIALS HANDLING IN SAN FRANCISCO—ELECTRIC CRANE CONVERTED FOR USE AS SHOVEL



MATERIALS HANDLING IN SAN FRANCISCO—SAND ELEVATOR READY TO LOAD FROM BANK

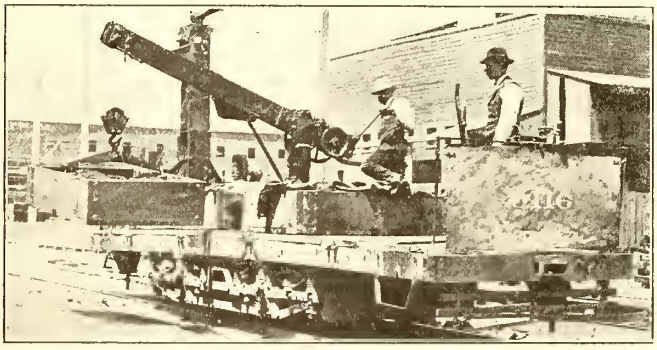
into three lengths for firewood. For this purpose a motor-driven circular saw is used, this being mounted on a small wheeled truck with an arrangement for taking power from the trolley.

Shops and Main Storage Yard

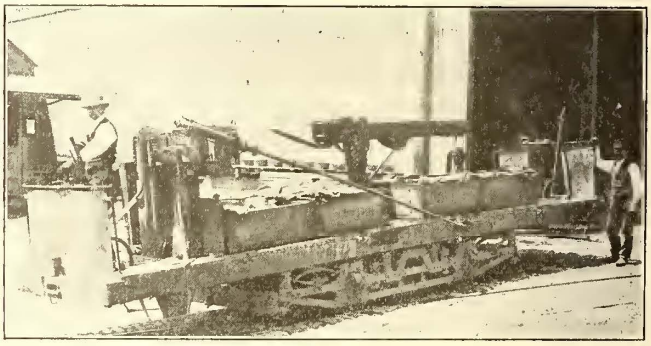
About 5 miles from the center of the system the company maintains the Geneva Street yards, where the shops are located and where the larger and heavier equipment and materials are usually stored. This yard is provided with about 2 miles of track and ample space for storing special work, paving brick, rails and all materials received by rail. A spur track from the Southern Pacific Railroad makes connection with the company's lines at this point. The company's 5-ton crane car, derrick car, electric shovel and similar rolling stock are usually kept at this yard.

The 5-ton crane is used in place of derricks in the yard to handle all steel materials. This crane is mounted on a truck equipped with the usual motors so that it can be dispatched to any part of the system. It unloads and piles special work, scrap iron and whatever heavy material there may be to be handled in the yards, and is also employed on construction work for laying track. It is mounted on a turntable with full circular swing, the motors operating the crane being separate from those for propelling the car.

The derrick was built up in the company's shops, and is used chiefly in construction and reconstruction work. It operates the plow in breaking up the surface preparatory to excavation, operates a ¾-ton hammer for breaking up pavement, or tears up cable road construction when cable lines are being replaced with tracks for electric operation. The company also has another derrick built entirely of steel, which it was decided would be more useful if equipped with a bucket such as is used on steam shovels. Accordingly, a ¾-yd. bucket was attached by means of a hinged joint, and this arrangement has been found very useful.



MATERIALS HANDLING IN SAN FRANCISCO—ASPHALT CAR UNLOADING BOXES



MATERIALS HANDLING IN SAN FRANCISCO—ASPHALT CAR COMING FROM MIXING PLANT

Three portable rock crushers are used for breaking up the concrete removed from old cable railway conduits. Although the company operates its own rock-crushing plant, and can deliver crushed rock for ballast very economically, it has been found cheaper to employ these small rock crushers in reconstructing cable lines because their use eliminates the necessity for hauling away the concrete removed from the old track. The crushed concrete is piled along the line from which it was taken, and as soon as the new track is down it is used for ballast.

Handling Sand and Crushed Rock

Excellent sand is secured for maintenance and construction without going off the company's right of way. The sand conveyor shown in an accompanying illustration can load a 16-cu. yd. car in ten minutes from the sand dunes through which the line has been located in some of the outlying districts. This sand is rather fine, but has proved excellent material for making concrete. It is also suitable for use on the cars and for mixing bituminous compounds, although for this purpose it is passed through sand dryers and thence to sand bins. An unlimited sand supply is so conveniently located that there is practically no necessity for storage facilities.

The company maintains a rock-crushing and screening plant on the outskirts of San Francisco at Daly City, where a maximum of about 200 cu. yd. per day can be produced. Owing to an arrangement with private companies for the securing of emergency supplies of crushed rock, no storage is provided for this material, and it has been found convenient to deliver from the crusher direct to the construction job, even when the requirements of the work call for as much as 300 cu. yd. of crushed rock per day.

The Daly City plant is also the depot for storing second-hand paving block. This is in order economically to dispose of broken pavers and the spalls which result from cleaning by hand the paving blocks removed from the street. All of this waste material is dumped into the crusher.

Handling Asphalt in Boxes

The company also maintains a blacksmith shop and general storehouse at Market and Valencia Streets, and here is located the asphalt mixing plant. A feature of handling asphalt is the specially designed car containers which are used for delivering the mix. A special car has been built with a hinged post on which the trolley is supported. The post can thus be easily lowered so that the car can pass under the asphalt mixers and receive its load by gravity. While the trolley pole is down power is supplied by 60 ft. of "fishline" connecting the trolley pole directly with the contactor board. This length of line is sufficient to allow the loaded car to move out to a point where the trolley is again put in service.

Before going under the asphalt bunkers four shallow boxes with a capacity of about 1 cu. yd. each are placed on the car by means of a derrick boom from a centrally located mast. When desirable two tiers, or eight boxes per load, are handled. After asphalt has been discharged into these boxes each unit is covered with a layer of carpet and the car proceeds to the paving job. Upon its arrival there the boxes are unloaded by the derrick boom and the boxes are kept covered up to the time that the material is actually required. It has been found possible to deliver asphalt 20 miles by this method and still have the material sufficiently hot upon its arrival at the job.

Illinois Association Holds Annual Meeting

At Chicago the Illinois Electric Railway Association Discussed Papers on the Economy of Raising Voltages for Railway Motors, the Training of Motormen and the Design of Interurban Headlights, Together with Reports from Standing Committees

A WELL attended meeting of the Illinois Electric Railway Association at the La Salle Hotel, Chicago, Jan. 19, was occupied with papers of interest particularly to operating men. One of them dealt with the effect of low voltage on railway motors and pointed out the economies to be realized from raising the trolley voltage even by small amounts. Another was devoted to the subject of headlights, and in a third the training of motormen was discussed. The meeting was ably presided over by Second Vice-President D. E. Parsons, general manager East St. Louis & Suburban Railway, in the absence of President J. R. Blackhall and First Vice-President C. F. Handshy.

Committee Reports

Reports of the several standing committees were called for after the association had listened to the reading of the minutes of the two preceding meetings by the secretary, W. V. Griffin, secretary and treasurer Chicago Elevated Railways. John Leisenring, Illinois Traction System, chairman of the engineering committee, stated that this committee had confined its activities during the early part of the year principally to consideration of the Bureau of Standards' electrical safety code. Later it was learned that the Illinois Public Utilities Commission was not going to adopt the Bureau's code, but instead was to draw up one of its own, and the attention of the committee had then been directed to the proposed code for the state. A joint committee from the Illinois Electric Railway Association and the Illinois Electrical Association had held two meetings and had filed with the commission a statement covering the objectionable points of the proposed code. The rules have since been greatly modified, being issued finally in December but dated in October. This committee also had held several meetings with the engineering staff of the commission, and as the result of the general co-operation it was believed that the final draft of the code was fair and workable.

Since a meeting in May at which all the telephone, telegraph, electric light and railway interests were represented and which was the last public hearing on the code, the commission put in a rule requiring the numbering and lettering of all poles in cities and municipalities and every fifth pole on transmission and other rural lines. This, of course, would entail a considerable burden on a great majority of the companies, and the joint committee of the two associations asked for a hearing, which was held Jan. 17. As a result of this, Mr. Leisenring felt that the commission would surely find it necessary to eliminate this rule or modify it to a large extent. It was brought out at this hearing that the additional expense to which the commission would be subject in the work of locating certain poles which might be involved in any action, if they were not all numbered and lettered, would amount to perhaps $200 a year. The Chicago Telephone Company offered to donate this amount to the commission, since if the rule were enforced it would cost this company $100,000 for the first numbering and lettering and $20,000 a year to continue the practice.

W. B. Potter, Illinois Traction System, chairman of the traffic committee, recommended to the association that steps be taken to withdraw if possible the interchangeable mileage books which sell at $8.50 for $10 in mileage. It had not proved popular because several of the participating companies had individual mileage books which sold at a more attractive discount. This brought out the fact that some of the members were not at all in favor of discontinuing this association mileage book, and there was pointed out the need for the succeeding traffic committee to work out a new mileage book which could be sold with a uniform discount inducement on all properties. Mr. Potter also recommended that the companies adopt some uniform system of advertising, and laid emphasis on the importance of placing timetables in the official railway guide. He believed that the interurban companies were losing considerable business because of the fact that this guide was the place where passenger agents looked for information and, when a line was not listed there, looked no further.

F. E. Fisher, general superintendent Chicago, Ottawa & Peoria Railway, added to the report of the traffic committee the considerations which had been under way in regard to transportation of baggage by interurban lines. The Illinois Commission had proposed the carrying of baggage on the same basis as the steam roads, namely, 150 lb. free with every full fare and excess charge for weights over this amount. A hearing had been held before the commission at which it was clearly brought out that since the conditions of handling were so complicated and varied it seemed impossible to establish any uniform rule. As a result the commission apparently was holding the matter in abeyance.

Technical Papers

The rest of the morning session was devoted to the reading of two papers, one by K. W. Mackall, electrical engineer Ohio Brass Company, on "Headlights," and the other on "The Effect of Low Voltage on Railway Motors," by G. M. Woods, Westinghouse Electric & Manufacturing Company. The latter paper appears in this issue. The former was published in Electric Railway Journal for Dec. 2, 1916. In discussing Mr. Mackall's paper, W. McK. White of Holden & White told of several tests in which the results corroborated the statement in Mr. Mackall's paper that a yellow beam light will penetrate a fog to a greater distance than a white beam. This feature is particularly prominent when the light is used as a marker or harbor light. For this reason the Navy Department and rivers and harbors commissions have adopted the yellow beam projector quite generally. In answer to a question by the chairman as to using incandescent lamps in headlights, Mr. White remarked briefly that the Milwaukee Northern Railway had found this type of headlight equipment very satisfactory, this company having made use of the Watson car lighting regulators in connection with the headlight and car lighting on all its cars.

In the discussion on Mr. Woods' paper, Mr. Parsons told how his company had saved itself the expenditure

of $120,000 for copper by increasing the trolley voltage on the system about 100 volts. He said that the equipment on his cars included GE-67 and GE-70 motors as well as Westinghouse No. 49 and No. 56 motors wound for 500-volt service. The manufacturers advised him against raising the voltage when he proposed this means of improving the conditions, but he decided the experiment was worth trying. During the first week twenty-five armatures were burned out and the second week fifteen armatures. These were thought to be old motors which were probably in bad condition anyway. Then it was soon found that some of these rewound motors were causing trouble, and so new armature winders were employed. The insulation was increased and the brush holders changed, and since then these same motors have caused no trouble, the service being greatly improved with the saving noted above.

Election of Officers

During the luncheon which followed, the nominating committee made its report and the secretary was instructed to cast the ballot of the association for the following officers:

President, C. F. Handshy, assistant general manager Illinois Traction System, Springfield, Ill.

Vice-president, D. E. Parsons, general manager East St. Louis & Suburban Railway.

Second vice-president, Frank J. Baker, Middle West Utilities Company, Chicago.

Executive committee: Chairman, J. R. Blackhall, general manager Chicago & Joliet Electric Railway, Joliet, Ill.; F. E. Fisher, Britton I. Budd, E. C. Faber, H. E. Chubbuck and T. F. Grover.

Immediately after luncheon the members were treated to the motion picture film "King of the Rails," which in a most interesting manner familiarizes the observer with the construction details of the Chicago, Milwaukee & St. Paul electric locomotives as they were assembled in the Erie plant of the General Electric Company and with the significance of their operation over the 400-mile mountain division of this railway. This was followed by Mr. Feron's paper on training motormen, an abstract of which appears below.

President Blackhall was present at the afternoon session and was called upon for a few remarks. He reviewed briefly the work of the association during the year. In general, he laid stress upon the need for further operating economies, and made mention of some of the notable improvements in equipment, particularly the automatic substation.

Training of Motormen on the Chicago Elevated System

BY M. J. FERON

General Superintendent of Transportation
Chicago Elevated Railways

On many city and interurban lines new men are employed and enter the motormen's class direct. In many cases these men are unknown to the officials. After their references are looked up, they are sent out on the various lines or divisions with regular motormen to receive the necessary training to qualify them for work. These students, as a rule, are on probation for a period of ten days or two weeks or until their qualifications are approved or rejected. During this period they are expected to familiarize themselves with the equipment, rules and regulations of the company regarding speed, deportment, accidents, etc. They must also familiarize themselves with the city and village speed ordinances, police rules on the streets, proper stops and numerous other details.

It is my opinion that a student who is broken in in this manner leaves the probation period with a mind so confused with innumerable details that he is uncertain as to whether or not he is carrying out his orders properly. I feel quite certain that a man being trained for the position of motorman should receive time to absorb all of these instructions so that they cannot be forgotten or misinterpreted before he is considered competent to be sent out as a motorman.

On the Chicago Elevated Lines promotions are made from the train service to the motorman's class. In this way we get the benefit of the knowledge a man will acquire while working as a trainman for a year or more. All trainmen employed on the elevated lines are first hired as extra trainmen. These men are generally about twenty-four or twenty-five years of age and are not allowed to work on a train except under the supervision of a regular conductor. Before they are employed they must pass a rigid physical examination. If they are passed by the doctor they are then sent to the superintendent, and if he believes they have the necessary qualifications to make trainmen they are sent with a regular conductor to break in, and generally put in from a week or ten days with him learning the duties of a trainman. After having served as an extra trainman for a period of six or more months they are allowed to break in or become an extra conductor, and after one year's service with the company they are allowed to make written application to the superintendent to learn the duties of a motorman. These applications, however, must be approved by the dispatcher or the one in direct authority over the applicants before being sent to the superintendent. This is done so that the superintendent who issues the permit to a trainman to break in for motorman may have the benefit of the judgment of one who has had an opportunity to observe the habits, deportment and other qualifications of the applicant and knows whether or not he is naturally careless or careful.

When the superintendent receives the application he makes further investigation in regard to the man by consulting the trainmaster, the supervisors and the man's record card. If the superintendent then finds the man desirable and believes he possesses the necessary qualifications for a motorman, he will call him to the office and give him a good talk on the requirements of a motorman and what is expected of him. A regular motorman is then selected to break in the student, and the latter receives a card or permit to ride with that particular motorman at any time. As stated before, the student, in most cases, is an extra man, and while he is not engaged in the train service, instead of loafing around the train room, "killing" time, he spends his spare time with the motorman learning his new duties. All of our students break in on their own time, and it requires from four to six months and even longer before the motorman will return the permit indorsed with his O.K. to the superintendent.

The motorman who is breaking in the student realizes the responsibility he assumes in declaring his student competent to act as a motorman, especially so on account of a personal blank which the motorman must fill out and send to the superintendent when he passes his student. On this blank the motorman fully states any points of weakness he has observed in the student. This blank is kept strictly confidential between the motorman and the superintendent. With this information before him, the superintendent is able to dwell upon the weak points when the student comes in for examination. The supervisor, under the direction of the superintendent, also watches this man when on the road for this particular fault, and in that way, very

often, we make a man strong where he was inclined to be weak.

By our method of training men for motormen, the student rides with one motorman only from the time he starts to receive instructions until he is thoroughly broken in. We also confine the student to one division and keep him on that division until he is thoroughly qualified for motorman. We think this is a considerable help, for when the student is operating only over one division he will have fewer details to remember and comprehend than he would if he had to learn the duties on several divisions at the same time. We find that once a man has been fully qualified to operate a motor on one division, it does not take him long to go on any other division and learn the details there, as all he is obliged to learn then is the operating rules for that particular division.

After a student is turned in as fully competent he is called before the superintendent and required to pass a rigid oral examination. If this examination proves satisfactory to the superintendent, he is then sent to the general superintendent, where he again attends a lecture in regard to speed on curves, operation of trains in fogs and other points of this kind. After the general superintendent has finished his instructions the man is considered a competent motorman and may be used as such when occasion requires. We feel that this method of training cannot fail to impress upon the student the responsibility of the position of a motorman, and as a rule we make him a careful, alert and competent man.

This method gives the company the benefit of the familiarity with the system and with the general operating conditions derived while the man is serving as a trainman, it provides a sufficient number of extra motormen to cover all emergencies, and gives the company an opportunity to judge of the man's responsibility before placing him in the motorman's position. We have 378 regular motormen and 224 extra motormen, and we have, on an average, sixty-five students passed as competent motormen each year.

Effect of Low Voltage on Railway Motors

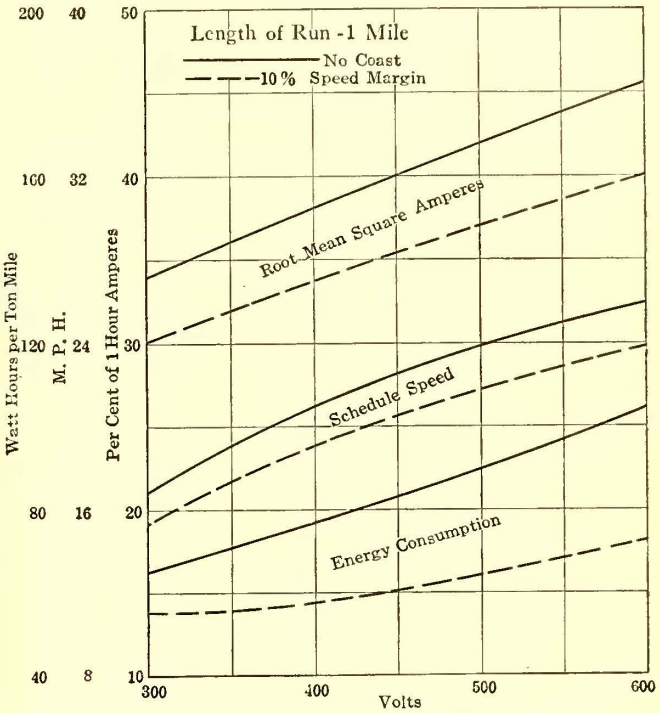
BY G. M. WOODS
Westinghouse Electric & Manufacturing Company.

The speed of a series motor at any given current is directly proportional to the counter emf., that is, to the impressed voltage less the drop in the motor itself. The line voltage impressed on a railway equipment has, therefore, an important bearing on the performance of that equipment. Voltage affects schedules, energy consumption and motor heating. The effects of low voltage are for the most part undesirable and hence demand serious consideration.

The effect on schedule speed is the most readily observed feature of low voltage. It is well known that in a specific service a lower voltage involves a lower schedule speed, or a reduction in margin for making up lost time, or both. If service conditions are such that an equipment is able at a given voltage to make a certain length of run without coasting, it is found that an increase in voltage produces a comparatively small speed margin on very short runs, while on long runs for the same voltage increase, the speed margin may be relatively great. This indicates that for the reasonable maintenance of schedules, it is necessary on suburban and interurban lines to maintain better line voltage conditions or apply equipments with greater leeway in speed than would be necessary on a city line. Since the maintenance of good voltage is more difficult and expensive on interurban than on city lines, the alternative of higher speed equipment is usually adopted.

On every run, the time during which current is drawn by the motors is made up of two distinct parts, the period of notching up the controller and the period of running with the controller on full. The speed of the car before the controller is on the full-parallel position depends primarily on the motorman's rate of notching up the controller and is to a certain extent independent of the line voltage. The more marked effect of the change in voltage on the speed margin on longer runs is due to the fact that the motors are running at line voltage a larger part of the time.

The effect of voltage on the operation of car equipments will be examined from two standpoints; first, where the schedule can be adjusted to suit the voltage, and, second, where the schedule must be maintained irrespective of voltage. In the first case, the



EFFECT OF VOLTAGE—FIG. 1—RELATION BETWEEN VOLTAGE, ENERGY CONSUMPTION AND SCHEDULE SPEED FOR GIVEN RUN

schedule, energy consumption at the car and the motor heating will vary in the same direction as the line voltage.

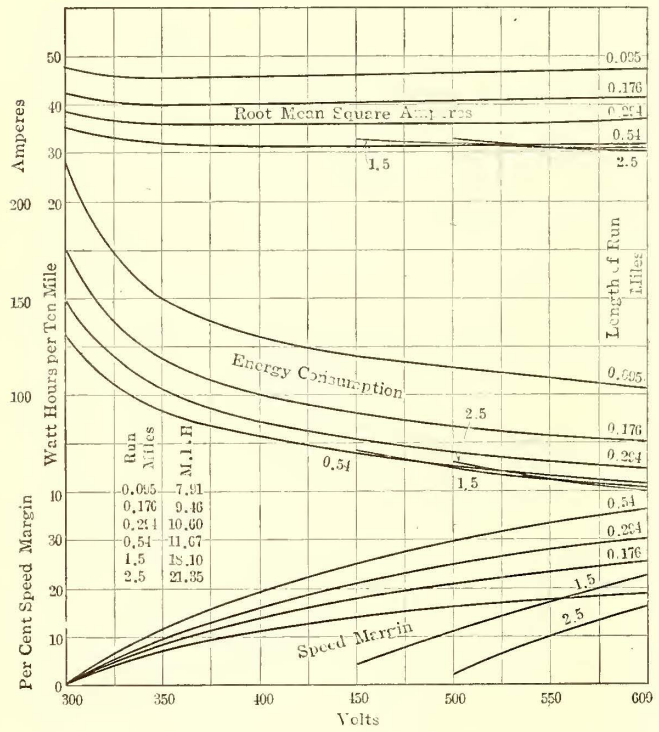
For example, under certain assumed conditions and with a typical railway equipment, it has been found that on the basis of constant speed margin, a reduction in generator voltage from 550 to 450 results in a reduction in schedule speed of 5 per cent for an average run of 1000 ft., and a reduction in schedule speed of 10 per cent for an average run of 1 mile. These percentages are approximately constant so long as the comparison is made on the basis of the same percentage of speed margin for both voltages.

Under these same conditions, the heating current is reduced about 9 per cent, both on a 1000-ft. run and on a 1-mile run, and this percentage varies but little for different speed margins so long as the comparison is made on the basis of a definite speed margin.

Energy consumption would be reduced 17 per cent at the car on a 1000-ft. run and 13 per cent at the car on a 1-mile run, the percentage being slightly greater when the comparison is based on runs without coasting than when based on runs with sufficient speed margin. This reduction in energy consumption at the car is due almost entirely to the reduction in schedule speed. If the lower voltage were assumed to be due to drop

in trolley and track circuits, the energy consumption measured at the substation would actually increase by 1 3 per cent on the 1000-ft. run and 5.7 per cent on the 1-mile run.

As an example of the conditions prevailing where the schedule must be maintained, irrespective of voltage, it has been found that an increase in generator voltage from 450 to 550 results in a 28 per cent increase in percentage speed margin on a 1000-ft. run and a 32 per cent increase on a ½-mile run. The same increase in voltage results in a 12 per cent decrease in energy consumption at the car on a 1000-ft. run and a 20 per cent decrease at the car on a ½-mile run. If the assumed lower voltage is due to drop in the trolley and track circuit, then with the higher voltage at the car, the energy consumption measured at the substation decreases 28 per cent on the 1000-ft.



EFFECT OF VOLTAGE—FIG. 2—RELATION OF VOLTAGE AND CURRENT CONSUMPTION OF MOTOR FOR VARIOUS LENGTHS OF RUN AND FIXED SCHEDULE

run and 35 per cent on the ½-mile run. The energy consumption decreases as the voltage increases because with higher voltage the car gets up to speed more quickly, in making a given schedule more coast is obtained, and the brakes are applied at a lower speed. The lower energy consumption is the result of less loss in the heating of wheels and brake shoes.

Under any given set of conditions there is one voltage giving a minimum heating current, which will increase if the voltage is either raised or lowered.

Fig. 1 shows the effect of voltage on schedule speeds, energy consumption, and heating current. It will be noted from these curves that as long as acceleration and braking rates, length of run, length of stop and speed margin remain constant, the schedule speed, energy consumption at the car and heating current vary in the same direction as the voltage.

Fig. 2 shows the variation in heating current, energy consumption and speed margin for several lengths of run from 0.1 mile to 2.5 miles, with voltages from 300 volts to 600 volts. For the four short runs, the schedule is such as can be made at 300 volts without coasting. The short runs are taken on that basis since the comparison can be made over the entire range of voltage chosen. On the two long runs, however, at higher voltages, the car makes the distance and coasts to a standstill in less time than required for the run without coast at 300 volts. In order to obtain a wider range of comparison, the schedule is taken as that which can be made at 600 volts when coasting to a standstill without any braking.

While the effect on speed margin and energy consumption is marked, the effect on heating current is comparatively slight. The ability of a car to maintain schedules under varying traffic conditions as measured by the speed margin, and the size of the power bill as measured by the energy consumption, are of primary importance to the operating man. The maintenance of an equipment is affected to a certain extent by the temperature rise obtained on the motors in their average service. It is doubtful, however, if the degree to which motor heating is increased by reasonably increased voltage will ever be reflected in any maintenance reports, provided running time is kept the same. With higher voltage, the coasting time is longer and brakes as a result are applied at a lower speed. This reduces the brake shoe and wheel wear and tends to counterbalance the theoretical increase in motor maintenance due to higher temperature.

With regard to motor heating, it is of interest to note that low voltage will often cause the overheating of a motor equipment on long grades. On account of the lower speed resulting from decreased voltage, the time on the grade may become sufficiently long to exceed the motor's thermal capacity, overheat the brushes or otherwise produce poor commutating conditions. This is particularly true of locomotives, since they will generally be more heavily overloaded on grades and operate at lower speeds than motor cars.

With extremely high resistance in trolley and track circuit it is sometimes possible actually to obtain a higher speed with the motors in series than with the motors in parallel. Assume as an example the following somewhat abnormal conditions: A single track section of road laid with 60-lb. rails and fed from one end by a single No. 0000 copper trolley wire. The total resistance per mile would be 0.305 ohm. If the substation voltage is 625 volts, and a car with quadruple motor equipment at the end of the line, 5 miles from the substation, is drawing 70 amp. per motor, the voltage at the car with motors in parallel is 198 volts. The voltage at the car with motors in series-parallel is 412 volts and the voltage per motor 206. The voltage per motor is, therefore, in the example chosen, 8 volts more with the motors in series-parallel, than with the motors in full parallel and the speed of the car would be 5 per cent higher. With any higher current per motor, the voltage drop would be greater and the difference in the voltage per motor with motors in series-parallel and with the motors in full parallel would increase as the current per motor increases.

Remedies for Low Voltage

One of the most easily remedied causes of low line voltage is low generator, or low-substation voltage. Generators and rotary converters are frequently operated below their rated voltages, whereas they can often be operated satisfactorily at 10 per cent above rated voltage. However, any contemplated increase in voltage should first be taken up with the manufacturer. Also, many roads are still operating cars equipped with motors that have been in service from ten to twenty years. Such motors are not only without commutating poles, but in many cases, the creepage distances and class of insulation are not suitable for any great voltage increase. However, by putting such motors in good shape and keeping them clean certain types

may be made safe for voltages higher than that for which they were designed. For example, it is a matter of record that one road raised the substation voltage from 600 volts to 725 volts and by having taken the above precautions has successfully operated a large number of Westinghouse No. 56 non-commutating pole motors at the higher voltage.

Series running on grades reduces the voltage drop since the current drawn from the line is just half the current drawn when the motors are in parallel. The speed in series may not be higher than that in parallel as was the case in the abnormal example previously given, but due to decrease in drop, it will be considerably more than half the speed with the motors in parallel and other cars in the same section of the line will benefit from the higher average voltage.

On interurban lines the maximum current taken by any one car has a considerable effect on the voltage drop. By accelerating in series more rapidly than at the average rate required, and less rapidly in parallel, the peak current from the line and consequently the drop is kept below the value which would be obtained otherwise. This improves the average voltage at the cars.

Another condition which causes low voltage on interurban roads is the passing of two cars at a siding. Frequently one car stops and the other slows down to a low speed. Both cars then accelerate at once and an extremely low voltage results. If the motorman of the second car, having seen that the first car is in the siding, and the way is clear, would run by at a fairly high speed, and then coast, the first car could accelerate, while the second car is drawing little or no current, and the maximum drop would be greatly reduced. On account of track conditions, however, it is not always possible for the second car to run by at a high speed, but any effort to obtain co-operation between the motormen under circumstances of this kind will in a majority of instances be rewarded by better voltage conditions.

To Prevent Electric Railway Strikes

Public Service Commission for First District of New York Proposes Plan Involving Wage Boards to Settle Wage and Other Disputes—Hearings to Be Held on Proposed Bill

OSCAR S. STRAUS, chairman of the Public Service Commission for the First District of New York, on Jan. 22 made public the tentative details of a plan by which the commission hopes to avert future strikes on electric railways in New York City. The main features of the proposed scheme are the creation of wage boards to certify to the commission findings on all matters of wages and working conditions that cannot be privately adjusted, and the prohibition of strikes pending settlements, which cannot be turned down if approved by the commission.

Since the strikes in New York City last August and September, the commission has been considering the proposal of legislation to remedy the strike evil. As a result of its study of the weaknesses of the existing public service law, as well as of the needs of the companies, the employees and the public, it has now presented a tentative plan for public criticism. In about a week public hearings will be begun, after which a bill in final form will be drafted.

ADVANTAGES STATED BY COMMISSION

According to the announcement by the commission, it is believed that the proposed plan has the following advantages from the point of view of the railways: (a) Registration of trades unions and agreements; (b) decision of wage disputes or other grievances upon the basis of fact; (c) maintenance of discipline and efficiency; (d) reasonable permanency of the staff, and (e) avoidance of interruption in the service.

The plan, it is also believed, will promote for employees on electric railways: (a) Freedom to organize; (b) proportional representation on a wage board; (c) fair and reasonable wages and working conditions; (d) redress of legitimate grievances; (e) power to negotiate collectively with employers; (f) faithful enforcement of agreements and awards relating to wages and working conditions, and (g) security of employment.

On the other hand, the public will feel that there will be: (a) Fair consideration of wage increases and working conditions; (b) rate adjustments based thereon; (c) uninterrupted service; (d) better and more efficient service through reasonable security of tenure to employees and best possible working conditions; (e) avoidance of accidents due to inexperienced men, and (f) complete supervision of the service.

In short, it is said, the proposed plan will give the widest opportunity for private negotiation consistent with regard for the public interest, to promote amicable adjustment by agreement, to insure knowledge of conditions and fair determinations through the aid of wage boards, selected by the parties themselves, reserving that supervision necessary for the protection of the "third party." In addition, it will seek to secure power conspicuously absent from the present law, *i. e.*, the power to enforce agreements after they are made.

THE COMPLETE PROPOSAL

The full text of the tentative proposal is published below:

1. *Wages and Working Conditions:*

Street railroads shall provide for the payment of fair and reasonable wages and salaries to all employees engaged in the service and make provision for fair and reasonable working conditions in the performance of such service.

2. *Duty of Company to Provide Adequate Number of Employees:*

Every street railroad shall procure and have such employees in service, adequate in number, competent, and governed by rules and regulations as to discipline, competency, wages, hours of work, working conditions, employment, promotion, benefits, retirement upon pension or otherwise, discharge or termination of service or reinstatement, and contract or terms of employment, in accordance with the provisions hereof, as shall secure continuous, uninterrupted, safe and adequate transportation of persons or property and promote the security or convenience of employees, passengers, shippers or the public.

3. *Method of Determination:*

The determination of what shall constitute fair and reasonable wages and salaries and fair and reasonable working conditions shall be made either by:

a—Mutual agreement between employer and employee;

b—The wage board, constituted as hereinafter provided; or

c—The commission of the district having jurisdiction over the employer.

4. *Organization of Employees:*

Any ten or more employees engaged in any branch of any service over which the commission has jurisdiction may form an association or union, or branch or local of any existing association or union, and this shall thereupon have the right to represent its members in all negotiations with employers and to be heard in any proceeding in any manner relating to wages or working conditions affecting its members, upon making and filing semi-annually with the commission:

a—A certified copy of its articles of association, certificate of incorporation, by-laws, rules or governing regulations;

b—A full and true list of all its officers;

c—A full and true statement of the number of its members and the branches of the service in which they are employed; and

d—A consent in writing, signed by its duly authorized officers, to accept and abide by all decisions, awards and orders of the commission or the wage board, when approved by the commission.

5. *Negotiations and Agreements With Employers:*

Any association or union registered as provided may negotiate with any employer under the jurisdiction of the commission for the purpose of establishing a joint agreement upon wages and working conditions. Upon application by the employer or by such an association or union of employees, the commission shall designate an impartial person to preside over such negotiations, who shall have no power to decide or vote upon any of the subject matters involved in the negotiations.

6. *Wage Board, How Constituted:*

The commission shall make suitable rules and regulations for the establishment of a wage board or boards, whose duty it shall be to make investigation and to certify to the commission its findings upon all matters of wages and working conditions. Any association or union registered as provided shall be entitled to nominate upon such board such number of members as the commission shall determine is reasonably proportionate to the number of members in such association or union, with due regard to representation thereon of unorganized employees and taking into account the total number of all employees. The employer shall be entitled to nominate such additional number of representatives as shall be equal to the total number of representatives of employees.

If such nominations shall be approved by the commission, it shall organize and complete such wage board, shall provide suitable accommodations for its work and shall provide such clerical, statistical and other assistance as may be required for the due performance of its work. The members of such wage board shall receive such compensation for their services as shall be fixed by the commission, which shall be paid by the State Treasurer, as are the expenses of the commission for the Second District.

7. *Hearings and Determinations:*

All applications for the fixing of wages or working conditions not established by mutual agreement shall be referred to the wage board for hearings and findings. Upon its report, the commission shall make a determination which shall be binding upon all parties concerned.

If the wage board shall fail to agree, or if there be no wage board established, then such hearings shall be had before the commission and the commission shall make its determination upon its own findings.

Applications hereunder for a wage determination shall not be made until reasonable opportunity shall have been given both employer and employees to come to a mutual understanding. The wage board, or, in case of its failure to agree, or if there be no wage board established, then the commission shall determine what is such reasonable opportunity.

8. *Agreements, Rules and Schedules to Be Filed:*

Agreements, rules or schedules regulating wages or working conditions shall be filed with the commission and shall be subject in all respects to its approval.

9. *Grievances, Adjustment:*

The maintenance of discipline and efficiency shall rest with the employer. Any employee deeming himself aggrieved and unable to obtain redress from his employer may petition either the wage board or the commission for an investigation of his grievance. If, upon such investigation, either the wage board or the commission shall find that he is justly aggrieved, it shall make such order and award in the premises as it deems fair and reasonable and for the good of the service, including the reinstatement of a discharged employee, and, in such case, the award of back pay.

10. *Existing and Future Contracts:*

All existing contracts fixing wages or working conditions shall remain in full force and effect. No person regularly engaged in an operating service, including the furnishing of motive power for the service, as motorman, driver, conductor, engineer, trainman, brakeman, fireman, switchman, or otherwise, shall be engaged or retained in the service for an indefinite period, or upon a hiring at will. The parties shall fix a definite period or term of service; and in the absence of any other agreement, it shall be understood and implied that the period or term of service is for one year, and thereafter from year to year, unless terminated upon thirty days' notice.

11. *Limitations, Strikes and Lockouts:*

Pending negotiations, investigation and determination as herein provided, there shall be no lockout or strike on any service subject to the provisions hereof and no action shall be taken in group or concert or by agreement tending to interrupt the service; but nothing herein contained shall be construed to prevent employees from organizing to improve or better their conditions in accordance with the provisions hereof.

12. *Penalties:*

A violation of any of the provisions hereof by any person, firm or corporation, officer, agent or employee of an association or union, or by any employer, officer or agent, shall constitute a misdemeanor punishable by a fine of not less than $..... or more than $.....

13. *Application:*

These provisions shall apply to street railroads and to employees and organizations of employees engaged in the service of such street railroads.

Compulsory Health Insurance Opposed

Departmental Reports at Meeting of National Civic Federation Show Industrial Progress and Needs

VARIOUS questions, ranging from the status of female labor to military preparedness and international peace, occupied the attention of the National Civic Federation at its annual meeting in New York City on Jan. 22-23. The points of most direct interest to the electric railway industry were the discussion in opposition to compulsory health insurance and the departmental reports on welfare work, workmen's compensation legislation and conservation of human life in industry.

DEPARTMENTAL REPORTS

Disclosure of a source of enormous financial loss in American industry and announcement of the projection of a movement to prevent it by the organization of state committees of employers in the various industrial states were made in the report of Louis A. Coolidge, chairman of the welfare department. "Unnecessary 'hiring and firing' in factories, due largely to unintelligent methods of dealing with the workers, is responsible," said Mr. Coolidge, "for a national waste of many million dollars every year, and this loss can be prevented to a great extent by according better treatment to employees as regards wages, working conditions and other factors."

The calling of a national conference to discuss the necessity of state legislation throughout the United States requiring employers to compensate workers who contract occupational diseases was urged by August Belmont, chairman of the workmen's compensation department. The enactment of special statutes covering occupational diseases, apart from accidents, would render sickness insurance legislation unnecessary. Mr. Belmont said that thirty-two states and three territories now have laws compelling employers to compensate workmen or their dependents for loss through injuries or death by accident, arising out of or in the course of employment, and added that there is reason to believe that ultimately Congress will enact a federal workmen's compensation law covering employees engaged in interstate commerce, particularly railroad workers. Mr. Belmont deplored the lack of uniformity in the compensation laws of the various states, and he urged that compensation laws be made to apply universally to all employers and not be limited to alleged hazardous occupations. After citing the drawbacks incidental to the different forms of insurance, Mr. Belmont stated that the most acute problem relates to the cost of medical attention and the right of the employee to select his own physician. He emphasized the necessity for standards on medical attendance, insurance, employments covered by the law, and a method of computing awards.

Louis B. Schram, chairman of the industrial accident prevention department, advocated the enactment of uniform safety legislation in the industrial states, better enforcement of existing laws, larger state appropriations for factory inspection, increased numbers of inspectors, and the establishment of safety museums in the principal manufacturing centers by federal and state governments. Mr. Schram showed how the enforced payment of compensation and the reduced premiums offered by insurance companies to employers who eliminate hazardous conditions in their establishments have stimulated the interest of employers in accident prevention. "But nearly all safety legislation is inadequate," said Mr. Schram, "and in some states there is a distressing failure to enforce safety laws owing in part to the insufficiency of appropriations and the small number of inspectors allotted to the work."

COMPULSORY HEALTH INSURANCE CONDEMNED

One session of the National Civic Federation was almost entirely devoted to a discussion of the principle of compulsory health insurance, labor leaders and representatives of large corporations holding that the scheme was an undemocratic and inadvisable experiment. A resolution in opposition to the plan was referred to the executive council.

The objections of representatives of organized labor seemed to be based on the belief that compulsory health insurance could not be administered without class distinctions and control over wage earners, that labor is satisfied with its union benefit funds and that it desires no one to assume any guardianship over itself. Samuel Gompers, head of the American Federation of Labor, sent a paper stating that the only agency which gets at the causes of poverty is organized labor, for this aims at higher wages as measured by American standards of living. If these are secured, workmen can insure themselves.

Corporation representatives told of the successful health and death benefit systems now in use and asserted that the state should not interfere and use compulsory methods where private efforts have not failed. A. Parker Nevin, general counsel National Association of Manufacturers, was of the opinion that before compulsory health insurance is ever tried, compulsory agencies for the prevention of sickness should be adopted.

Among others who participated in the discussion were the following: Warren S. Stone, grand chief International Brotherhood of Locomotive Engineers; John Franklin Crowell, executive officer Chamber of Commerce; Frederick L. Hoffman, former president American Statistical Association; Charles G. DuBois, comptroller American Telephone Company; S. T. Simmonds, the Celluloid Company; M. W. Alexander, General Electric Company; W. D. Kelley, Consolidated Gas Company of New York; Hugh Frayne, American Federation of Labor; Peter J. Brady, Allied Printing Trades Council, and Timothy Healy, international president Stationary Firemen's Union.

Publications on Labor

Two recent publications by economic bodies present additional data in regard to one of the most important present-day problems—that of labor. The first, the January, 1917, issue of *The Annals* of the American Academy of Political and Social Science (Woodland Avenue and Thirty-sixth Street, Philadelphia), contains a large number of articles discussing various aspects of the situation, such as regulation of wages, hours and working conditions; public employment bureaus, collective bargaining, compulsory arbitration or investigation, voluntary arbitration and conciliation, and the fixing of wages by utility commissions. Single copies may be obtained for $1.

The other publication referred to above is the one on "Labor Disputes and Public Service Corporations," published by the Academy of Political Science (Columbia University, New York), as the January number of its *Proceedings*. This volume gives the full text of the various papers presented at the recent meetings of the academy, reported in the ELECTRIC RAILWAY JOURNAL of Nov. 25, 1916, page 1106. It may be secured in paper for $1 and in cloth for $2. Like the first mentioned publication, it is a real contribution to the studies of how to solve the labor problem in a democracy.

Treated Wood for Ties and Paving

At the Annual Meeting of the American Wood-Preservers' Association in New York Special Attention Was Devoted to Treated Wood-Block Paving—Elaborate Service Records Covering This Material and Also Steam-Railroad Ties Were Submitted

THE annual meeting of the American Wood-Preservers' Association, which was held in New York City, Jan. 23-25, 1917, with an attendance of more than 200 delegates, reflected the growing general interest in treated wood as a surface for street paving through the assignment of one complete session to the subject. At this time a committee stated that a joint specification for wood-block paving had been approved by committees from six different technical societies for presentation to their respective associations. In consequence, the committee submitted a copy of this specification for adoption as standard by the American Wood-Preservers' Association in a form substantially the same as that submitted as information at the last convention.

This committee's report included a statement disapproving of the use of sand fillers or sand cushions for such pavements. Sand fillers are not waterproof and permit water to reach the base of the blocks, causing trouble from expansion. If the blocks dry out and shrink, the sand settles down in the spaces between the blocks, creating the possibility of further trouble if the blocks later become wet and expand. Instead of sand, the committee recommended either coal-tar pitch or asphalt filler.

The committee expressed a favorable opinion in regard to the practice of laying blocks on a smoothly-finished concrete base, particularly when the blocks are either dipped in pitch immediately before laying or when the blocks are set in hot pitch swabbed upon the concrete base. A new method was also recommended whereby the smoothly-finished concrete base is coated with bituminous cement, this being allowed to get cold and hard before setting the blocks upon it. This substantially removes the objection of high cost applying to the use of hot cement and also removes the objection in regard to difficulty of replacing faulty blocks. Nevertheless, after a day or more of service the blocks adhere firmly to the base. In an appendix to this report there was given an account of tests upon wood-block paving to determine the relative strength of treated and untreated blocks. These tests showed no appreciable change in strength due to treatment, such minor differences as existed being considered to be due to changes in the internal structure.

The committee on preservatives, through a sub-committee, reported very favorably in regard to the use of water-gas tar and oil for treatment of paving blocks, and special comment was made in regard to the uniformly high waterproofing value of this preservative material. In addition, the sub-committee was unable to find instances of decay in any of the water-gas-tar treated blocks inspected by it, nor was any such decay reported from uninspected work, although a number of installations had been in service for more than eight years. The report was favorable also in regard to permanency of oil in the blocks, ease and completeness of penetration and freedom from bleeding when water-gas-tar and oil were used. In consequence, the committee recommended that refined water-gas tar be recognized as a suitable wood-block preservative and submitted specifications for a standard of the association for this class of material.

Another committee presented a detailed summary of replies to an inquiry regarding experience with wood-block paving in each of a number of cities. Detailed information was given on the oldest wood-block pavement installed in each city and on the best wood-block pavement regardless of age, as well as on pavements that had failed in service. Replies to the first section of the inquiry showed the maximum life of pavement to be in the vicinity of seventeen years, and where the life had exceeded this, the paving was reported in bad condition. Practically all of the oldest pavements were laid with long-leaf yellow pine, but some Norway pine and tamarack that had been laid since about 1908 appeared in the record.

The wood-block pavement reported by the different cities as being the most satisfactory up to Jan. 1, 1917, included installations up to an age of only about seven years. Practically all of this material was long-leaf yellow pine, but some tamarack and Norway pine laid in 1913, and subsequently, was included among the most satisfactory pavements by certain cities, improved methods of treatment and laying the blocks in the street undoubtedly being responsible for this condition.

The most interesting feature of the report was the section covering wood-block pavements that had been reported by different cities as failures, or as being the most unsatisfactory according to local experience. Reports were received from seventeen cities and included three cases of decay, four cases of excessive wear and four cases of heaving, the remainder being miscellaneous in character. Of the three cases of failure caused by decay, one was thirteen years old and was said to be chargeable to insufficient penetration of the oil into the sap wood. The two others were only four years old, and the reason for the rapid deterioration was not apparent, although it was presumably caused by insufficient treatment.

The four cases of failure because of excessive wear were all about ten years in age, the life of one pavement having been extended from seven to ten years by relaying with a number of new blocks. Of these four cases, one pavement was reported to have been laid with tamarack blocks, although a report from another source states that "all kinds of wood" were used. In two of the other failures due to wear the pavements were laid with black gum, and the fourth was reported to have been laid with Norway pine and tamarack.

The four cases of heaving or bulging that appear in the list of failures are charged to a neglect in providing for expansion, and to the use of pitch filler which becomes hard and incapable of compression in cold weather. In addition, reports on all four cases cite the probability that the blocks were insufficiently treated, being thus permitted to absorb an excessive amount of moisture and to expand greatly.

Of the four cases of failure classed as miscellaneous, two were caused by a washing out of the sand cushions under the blocks, both being reported to have been subject to the pumping action of street railway tracks on water that seeped under the blocks from alongside of the rail. In one of these cases some of the blocks are now resting upon the bare concrete foundation, while in other

places the sand cushion is 6 in. thick. It is proposed to relay this pavement without a sand cushion, laying the blocks on ⅛ in. of asphalt supported by a mortar coating on the concrete base. This city reports that practically no repairs of wood-block paving have been needed on streets where car tracks do not exist.

Movement of street railway track is also reported as a cause of failure by another city, this movement producing leaks in the pavement surface and frost doing the rest. However, this trouble is found to occur only at cross-overs, and it is proposed to remedy the situation by using granite blocks at these points.

Of the remaining miscellaneous failures, one is due to excessive shrinkage during long dry seasons because of improper creosoting of the blocks and the use of sand filler. Another is due to sinking caused because the pavement was laid without any concrete foundation. The last instance of failure reported was chargeable to fire, the greater part of the city from which the failure was reported being destroyed in a conflagration. The committee, however, stated in its report that this could not be called an inherent defect in wood-block pavement because several instances were on record where wood-block pavements had passed through very destructive fires and were little injured. In one fire the heat was so great that overhead structural steel work was fused and fell upon a wood-block floor, but after the removal of the débris it was found that the blocks had charred only ⅛ in. to ¼ in. in depth under the direct action of the flame and from ¾ in. to 1 in. where they were touched by the fused steel. Subsequently the charred blocks were scraped and allowed to remain in service, while the blocks more deeply scarred by the hot steel were turned over and relaid. This burned floor involved perfectly normal charges for upkeep since that time.

Service Tests of Ties

The report of a committee on service tests for ties and structural timber stated in its report that primary attention had been given to ties for steam railroads. A systematic collection of data of this character has been undertaken by the Forest Products Laboratory in co-operation with this committee and with the committee on wood preservation of the American Railway Engineering Association. The general plan is for the various steam railroads to submit annually a report showing results obtained on their test tracks, which are generally used since experience has shown that tie records can be kept more accurately by the use of short sections of experimental track than by trying to keep a record of all ties on one division or the whole system. These results are classified and tabulated systematically.

With a view to securing similar data for ties used in electric railway service in the same manner, this subject has been taken up by the committee with the American Electric Railway Association. Record forms for data have been submitted and it is expected that during the ensuing year exhaustive records will be available regarding the life of ties on electric railways. The committee considers that a compilation and analysis of such data, both for ties in interurban tracks and in track on paved and unpaved streets, has not as yet received proper attention.

In addition to the service test records, which covered records from thirty-three steam railroads, the report included a statement summarizing the results obtained during the last seven years on the Chicago, Burlington & Quincy Railroad with various kinds of treatment and various species of wood. This statement represented an average of the conditions existing on twenty divisions of the railway in the states of Wisconsin, Illinois, Missouri, Iowa, Nebraska, Colorado, South Dakota and Wyoming. With regard to the various kinds of wood, the feature of the statement is the fact that practically all untreated ties, with the exception of three species; namely, white oak, chestnut and cypress, reached the end of their life in seven years. All of the ties in question were laid in the years 1909-10, and in January, 1917, something like 90 per cent of all untreated ties had been removed, this figure reaching 100 per cent in several instances. The percentage of ties removed after the seven years' service in the case of the three above-mentioned exceptions, were respectively 10 per cent, 37 per cent and 51 per cent.

The influence of treatment upon the life of ties is displayed in the following table, which is a general summary of results regardless of species of wood.

Treatment	Total Ties Placed 1909-10	Total Ties Removed Up to 1917	Per cent removed Up to Jan., 1917
Creosote	3,264	16	0.5 per cent
Card Process	15,817	455	3 per cent
Burnett Process	2,488	100	4 per cent
Untreated	3,270	2,626	80 per cent

The different treatments mentioned above include the straight creosote process, whereby creosote oil is forced into the treated wood under pressure until there is an absorption of from 5 lb. to 10 lb. of oil per cubic foot of timber. The Card process above-mentioned consists, in brief, in the use of a mixture containing about 80 per cent of zinc-chloride solution and 20 per cent of creosote, which is injected to an absorption amounting to about ½ lb. of dry zinc-chloride and 2 lb. or 3 lb. of creosote per cubic foot of timber. The Burnett process involves the use of zinc-chloride solution alone, this being applied under pressure after a preliminary vacuum until the wood refuses to absorb more, the absorption ranging between ¼ lb. and ½ lb. of dry zinc-chloride per cubic foot.

Interborough Complaint Invitation Appreciated

Posters Placed in Cars Soliciting Constructive Criticism Have Been Effective in Drawing Many Replies of a Reasonable Nature

The Interborough Rapid Transit Company and the New York Railways, New York, are receiving a large number of appreciative letters as a result of their recent appeal to the public for help in solving their transit problems, by means of posters placed in the windows of their subway, surface and elevated cars. The subway posters bear the following request:

WE ASK YOUR HELP.

Until new subway lines are opened rush-hour congestion is bound to be abnormal.

The Interborough Rapid Transit Company is trying hard to meet the emergency. We are running every rush-hour train the tracks will hold.

We ask helpful suggestions or criticisms.

Write us at 165 Broadway. All letters will receive careful attention.

THEODORE P. SHONTS,
President Interborough Rapid Transit Company.

The surface cards read:

WE ASK YOUR HELP.

Street congestion is the worst in the city's history. In our efforts to keep up good service we invite helpful suggestions, or criticisms.

Write to 165 Broadway.

Every letter will receive careful consideration.

THEODORE P. SHONTS,
President New York Railways Company.

The elevated posters read:

WE ASK YOUR HELP.

The Interborough Rapid Transit Company seeks intelligent comment or criticism of its service.

Letters sent to 165 Broadway will receive careful consideration and acknowledgment.

THEODORE P. SHONTS.
President Interborough Rapid Transit Company.

On inquiry at the Interborough offices by a representative of this paper it was learned that out of about

200 letter replies received in answer to the invitation for criticisms, a gratifyingly small proportion of them were of an unreasonable and abusive nature, whereas about 75 per cent were worded with great consideration, most of the writers prefacing their criticisms by expressing their appreciation of the excellence of this railway's service and their realization of the enormous problems with which it has to contend. The great majority of these criticisms are specific in nature and relate to suggestions for improvements in particular localities or lines personally frequented by the writer, such as having trains skip certain stops during the rush hour in order to avoid congestion and accelerate schedules, or as to the condition of toilets in certain stations, etc. Although practically all the complaints are similar in kind to those which have been registered on previous occasions, they will all be reviewed carefully, in the light of the present altered conditions of transportation.

The investigation of the complaints has been placed in the hands of a special committee, composed of two representatives of the operating department, one representative of the legal department and one representative of the president's office. Each complaint will be referred to the man in most direct charge of the matter covered, and answered as soon as possible, the reply stating whether or not the complaint had been corrected, and if not, explaining frankly the company's inability to comply.

COMMUNICATION

Standards in Car Equipment

LACONIA CAR COMPANY
BOSTON, MASS., Jan. 20, 1917.

To the Editors:

The subject of standardization for electric-railway equipment is, I think, a particularly timely one, and is of vital interest at present to car builders and railways alike. Now that it has come to the front, I trust the agitation will be kept going to its logical conclusion—a conclusion that must come sooner or later, and the sooner the better. In this the support of the ELECTRIC RAILWAY JOURNAL is a powerful leverage which cannot be overestimated.

Standardizing electric-railway car bodies appears as a very broad problem to any one who has followed the evolution since electric cars have been in use, and, although electrically-operated cars are only thirty years old, and are still in their childhood, they have undergone wonderful improvement. Nevertheless, standardization to-day has acquired vital importance in railway equipment. Any one familiar with steam-railroad standards, and knowing what they have done for the steam railroads, cannot fail to appreciate the value of the whole movement.

At the present time, the standardization of motors and trucks for electric cars takes precedence over the standardization of car bodies, and electric-railway men are busy day and night on standards for all wearing parts used on their equipments. Where the wear is heaviest, standardization has, obviously, the most importance. Therefore, the motors, motor equipment, trucks and all truck appliances subject to wear are getting the first attention.

Standardization of electric-car bodies will require the general support of railway men before anything successful can be accomplished. To-day there are a dozen different general styles of car in use all over the country, and it is safe to say that each style of car has from five to ten varieties, when one considers their design, dimensions, platform construction, seating arrangement, system of fare collection, etc., so that the field for standardizing is large.

These variations in car-body design have been brought about largely by a belief in the influence of "local conditions" existing in the city and suburbs where the cars are operating, depending upon the layout of the city with reference to its streets, parks, depots, residential locations, business districts, factory locations and suburban territories, as well as municipal rules. As such conditions differ in different cities, railway managers order cars of a type that they think is best suited for their particular requirements. In the selection of the dimensions for the various types the conditions above mentioned are also allowed to dictate, and they interfere with the ready acceptance of standards, since the railway company that is fortunate enough to have wide streets and plenty of clearance will not submit to a narrow car or a short car that might affect unfavorably the questions of capacity and comfort of passengers.

However, variations of a few feet in length are not of vital consequence. The standardization of width and bolster centers would be, in reality, more important, for as soon as we change the width of the car we must design a new cross-section, and as soon as we change the bolster centers our underframe must be redesigned. Any arbitrary dimension for height, I believe, could be readily agreed upon, except where there is overhead interference involved by passing under very low bridges or other obstructions.

What everybody is working for is to get a car that is best adapted to their particular requirements. However, aside from the peculiar needs of certain railway companies, the aim, in general, is to produce a design that gives the lightest weight consistent with durability and the greatest carrying capacity consistent with the comfort and safety of the passengers, as well as a car that can be operated with a minimum number of accidents, is cheap to maintain, and is practical for fare collection. I am of the opinion to-day that the last comer is proving to be the best car from the standpoint of the public, the railway managements, and the railway commissioners. This is the low-mounted, center-entrance design, which, I believe, will be the first and best car to commence standardizing on, as well as the simplest.

As to the standardization of structural features, it may be said that we are progressing to the extent of getting nearer together in using the same class of structural material that is available from the standard sections manufactured by the rolling mills. But in addition, a few special sections that were carefully designed and agreed upon would greatly help the builders to make lighter, stronger and neater cars.

H. DENTON WHITE,
President.

In 1916 the Pennsylvania Railroad System carried 196,294,146 passengers—the greatest number in any year of its history—without losing the life of a single one of them in a train accident. The heaviest freight traffic ever transported by any railroad was moved at the same time that these passengers were being carried safely. The entire Pennsylvania Railroad System, taking into account every affiliated company either East or West of Pittsburgh, now has to its credit three complete successive calendar years in which no passenger has been killed as the result of a train accident on any portion of its lines.

MID-YEAR MEETING BOSTON FEBRUARY 16, 1917

ASSOCIATION NEWS

MID-YEAR MEETING BOSTON FEBRUARY 16, 1917

Four Men Prominent in Public Life Are to Address Association at Midyear Dinner—Way Committee Considers Standard Spirals and Co-operation with Equipment Committee on Tread and Flange Contours

Mid-Year Meeting Dinner Speakers

At the dinner to be held in connection with the mid-year meeting at the Copley-Plaza Hotel, Boston, on Feb. 16, President L. S. Storrs will preside and the following will speak: Hon. Samuel W. McCall, Governor of Massachusetts; Hon. Warren G. Harding, United States Senator from Ohio; Hon. James M. Curley, Mayor of Boston, and Hon. Job E. Hedges, New York City.

At the meeting, as previously announced, J. D. Mortimer will present the report of the committee on social relations prepared by H. G. Bradlee, E. W. Rice, Jr., and himself; E. E. Rice, Boston, will open the discussion on this report; Bentley W. Warren, Boston, will read a paper on "Wage Arbitration and Contracts," and Robert Frothingham, New York City, will read a paper on "Salesmanship in the Electric Railway Business."

Way Committee Meets

The first meeting of the 1917 committee on way matters was held in New York on Jan. 19, 1917. C. H. Clark, Cleveland, Ohio, chairman of this committee, presided, and the following members were in attendance: A. E. Harvey, Kansas City, Mo.; E. M. T. Ryder, New York, N. Y.; W. F. Graves, Montreal, Quebec, Can.; W. R. Dunham, Jr., New Haven, Conn.; C. G. Keen, Philadelphia, Pa.; H. H. Ross, Toledo, Ohio; D. P. Falconer, Rochester, N. Y., and E. M. Haas, Cleveland, Ohio. The first subject considered was the revision of the Engineering Manual. A sub-committee of the committee on standards had made certain recommendations for condensing and eliminating extraneous matter from the Manual, and these were approved.

A sub-committee was also appointed to make final recommendations on the kind and size of bolts and fits for standard section and girder rails. In order to keep the recommended uniform method for designating compromise joints in the Manual it was approved as standard by the committee. A sub-committee was appointed to secure the approval or rejection by other committees interested of the symbols for recording surveys and the specifications for preservatives and treatment of woods which were submitted in the reports of the 1915 and 1916 way committee respectively.

L. M. Clark, Indianapolis, Ind., represented the equipment committee at this meeting in the consideration of wheel contours as they effect rail head contours. It was decided to retain the tread slope of 1 in 25 for all wheels and to submit a modified ¾-in. flange to member companies for criticism. It was the consensus of opinion that a standard flange thickness of 1 1/16 in. should be adopted to insure clearance through special work. Messrs. Clark and Ryder were appointed a sub-committee to reconcile the difference of opinion existing between the way and equipment committees in the matter of flange dimensions and contours.

Curved head rails were also considered quite fully. It was believed that the rail head should be designed to fit average worn wheels rather than to attempt at this time to adopt a wheel and rail contour which would provide a full line of contact. In order to arrive at a preliminary curved head rail section a sub-committee was appointed to obtain contours of average worn wheels from each of the properties represented by the committee members, and from as many other railways as possible, before the next committee meeting. The Brooklyn curved head rail section will also be submitted to a number of companies for criticism.

Messrs. Graves, Harvey and Ross were appointed a sub-committee to prepare a specification for built-up crossing frogs for steam and electric railway crossings.

The way committee also took up the question of recommending standard spirals. It was brought out that there were more than 250 spirals in use by railway companies, and this number could be reduced to about six. Mr. Ryder had consulted a number of the special work manufacturers on the subject of standardizing spirals and had found them in sympathy with such a move. Mr. Ryder submitted six recommended standard spirals for the consideration of the committee, and the special work manufacturers will be asked to criticise them before the next committee meeting. Before adjourning it was decided to hold the next meeting of the way committee in Cleveland, Ohio, in June.

Engineering Standards Committee

In the past the engineering associations committee on standards has contained the chairmen of the several technical committees with a view to the presentation of the points of view of these committees when their respective recommendations were under consideration. It has been decided, however, that better results will be secured by having the standards committee made up of others than the technical committee members in order that the work of the committees may be reviewed by an entirely different group. The 1917 committee is being reorganized on this basis.

Company Membership

A meeting of the manufacturers' branch of the American Association committee on company membership met in New York on Jan. 18 and planned to make an unusual effort to secure new manufacturer members before the mid-winter meeting. A list of 400 possible members was divided among the committee members.

Those present at the meeting were J. M. High, the Pantasote Company, New York City; J. H. Drew, Drew Electric & Manufacturing Company, Indianapolis, Ind.; W. K. Archbold, Archbold-Brady Company, Syracuse, N. Y.; John Benham, International Register Company, Chicago, Ill., and E. B. Burritt, New York City. Mr. Drew was designated as vice-chairman in charge of the campaign, the chairman being away on a business trip.

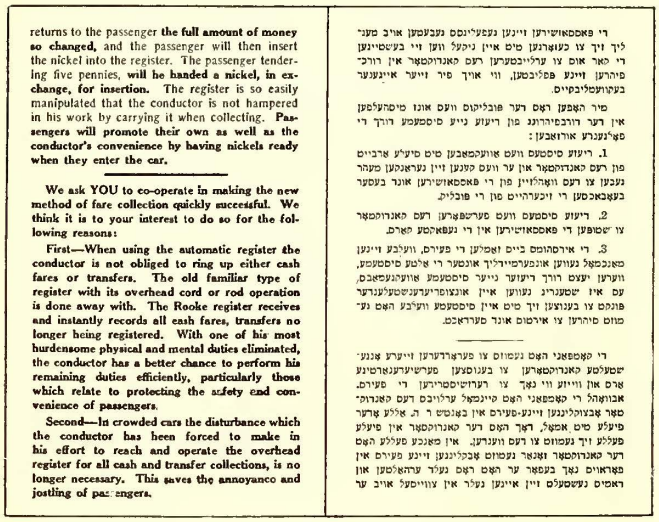
January Meeting of Denver Tramway Section

The forty-first meeting of Section No. 3 was held in Denver on Jan. 18. It was largely of a social character and more than 500 were present. Officials of the company and representatives of Denver's "Opportunities School" made addresses, and these were followed by dancing and refreshments.

B. R. T. Passengers Ring Up Fares

Automatic Coin Registers Being Used on Hamburg, Church and Ralph Avenue Lines of the Canarsie Division

IN order to enable its conductors to perform their duties more efficiently and at the same time to protect them from making mistakes the Brooklyn Rapid Transit system on Jan. 16 began the use of the Rooke automatic registers in the collection of fares on its Hamburg Avenue line. This is one of the most heavily traveled lines on the whole system, the cars during the rush hours being operated on a two and one-half-minute headway from the New York terminal of the Williamsburg Bridge. The line extends from Delancey Street, New York, over this bridge to Brooklyn and passes through a densely-traveled foreign district. Anyone familiar with this picturesque and thickly-settled section of New York knows of the congestion and heavy riding conditions. It is necessary, at times, for the conductor to bunch collections, which is contrary to the rules, and may involve either himself or the company in loss. In order to get the co-operation of the passengers



returns to the passenger **the full amount of money so changed,** and the passenger will then insert the nickel into the register. The passenger tendering five pennies, **will be handed a nickel, in exchange, for insertion.** The register is so easily manipulated that the conductor is not hampered in his work by carrying it when collecting. **Passengers will promote their own as well as the conductor's convenience by having nickels ready when they enter the car.**

We ask YOU to co-operate in making the new method of fare collection quickly successful. We think it is to your interest to do so for the following reasons:

First—When using the automatic register the conductor is not obliged to ring up either cash fares or transfers. The old familiar type of register with its overhead cord or rod operation is done away with. The Rooke register receives and instantly records all cash fares, transfers no longer being registered. With one of his most burdensome physical and mental duties eliminated, the conductor has a better chance to perform his remaining duties efficiently, particularly those which relate to protecting the safety and convenience of passengers.

Second—In crowded cars the disturbance which the conductor has been forced to make in his effort to reach and operate the overhead register for all cash and transfer collections, is no longer necessary. This saves the annoyance and jostling of passengers.

FACSIMILES OF PAGES FROM BOOKLETS EXPLAINING NEW B. R. T. FARE COLLECTION SYSTEM

on this line, most of whom are Jewish, four-page booklets explaining the use of the new system was printed in both English and Jewish and placed in the "Please Take One" boxes at each end of the car. A facsimile of the second page of each of these booklets is shown in the accompanying illustration. In addition, car signs directing the passengers to have their nickels ready and illustrating the method by which they should insert the coins, were posted in the car.

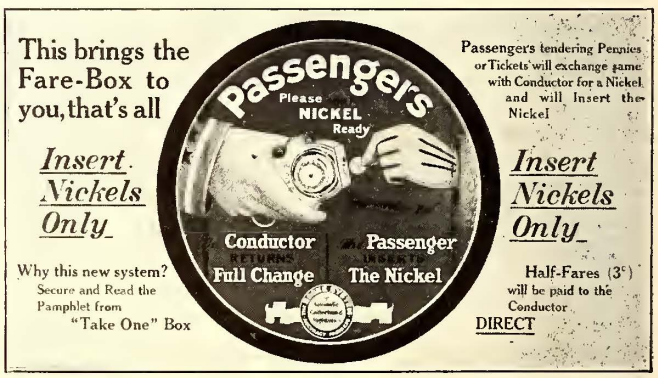
In order to install these registers, meetings for all the men were called, and a statement of the new system, its principles, etc., was made to the men by a representative of the Rooke Automatic Register Company. Immediately after this general meeting, which was held at Canarsie Depot, a group of conductors were advised to report for definite instructions which were given them in a car operated by two uniformed conductors in the employ of the Rooke Company. These men have operated this register for years in meeting crowded city conditions and were on the car to instruct the conductors and to answer all their questions. In order to show the men how the registers could be handled during the rush hours, they took out a heavily-loaded car on the 5.30 trip, operated the car, and collected the fares. These demonstrations were object lessons to the new men and gave them the necessary confidence to do the work well.

With this system, instead of ringing up cash fares and transfers on separate registers, the conductors extend the automatic collector and register toward the passengers, who insert their nickels in the register slot. An automatic device in the register grips the coin, pulls it in and instantly registers it, the coin then passing through a cup into the conductor's hand. When change has to be made the conductor returns the full amount of change to the passenger, who then puts the nickel into the register. In Brooklyn transfers are collected but not registered, the conductor keeping a record of the number received as heretofore.

B. R. T. Efficiency Campaign

In the efficiency campaign which the Brooklyn Rapid Transit system has been conducting, the last few bulletins to the conductors have been under the general heading of "The Company and Its Money." One of these bulletins, which was issued to the employees of the Canarsie division, contains the following:

"In speaking about your own responsibility, the management has not forgotten its responsibility to relieve you if possible, from the confusing and difficult conditions under which fares have been collected and registered in the past. A large measure of such relief the management confidently believes is presented by the introduction of the Rooke automatic register."



INSTRUCTION CARDS MOUNTED IN CAR FOR GUIDANCE OF PASSENGERS

Although there are eleven transfer points on the Hamburg Avenue line, the conductors have suffered no inconvenience and the cars are not delayed owing to the issuing of transfers or the collecting of fares at these points. Altogether, a total of thirty-seven cars are operated on this line. In the early morning hours cars are operated on a 10-minute headway; during the morning rush hours a 3-minute schedule is maintained; near mid-day the cars are operated every six minutes, and during the evening rush hours a 2½-minute headway is maintained. The normal traffic in passengers per day on this line is 29,600. Of these 19,600 are cash fares and the remaining 10,000 are transfers. The earnings per car-mile are 27 cents, but this does not give a clear idea of the density of travel because the average haul is long.

Since this automatic register was placed in service on the Hamburg Avenue line it has worked satisfactorily and the foreign-born passengers appear to be pleased with it. On Dec. 23 and 26, respectively, registers were placed in service on the Church Avenue and Ralph Avenue lines of this division and as soon as the registers arrive and conductors can receive their instructions the New Lots Avenue and other lines will also be equipped.

Short and Up-to-Date Articles on

EQUIPMENT AND ITS MAINTENANCE

Turning Commutators Concentric with Shaft Journals—Track Tools to Replace Human Horse-Power—Economies Effected in Car Lighting—Second Chart Giving Cost Data on Trolley Wire Suspension—Articles on Other Shop Methods and New Apparatus

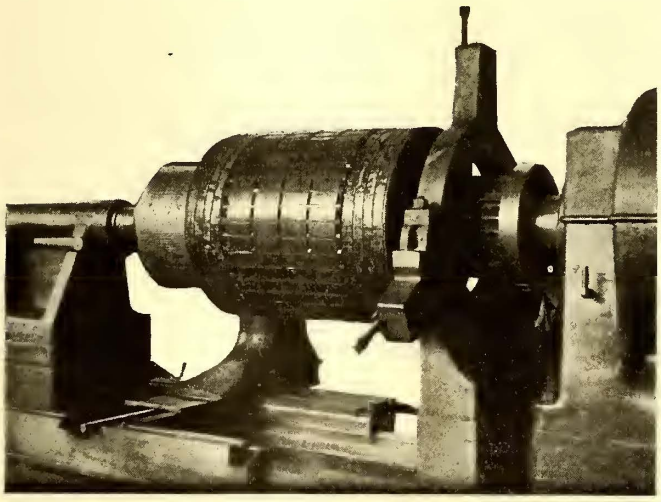
(Contributions from the Men in the Field Are Solicited and Will Be Paid for at Special Rates.)

Getting a True Commutator

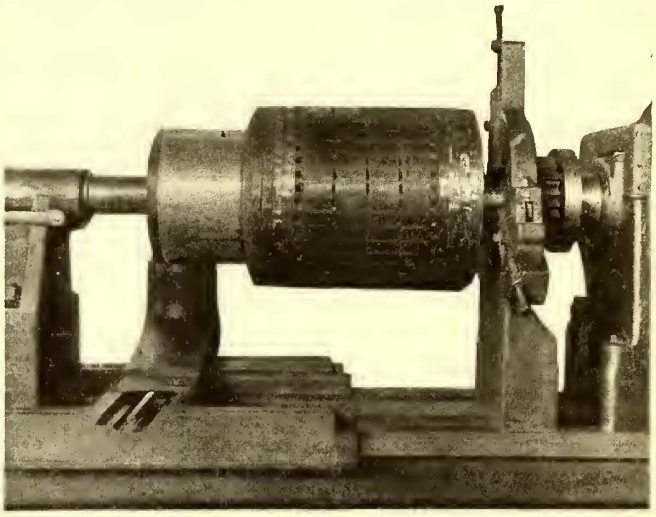
For Commutator Turning, Armatures Are Supported in Sleeve Bearings Instead of on Lathe Centers to Correspond with Service Conditions

BY R. R. POTTER
Superintendent of Equipment New York, Westchester & Boston Railway

Common practice in repair shops, whereby commutators are turned by supporting the armature between lathe centers, undoubtedly provides for a smooth commutator surface, but it does not give any guarantee that the surface is concentric with that of the armature shaft-ends, or journals, and that the commutators will run true in service. Theoretically, of course, the brush-holder springs should take up any unevenness in the movement of the commutator surface, and when the armature is rotating at slow speed, this theory applies absolutely. But when speeds of the order of 1000 r.p.m. are attained, the same thing does not hold, and though the brushes may not actually jump over the low section of the commutator surface that is brought about by a lack of concentricity with the surfaces of the shaft ends on which the armature runs, there is no question that great variation in brush pressure and liability to sparking and even flashing are produced.



STEADY-REST SUPPORT AND DRIVE AT PINION END OF ARMATURE SHAFT



ARMATURE SWUNG IN SLEEVES ON SHAFT INSTEAD OF LATHE CENTERS

The establishment of a commutator surface that is absolutely true as well as smooth is usually a difficult matter for the following reasons: In the first place, the recessed centers in the ends of the armature shaft are generally made only large enough to serve for the initial finishing of the shaft before the armature is built upon it. With the weight of the armature added, which in the case of some railway motors is as much as 2000 lb., these centers are not large enough properly to carry the load. The result is that both lathe centers and shaft centers are quickly worn out of shape, the shaft centers being not infrequently worn to one side away from the true center line of the shaft.

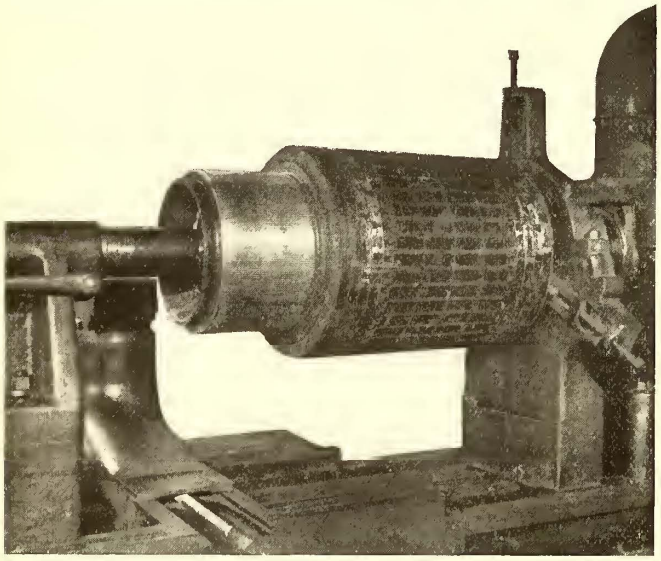
In the second place, a considerable percentage of armature shafts are more or less sprung between the pinion and the pinion-end bearing shortly after being placed in service. These slight bends are caused by reversing the motors or other incidents that bring about extraordinary strains upon the shaft. In such cases, it often happens that the shaft is not bent sufficiently to affect the proper meshing of the pinion and gear, but nevertheless the center is thrown out of line enough to influence the concentricity of the commutator when it is turned in a lathe and is swung between the lathe centers. Still another reason for difficulty in turning commutators is that as a rule the lathe centers are not kept in a sufficiently accurate condition to insure trueness of work that is turned on them. This is particularly the case when exceptionally heavy pieces such as armatures are frequently swung in the lathe and when the recessed centers on the work are under size.

To avoid the difficulties outlined above and to insure the production of a finished commutator that will run absolutely true with the journal bearings after turning, the New York, Westchester & Boston Railway has adopted in its shops the practice of turning all commutators by setting the armature shaft ends in sleeves corresponding to the armature shaft bearing, one sleeve being attached to the tailstock and the other carried in the steady-rest of the lathe in place of the ordinarily used lathe centers.

From these illustrations, it may be seen that a sleeve bearing has been slipped over the tailstock, this serv-

ing as a support for the shaft extension at the commutator end of the armature. At the pinion end of the armature, a standard pinion-end armature bearing is supported in the lathe steady-rest. This bearing in the steady-rest is first centered as accurately as possible with the armature supported between the lathe centers, after which the lathe centers are removed and the weight of the armature taken directly on the bearing. Once this steady-rest is set, there is no need to change it for turning other armatures, and the steady-rest may be left without any readjustment in setting unless, of course, other work that requires the use of the rest has to be done. The armature is driven through a short piece of bar iron attached to the face plate and engaging with the pinion teeth.

In practice it has been found that the weight of the armature is ample to make it run perfectly steady in the bearings without any tendency toward chattering, the



SLEEVE SLIPPED OVER TAIL STOCK CENTER TO SUPPORT COMMUTATOR END OF ARMATURE SHAFT

reason being, undoubtedly, that the cuts taken across the face of the commutator are invariably light and work is done on such a soft material as copper. The results in service have, of course, been very satisfactory. In the past, commutators turned in the ordinary way on lathe centers have been found to be as much as 1/16 in. out of true, and the elimination of such variations can only be desirable from an operating and maintenance standpoint. With the new method of turning, it may be said, no great necessity exists for establishing exact central positions for the bearing sleeves. If both are off center by an equal amount, the only effect will be a negligible change in the position of the cutting tool relative to the work. If one sleeve is off-center and the other is not, the result will be that the commutator surface will be turned with a slight taper, although the amount of taper will be negligible. In no case can the commutator surface be turned out of concentricity with the shaft, except where the sleeves are allowed to be so loose as to permit an appreciable movement of the shaft in a horizontal plane with the sleeves, and this, of course, can be avoided with a small amount of care on the part of the machine hand.

The armature slotter used in the Howewood shops of the Pittsburgh (Pa.) Railways is equipped with a suction blower attachment arranged so that all the copper and mica dust is drawn through a 2-in. tin pipe and deposited in a box. Considerable saving results from the reclaimed copper, and the surrounding air is kept pure.

Labor-Saving Tools for Way Department

Mobility Is an Important Element in Devices for Handling Way Materials—Tampers and Welders Are Money Savers in Maintenance Work

BY W. R. DUNHAM, JR.
Engineer Maintenance of Way The Connecticut Company, New Haven, Conn.

The article in the Electric Railway Journal, issue of Dec. 23, 1916, on cutting costs in storage yards shows what may be done in the mechanical handling of material in its first stage as raw material in the railway system and in its initial start for the "job." Any economy at this point, however, may be greatly offset, if not entirely lost, in the subsequent handling to and at the location of work. While it is true, therefore, that a yard full of cranes, derricks and other appliances for the saving of labor is very desirable, the same or a greater amount of money will give better results if spent for moving units which can be used at both loading and unloading points.

As an illustration, the saving effected by the crane car mentioned in the article in the Journal would have been 50 per cent less had the crane been fixed in the yard, so that the addition of wheels at least doubled the saving of the device. In other words, mobility of the equipment made it worth while.

One of the implements in the labor-saving class which is well worth considering is the electric shovel. On two jobs, not totaling 2 miles of single track, the difference in cost of excavating by hand over that of excavating by shovel was 73 per cent of the cost of the shovel, so that these 2 miles practically paid for the shovel and the rest of its work is nearly all gain. Not only was the cost of excavating cut 66 2/3 per cent, but the cost of teams was cut 50 per cent, a very desirable result when teams were not only high in cost but difficult to get. This saving was made by a green man at the shovel, and will be lowered as the operator becomes experienced.

Another help in lowering costs is one or more sets of power drills. These machines cut the costs of track work in their sphere 75 per cent over hand methods. The use of the pneumatic tampers also will show a saving not only in the actual first cost of work, but in the number of men required, in efficiency, and in time. In addition the ties are actually better tamped so that future maintenance costs are reduced.

While the use of arc welders may be overdone, there is no question but that their judicious use reduces the cost of maintenance and prolongs the life of rails and special work. Their use, of course, entails the purchase of suitable grinding apparatus. These grinders, however, are not limited to following up the welders since, in addition, they have a well-defined sphere of their own.

The article in the issue above referred to illustrated a crib for handling ties, and gave costs showing the saving made by its use. This method, however, would not give a saving unless the ties were delivered at a central yard at first. On a road where ties are received and piled by the dealer, thence hauled direct to the various jobs as needed, its use would mean a second handling and possibly duplication of equipment.

The ideal of perfect track construction has not yet been reached, nor is economy on one property necessarily an economy on another. Every road has its own distinct problems, which must be studied and met, and while a knowledge of what the other fellow is doing is a help in the right direction, an automatic following of his method will not produce the same results.

Economical Car Lighting

The Author Describes the System Used on the Cars of the Washington-Virginia Railway

BY W. A. ARMSTRONG, JR.

The changes and improvements that have been made in car lighting have resulted not only in better lighting but in cheaper lighting as well. Means for improvement that have received most attention are the use of tungsten lamps, properly designed reflectors and shades, fixtures for supporting the reflectors and lamps in such a manner as to prevent their injury as well as to insure the safety of passengers, and methods for operating headlights in a manner to eliminate the waste of power that results when the headlight is placed directly across full line potential in series with resistance. Efforts in this direction have been intended to improve relations with the public by providing cheerful, brightly lighted cars.

A typical installation recently made by the Electric Service Supplies Company for the Washington-Virginia Railway, Washington, D. C., illustrates the latest practice in car lighting. A description of the installation is given here through the courtesy of R. W. King, general manager of this railway. The company operates 64 miles of line connecting Washington, D. C., with Alexandria and Mount Vernon, Va. It is double-tracked from Washington to Alexandria and single-tracked from Alexandria to Mount Vernon, operating two-car trains at speeds up to 50 m.p.h. The conditions are not peculiar in any way, therefore the application of this car-lighting system is perfectly general.

The lighting equipment originally consisted of eighteen 23-watt lamps grouped as shown in the accompanying illustration, with an additional lamp on each platform, making a total of twenty lamps. The headlight equipment consisted of one standard 4½-amp. luminous arc, arranged with an auxiliary incandescent lamp for dimming.

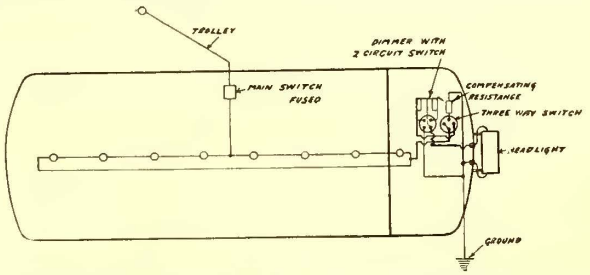
The power required for the former installation was 3160 watts, *i. e.*, 460 watts for the car lamps and 2700 watts for the headlight. Figuring the energy purchased by this company at 1 cent per kilowatt-hour for an average of five hours of night service and for 365 days per year, it is seen that the cost of power for lighting one car amounted to approximately $57.70 per year.

The redesigned lighting system for the remodeled cars consists of seven 72-watt lamps with reflectors, together with one similar platform lamp. The eight lamps are wired in two parallel circuits, each having four lamps in series, and connected in series with a Golden Glow headlight equipped with a 12-in. mirrored glass reflector and a 150-watt concentrated filament lamp.

The power required for this installation is 726 watts, the eight interior lamps requiring 576 watts and leaving only 150 watts for the headlight. The cost of lighting for the improved installation, calculated on the same basis as before, amounts to $13.25 per car per year, effecting a saving of $44.45 per year.

The safety fixtures used are of the round base, straight-pendant type, fitted with heavy-density opal glass reflectors for properly distributing the light. The fixture clamps the shade by means of flexible metal fingers to provide for expansion and contraction of the glass and to prevent rattling, as well as to cushion the reflector against severe jolts of the car.

The Golden Glow headlight, with a 150-watt lamp, provides illumination equal to the 4½-amp. luminous arc. It also gives a soft yellow beam of light for which motormen almost invariably express their satisfaction after becoming accustomed to the colored rays. For dimming the headlight within city limits, a special dimmer has been devised and application for a patent

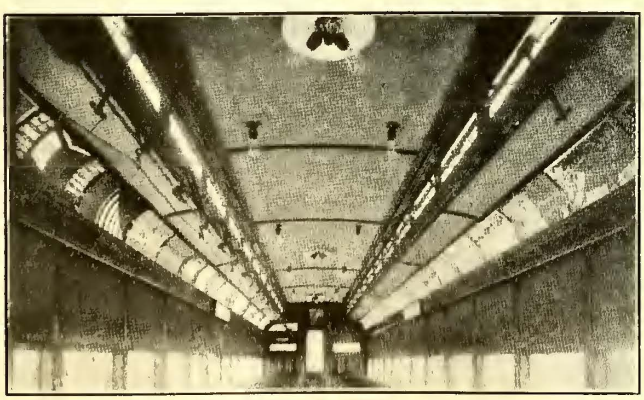


SIMPLIFIED DIAGRAM OF REDESIGNED CAR LIGHTING CIRCUIT

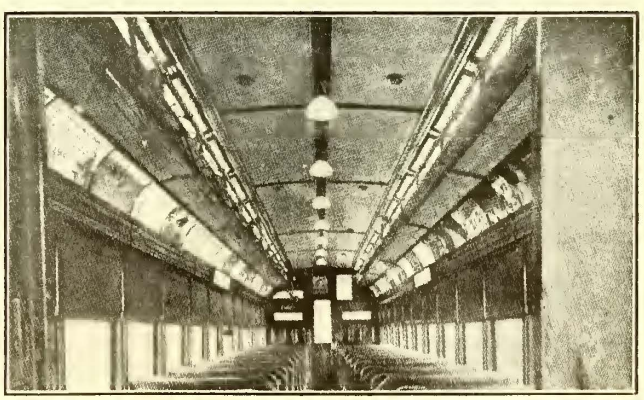
upon it has been made. By turning a snap switch the headlight is dimmed without affecting the car lamps, and also without causing a great loss of energy as in the series resistance method.

Since the laws of Washington, D. C., require that the headlight be turned out when a car stands at a terminal, these cars were each equipped with a compensating resistance equal to that of the headlight lamp which it replaces when cut into the circuit. This resistance, when used, obviously has no effect upon the interior car lamps and may be used in the circuit with them when a headlight lamp is burned out and is being replaced. In case one of the car lamps burns out, the headlight is burned temporarily in series with the remaining circuit at about one-half its usual intensity.

The cost of the installation, done while the cars were going through the shop, was about $85 per car. The average annual maintenance cost of an arc headlight is placed at $25. This amount compared with the cost of replacing two lamps for the Golden Glow headlight at $2 each shows a saving of $21, which, added to the saving in cost of power as explained above, gives a total saving of about $65.50 per year per car afforded by



INTERIOR OF CAR SHOWING FORMER ARRANGEMENT OF LAMPS



PRESENT INSTALLATION SHOWING IMPROVED APPEARANCE

the new installation. Since eight car lamps now replace twenty as used formerly, the cost of lamp renewals is reduced, especially since the larger lamps have more rugged filaments and in a vertical position are less affected by vibration. After four months in operation these cars have had no failures of either car or headlight lamps.

Economies in Track Construction Due to Equipment

Results Which Have Been Obtained with the Pneumatic Tie Tamper and the "Skull-Cracker"

BY D. P. FALCONER
Engineer of Maintenance of Way New York State Railways, Rochester, N. Y.

It is a generally admitted fact that human horsepower is the most expensive kind of power which can be purchased, and it is for this reason that any equipment or machine which will transform electric or other energy into useful work in track construction or maintenance is economical. It is with this idea in mind that this company has endeavored to equip its track gangs with such labor-saving devices as are obtainable and suitable for its use.

One of these tools is the pneumatic tie-tamping outfit which we have had in use for the past two years. We have operated this machine with a gang of five men, one operator, two ballast distributors and two tampers. The ballast distributors and tampers alternate, and in this way avoid any excessive jar or possible fatigue due to the continued use of the tamping tools. The operator is the only man in the gang who is paid more than the regular laborers' rate and we have used common labor entirely for tamping track.

We find we can tamp from seventy to ninety ties per day which, assuming twenty days to the month and six months to a year as a working season, gives us about 4½ miles of track tamped. This, of course, means new track or track which has been entirely reconstructed.

We have not obtained this record, however, with the use of our tamping outfit because we have used this outfit also for installing our riveted joints. These joints are the patented design as exhibited at the Atlantic City Convention and described in the Electric Railway Journal in the Nov. 4, 1916, issue, page 982. A number of other uses for compressed air have been noted in the columns of this paper and undoubtedly this method of transforming energy will find a wide variety of uses in track construction and maintenance.

Another piece of equipment which has been used by us with excellent success during the past season is what is known as a "skull-cracker." This is a pear-shaped piece of cast iron weighing approximately one ton and frequently used in junk shops and other places for breaking up old iron castings. This device was applied to the breaking up of concrete in track which was to be reconstructed. The equipment used was a small derrick operated on the track to be reconstructed after the paving was removed, and arranged with a special hook so that when the "skull-cracker" had been lifted to a height of 12 ft. or 15 ft. the trigger would release the weight and it would fall, thus shattering the concrete and making it easy for the men to pick it loose and remove it from the track. It was found that about three blows of this "skull-cracker" would break up the concrete across the track for a distance of 2½ or 3 ft. in length. Several hundred feet of concrete could be broken up in one day, resulting in a saving of from 15 cents to 20 cents per foot of single track in the labor item. In removing this concrete from the track it was piled alongside of the trench, and after the new track was laid on the subgrade the concrete was put through our portable stone crusher, which was described in your columns in the Feb. 5, 1916, issue, page 277, with the result that we were able to ballast this track with the old concrete removed, thus making a saving in ballast and also eliminating the loading and hauling of this material off the street and hauling and unloading the new material onto the street.

While it is impossible to accomplish all of these economies on all jobs, schemes of this kind can be worked out, to very great advantage and at considerable saving in cost, especially when the gangs are equipped with such tools as the above and with electric drills, welders, rail grinders, concrete mixers, etc. It is, therefore, by proper selection of equipment for each job that a saving can be made in construction and maintenance costs of electric railway work, and while each job does not give an opportunity for the economical use of all equipment, yet if gangs are equipped with a complete outfit great saving can be made by the proper planning of the work.

Data on Stoker Installation Show Low Maintenance Cost

The costs of repair parts and material for four 10-ft. x 10-ft. chain-grate stokers and their furnaces operated over a period of six years have the low values shown in the table below. It will be noted that the cost of the tile and fireclay was 85 per cent of the total material and repair part cost. The cost of replacing operating parts of the four stokers was but $8.77 per stoker per year, which is a small percentage of the present cost of such a unit, $1,800 without firebrick. The fact that in the table the 1912 cost appears rather high is accounted for by the purchase of one complete 9.5-ft. x 6.5-ft. arch and ninety large 4-in. x 12-in. x 24-in. bridge wall tile in that year at a total cost of $498.22. The data given relate to an installation of Illinois Stoker Company's chain-grate stokers in a Mid-West electric railway company's power plant.

Cost of Stoker and Furnace Repairs for Six Years

	Cost of Repairs		
	For Stoker Parts and Iron Parts of Arch and Feed Gate	For Tile and Fireclay	Total
1910	$60.00		$60.00
1911	14.00	$142.25	156.25
1912	61.12	823.17	884.29
1913	40.50	67.50	108.00
1914	3.00	217.00	220.00
1915	33.25	190.25	223.50
1916	189.01	894.70	1,083.71
	$400.88	$2,334.87	$2,735.75
Total per stoker per year	$16.70	$97.29	$113.99

Flexible Conduit Used by Boston Elevated

Flexible woven conduit is being used by the Boston Elevated Railway in renewing the heating, lighting and ringing circuits and in equipping their cars with Tomlinson drawbars. The Tomlinson drawbar is constructed with insulated electric conductors forming a part of it, the terminals of these conductors being designed to make connection with corresponding terminals on the next car when the drawbars are coupled together. The wires running from the car body to the drawbar are subjected to repeated bending on account of the drawbar swinging sideways as the car turns curves, and therefore they must be run through a flexible duct. Single wall flexible woven conduit was found to be the most satisfactory for its durability and for its tendency to prevent chafing of the insulation which finally results in injury to the conductor itself.

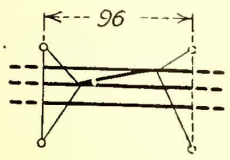
Cost of Erecting Overhead Work—II

(From the records of a large Eastern company)

The following is the second group of a series of diagrams with cost figures to show actual costs of erecting the various types of overhead construction described under conditions of light, ordinary and congested traffic. In the first group of this series, which appeared in the issue for Jan. 20, page 127, none of the figures included the cost of superintendence and engineering.

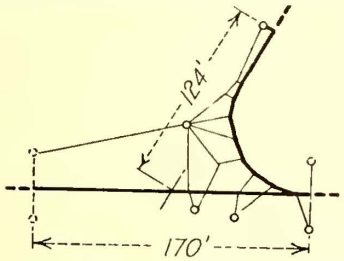
LABOR REQUIRED FOR CONSTRUCTING VARIOUS TYPES OF OVERHEAD TROLLEY SPECIAL WORK UNDER VARIOUS TRAFFIC CONDITIONS

Right-hand crossover and siding



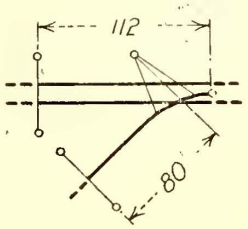
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
11	$15.95	$6.60	$19.14	$7.92	$22.33	$9 24

Single-track, right-hand branchoff, angle 120 deg.



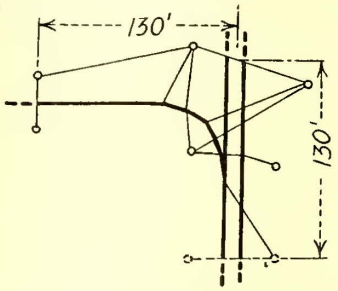
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
12	$15.95	$6.60	$20.74	$8.58	$23.93	$9.90

Single-track, left-hand branchoff, angle 45 deg.



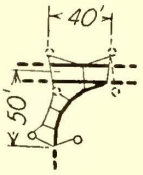
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
13	$15.95	$6.60	$19.14	$7.92	$22.33	$9.24

Single track, left-hand branchoff, from double track, angle 90 deg.



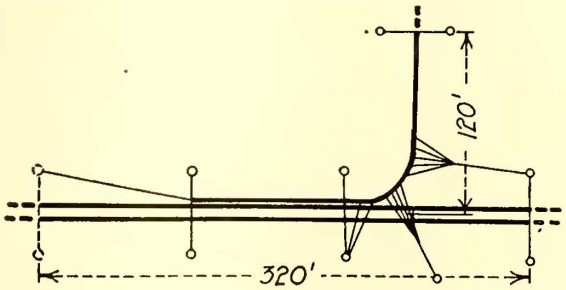
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
14	$15.95	$6.60	$19.14	$7.92	$22.33	$9 24

Single track, left-hand branchoff, angle 90 deg.



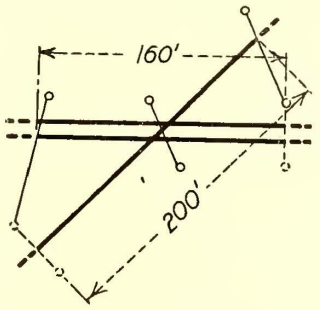
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
15	$15.95	$6 60	$19.14	$7.92	$22.33	$9 24

Single track, left-hand branchoff, to freight siding with unbroken main line connection



	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
16*	$29.04	$21.12	$36.30	$26.40	$45.38	$33.00

Single track, crossing, double track, angle 45 deg.

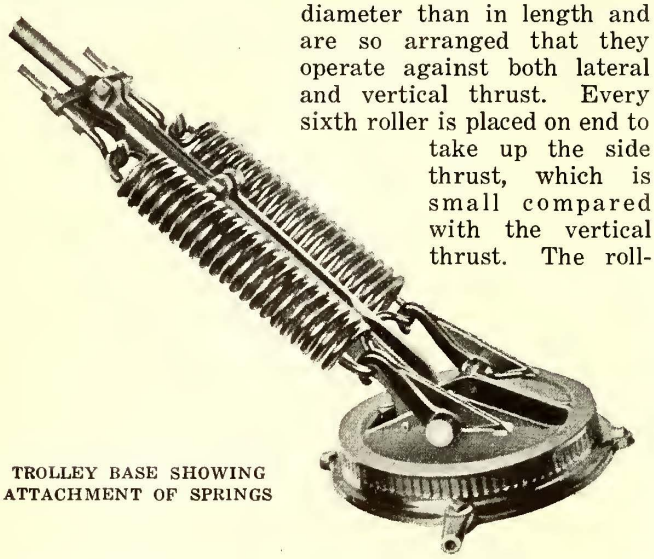


	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
17*	$18.15	$13.20	$21.78	$15.84	$27.23	$19.80

*Trucking includes cost of extra reel truck. None of the figures on this page include cost of superintendence and engineering.

New Anti-Friction Non-Retrieving Trolley Base

The principal feature of a new Wasson non-retrieving trolley base, for which Holden & White, Chicago, Ill., are general sales agents, is its roller-bearing mounting with an unusually large bearing area. This feature has been quite successful in extending the life of the base by preventing the wearing of pits and waves in the bearing surface. The main bearing has 120 sq. in. of area and 215 rollers, which are slightly larger in diameter than in length and are so arranged that they operate against both lateral and vertical thrust. Every sixth roller is placed on end to take up the side thrust, which is small compared with the vertical thrust. The rollers taking the latter have both a rolling and a sliding action, giving constantly shifting bearing points, which distributes the wear over the bearing surface. This action keeps the bearing surface clean, and insures good electrical connection between the upper and lower plates. The large diameter of the bearing tends to minimize the pressure upon it, insuring long life of the bearing and consequently that of the trolley base.



TROLLEY BASE SHOWING ATTACHMENT OF SPRINGS

Each roller gives a ⅜-in. line contact between the upper and lower bearing surfaces of the raceway, which is 13 in. in diameter, and the rollers form the current path between the movable and stationary parts. The over-all height of this base is 5 in. and it weighs 100 lb., the construction being similar to the retrieving base of the same make. The current cable can be attached to any one of the four lugs, making a very accessible connection.

By attaching the springs to the pole more than 2 ft. from its fulcrum point, the makers secure a quick spring action, which tends to prevent the dewiring of the wheel at uneven places in the wire. The opposite ends of the springs are located in such a position, relative to the pole fulcrum, that an increase or decrease in spring tension, due to the movement of the pole, is overcome by a change in the length of the power arm to produce a uniform force at the wheel. This tends to prevent the wheel from leaving the wire where it is high, as for instance at railroad crossings.

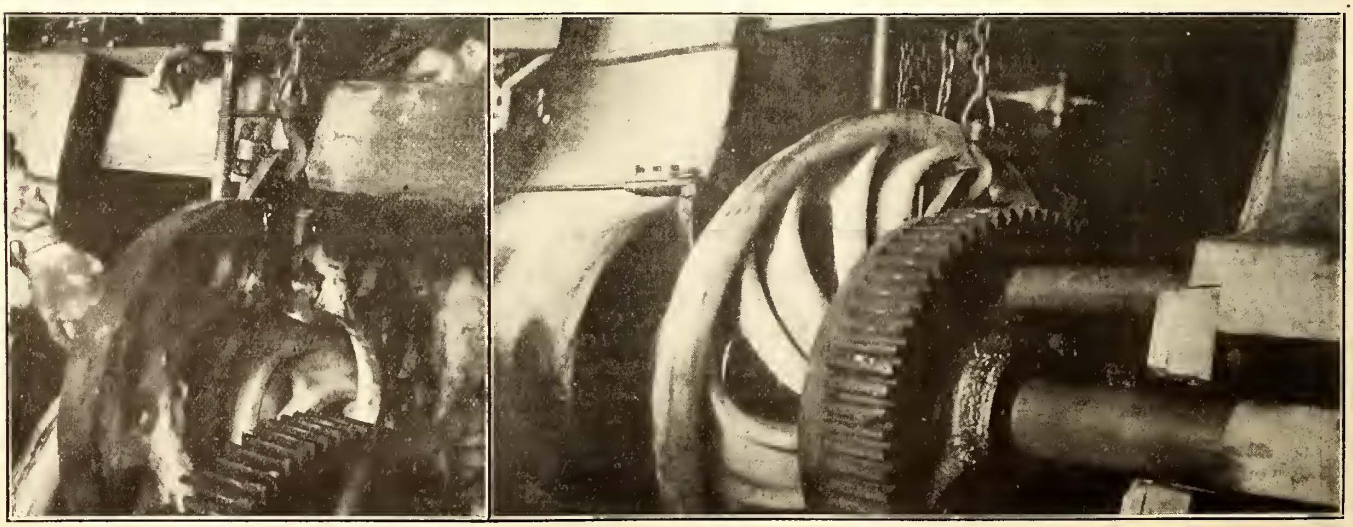
In case the trolley pole leaves the wire and "throws over" beyond a certain point, the springs are brought into tension again, and serve to check the motion of the pole as it approaches a vertical position. This is accomplished by means of an extension lug which forms an integral part of the spring hook, and engages the main base as the pole goes beyond its highest working position. The travel of the hook is thus limited and a line of spring tension at a new angle to the pole is established, thus virtually shortening the springs. If the trolley wheel leaves the wire at a low position and the rope breaks, the springs gradually bring the pole to rest after it passes a certain position, thereby obviating the damage to the equipment which might result if the pole is stopped suddenly.

Pressing Off Car Wheels

A method has been devised by M. B. Osborne, master mechanic Galveston Electric Company, for pressing off a car wheel when a gear is on the axle adjacent to the wheel. The device consists of a steel collar 26 in. in diameter and 3½ in. thick. It was made from a flange coupling taken from a shaft which was a part of an old steamboat equipment.

As seen in the photograph the flange was simply cut in two and then the two halves were hinged to provide a means of support in handling. The large holes shown in the collar were originally provided to fasten together the flanges of the coupling, and though not used for any purpose now are advantageous in making the device lighter. Two rods, used to press off the wheel, are passed through holes in the gear and are held firmly in place by means of the small holes shown in the collar. These small holes are so arranged that the rods may be set and held in place whether the gear has three or four holes, thus making the application of the device general.

This device is very inexpensive and convenient. The split flange is lowered into place by means of a chain block and fastened around the axle, the rods are set in place and the wheel is quickly pressed off.



LOWERING COLLAR INTO PLACE ON CAR AXLE—COLLAR AND RODS IN POSITION FOR PRESSING

News of Electric Railways

Traffic and Transportation

Financial and Corporate | Personal Mention | Construction News

Chicago Committee Hears Railways

Mr. Busby States Position of Companies on Subway Commission Report — Enabling Legislation Necessary Before Progress Can Be Made

At a meeting of the local transportation committee of the Chicago City Council, Jan. 22, which was attended by Samuel Insull, Henry A. Blair, Britton I. Budd, Leonard A. Busby, Gilbert E. Porter, and other electric railway officers, Alderman Henry D. Capitain, chairman of the committee, called upon Mr. Busby to state the position and attitude of the companies with respect to the report of the Chicago Traction & Subway Commission.

MR. BUSBY'S PLEA

Mr. Busby confined his remarks principally to the franchise consideration upon which depends the practicability of the subway plan. The physical plan recommended by the commission appealed to him. The crux of the whole plan, however, was the franchise arrangement. On this the commission made no definite recommendation. Mr. Busby estimated that between $275,000,000 and $300,000,000 will be required to carry the scheme to completion. This can be raised only through a sound financial plan based on a satisfactory franchise. According to Mr. Busby there was no use to proceed with the discussion of any other phase of the plan until after the franchise matter was settled. It was generally conceded that legislation was necessary to enable the city to grant a franchise for more than twenty-five years, to make possible the unification of the elevated and surface line companies. It would be impossible to raise the money with a twenty-year grant as a basis. The City Council should formulate its policy and take steps at once to secure the legislation desired if anything was to be accomplished at the present Legislative session.

The commissioners report outlined a terminable, or as it is more generally known an indeterminate, franchise as one of two possible plans of financing the undertaking. Mr. Busby believed that the terminable franchise offered the only other satisfactory agreement which would serve all interests to the best advantage. The terminable franchise might in effect become perpetual, but there could be no cessation of the operation of the cars, and this implies a continuation of service under term franchises renewed under a new terminable franchise. As long as the terminable franchise under the proposed plan gave control of the property to the city, the objections to the perpetual grant were entirely outweighed by its advantages.

PROBLEM LARGELY FINANCIAL

Mr. Insull said that the problem was purely a financial one, and included the financing of about $500,000,000 of new securities divided about half and half between construction work and refunding of existing securities. In order to raise this sum of money, a basis of financing must be provided by which it can be secured cheap. The investment must eventually come out of the pockets of the people who ride, and it was to the city's advantage to devise the most economical way to finance the work. The terminable franchise was best suited to this.

Several aldermen objected to the terminable franchise because of its perpetual aspects. A resolution was then passed directing Walter Fisher, the committee's special counsel, to draw up a resolution for discussion which would cover the several points of enabling legislation necessary, and include the shortest definite-term franchise under which it would be possible to carry out the commissioners' plan. In this connection Mr. Blair said that he was certain nothing under fifty years would be considered by the men to whom it would be necessary to look for financing the proposition.

Court Against United Railroads

Injunction to Prevent Paralleling of Tracks by Municipal Lines Denied by Judge Hunt of United States District Court

San Francisco's right to lay railway tracks upon city streets without regard to existing franchises held by private companies was upheld in a decision by Judge William H. Hunt in the United States District Court at San Francisco on Jan. 18. The decision denies the United Railroads an injunction preventing the city from building parallel tracks along Market Street from Kearny to the mouth of Twin Peaks tunnel.

The suit for the injunction was filed by the United Railroads last June and a temporary restraining order was granted, after the city had begun laying a crossing of the United Railroads' tracks at Van Ness Avenue and Market Street, to extend the Van Ness Avenue line out Market Street to Church. The case was argued before Judge Hunt in August and was finally submitted on Oct. 14.

HOW CITY OFFICIALS INTERPRET ORDER

The decision is interpreted by city officials to mean that the municipality may build its own lines along any streets within the city limits whether or not these streets are occupied by the tracks of a private corporation. Pending further litigation the city understands that it has a wider latitude than that which was accorded rival traction companies by the Legislature when one company was granted the right to use the tracks of another for a maximum distance of five blocks. The decision says:

"It is accepted that the destruction of the franchise is not possible; but even so, in the complexity of modern society new conditions present themselves which may call for the safeguarding of the public interests in a way which justified the application of the doctrine that the police power may extend to all great public needs.

"It is very important to note that words of direct expression or intention to grant an exclusive franchise are not to be found in the instrument itself (the franchise) nor does it appear that exclusiveness was a positive consideration for the contractual obligation nor is there any expression by apt words to show that the city intended to exclude itself from exercising the privilege of establishing a street railway of its own. No deliberate purpose to make a surrender of exclusive rights appearing, I accept the more reasonable interpretation of the language used, and regard the franchise as not conferring such exclusive rights as against the city."

DECISION BASED ON KNOXVILLE CASE

The court based its decision largely upon the Supreme Court decision in the Knoxville water case. In that case the city of Knoxville had granted an exclusive franchise to the water company to supply the city with water, but the Supreme Court held that this did not bar the city from going into the water business, although it did exclude competition by a private company. In short, in the San Francisco decision the court ruled that the right of a municipality to those privileges which it grants to private corporations by a franchise cannot be forfeited or lost.

It is believed the United Railroads will appeal first to the United States Circuit Court of Appeals and then to the United States Supreme Court at Washington on the ground that the laying of parallel tracks practically confiscates its franchise, which is a property right, and is thus a violation of the United States Constitution.

Immediately after the decision city officials decided upon the following construction program:

1. Construction of the Church Street line from Sixteenth

and Church Streets to Van Ness Avenue and Market Street.

2. Double tracking from Van Ness Avenue and Market Street to Twin Peaks Tunnel.

3. A double-track line from Van Ness Avenue and Market Street to Kearny and Market Streets, giving through connections from Sloat Boulevard to the ferries.

Item 1 will be undertaken first. The funds for this connecting link, amounting to $110,000, have already been appropriated and it is expected that the work can be completed within three months. Other features of the proposed construction program will bring the total cost up to $442,000.

Tacoma Relief Petition Heard

Company Seeks to Have Gross Earnings Tax and Paving Requirements Rescinded

The hearing relative to the petition of the Tacoma Railway & Power Company to be relieved of certain franchise provisions was held before the Public Service Commission of the State of Washington in Olympia, on Jan. 15. The company asks that the tax of 2 per cent on gross earnings and the obligations to pave streets both be rescinded. It contends that reduced earnings have made it impossible to fulfill the obligations of the franchise without jeopardizing the utility. The case came before the commission on an objection interposed by the city of Tacoma to the jurisdiction of the State Board.

City Attorney U. E. Harmon, of Tacoma, made the principal argument for the municipality, contending that the commission is not empowered to afford relief to the company from its contractual obligations with the city. Attorney James B. Howe, for the company, argued that the commission has jurisdiction and can abrogate franchise obligations.

OTHER CITIES REPRESENTED

Owing to the importance of the hearing to municipalities of the first class, the cities of Seattle, Spokane, Bellingham and Everett had representatives present. Issues argued were based on a motion to dismiss raised by Mr. Harmon on grounds that the company seeks to abrogate franchises which have all the force and effect of contracts and that the only relief possible is through the courts. Jurisdiction of the commission over any function of public utility operation, other than as to regulation of fares and service, was denied. Hugh M. Caldwell, corporation counsel of Seattle, maintained that under the present law the public utility companies which feel that they can not meet contract obligations must obtain relief through the Legislature or surrender their franchises. Walter F. Meier, for Seattle, maintained that while the Public Service law has invested the commission with police power over rates and service, it has excluded broader powers of jurisdiction from the commission, and that these remain with the city.

THE COMPANY'S ARGUMENT

Mr. Howe, for the company, argued that as the statute places the company under commission regulation, in all particulars of operation, and limits its charges to a 4-cent fare within the corporate boundaries of a city, at the same time guaranteeing to it a fair return on money invested in return for adequate service, power is thereby conferred upon the commission to remove any franchise restrictions that make it impossible for the company to live up to conditions imposed by the State in establishing commission regulation. In support of its petition to be relieved of a gross earnings tax of 2 per cent imposed in Tacoma, street maintenance expense and other contributions, the company submitted a statement showing a deficit of $218,000 from Tacoma operations.

At the close of the arguments the commission took under advisement the contentions raised by the cities of the State against the commission assuming jurisdiction over public utility franchise conditions. If the commission decides to assume jurisdiction, a hearing will be held and evidence taken on the company's claim that it can no longer furnish adequate service and meet the contract conditions at the statutory fare, within the limits of an incorporated city.

Cost of Living Discussed

Company in Portland, Ore., in Striking Treatment Compares Cost-of-Living Nickel with the Street Car Nickel

The Portland Railway, Light & Power Company, Portland, Ore., published in the annual edition of *The Morning Oregonian* of that city, dated Jan. 1, a full-page advertisement, headed "A Study of the Cost-of-Living Nickel *vs.* The Street Car Nickel." The text was divided under the heads "The Cost of Living" and "The Street Car Ride," there being one paragraph under the former and three under the latter head. On the cost of living the company said:

"The unprecedented increase in the cost of the necessities of life in recent years, and particularly in the past year, has become a national problem and is engaging the attention of the Federal Government. It is estimated that the purchasing power of the nickel has been virtually cut in two in the last thirty years and that the reduction in its purchasing power has been about 40 per cent in the last twelve months."

At the right-hand side of this statement was printed "5c.," under the dates 1886, 1915 and 1916, to show by their relative sizes the shrinkage in purchasing power of the nickel in buying things to eat and wear.

The first paragraph devoted to the street car ride follows:

"In 1886 you could ride a distance of only 2.75 miles in one of Portland's old horsecars for a single 5-cent fare. Transfers were unknown in those days, at least in Portland. In 1916 you can ride a distance of 18.7 miles for the same 5-cent fare, or practically seven times as far as you could thirty years ago, thanks to our long suburban lines and universal transfers."

At the right-hand side of this statement was printed "5c." under the dates 1886 and 1916, to show by their relative sizes the comparative length of the car ride in Portland thirty years ago and to-day.

The second paragraph devoted to the street car ride follows:

"While it is rather difficult to make exact comparisons as to the saving of time spent riding to and from your work nowadays as compared with the days of the old, slow, easy-going horsecars, a fair estimate is that the average street car patron saves fully two-thirds of the time formerly consumed in that manner."

At the right-hand side of this statement was printed "5c." under the dates 1886 and 1916, to show by their relative sizes the comparative speed or time-saving element of the old horse car and the modern trolley car.

The third paragraph devoted to street car rides follows:

"There has been a substantial increase in the comfort, safety and convenience of street car patrons in the past thirty years, due to better roadbed, better ventilation, heating, lighting and seating facilities of the modern electric cars as compared with the ancient horse car. Probably 100 per cent would not be an overestimate of the improved facilities and comforts in the past thirty years."

At the right-hand side of this statement was printed "5c." under the dates 1886 and 1916, to show the relative comfort, convenience and safety to passengers to-day and thirty years ago.

The fourth paragraph devoted to street car rides follows:

"There has been a tremendous increase in the cost of everything entering into the production of the street car ride in recent years. Material, labor, equipment and supplies of all kinds have substantially advanced in cost. A very conservative estimate based on the experiences of electric railways generally is that this increase will average fully 50 per cent, considering all items."

At the right-hand side of this statement was printed "5c." under the dates 1886 and 1916, to show by their relative sizes how the cost of producing the 5-cent car ride has increased in three decades.

The advertisement was concluded with this statement:

"Since Jan. 1, 1907, and up to and including Nov. 30, 1916, this company has carried the enormous total of 810,363,205 persons on its cars without the loss of the life of a single passenger."

International to Spend $1,000,000

President Connette Announces That Fifty Cars Will Be Purchased and Other Expenditures Made

More than $1,000,000 will be spent in improvements within the next six months by the International Railway, Buffalo, N. Y. Edward G. Connette, president of the company, announces the company will purchase fifty new cars of the front and rear entrance and center-exit type. These will be used on the city lines. The thirty-three cars which were destroyed by fire in the Cold Spring and Broadway carhouse last year have been replaced with the exception of eleven, which are now being rebuilt in the company's Cold Spring shops. Other old-type cars, which have been out of service for some time, are being rebuilt and repaired by the company.

The 10,000-hp. steam turbine ordered by the company a year ago will be delivered in February and will probably be in service in the Niagara Street power house early in March. This will relieve the shortage of power experienced by the company since the embargo was placed by the Canadian Government on the exportation of Canadian-Niagara power to western New York.

In an effort to relieve the congestion at the big industrial plants in North Elmwood Avenue, where almost 12,000 workers board cars between 5:30 and 6 o'clock every night, the company is considering the construction of a substation near this district where passengers can board cars after passing through gates where fare collectors would be stationed. Pending the construction of such a loading station, the company will lay a double-track line in Elmwood Avenue, from Hertle Avenue to the city line. A franchise for this extension was granted at the last municipal election. Construction work will start in the spring. This track extension will be used for storing extra cars to handle the rush-hour crowds from this rapidly growing industrial district.

Among other improvements the company will extend the new Bailey Avenue line from Clinton to Seneca Streets. The line from Broadway to Clinton Street has been in operation about a month. The Bailey Avenue line has also been opened between East Ferry and Genesee Streets. The Broadway line between Jefferson Street and Fillmore Avenue will be rebuilt and improvements will be made in the roadbed of other lines.

$600,000 Spent in Indianapolis

Money Used for Improvement of Lines and for New Equipment

The Indianapolis Traction & Termial Company, Indianapolis, Ind., during the year 1916 spent more than $600,000 in the improvement of its lines and in purchase of new equipment. The 1916 improvements may be grouped into four classes, viz.: Track elevation, flood prevention, down-town re-routing and track construction and rehabilitation. Under the head of track elevation there appears special work at Illinois and South Streets, and on Kentucky Avenue at South and West Streets. At the crossings on South Street the tracks were spread and the crossing improved. Under the head of flood prevention is classed the improvements on Oliver Avenue, Kentucky Avenue, Morris Street, West Michigan Street and West Washington Street, these improvements being of a varied nature and designed to adapt the car system to the flood prevention work being carried on in the city of Indianapolis and to supplement that work. Following the policy of the company to install permanent construction work wherever new paving is required, the company has reconstructed a great deal of track in connection with orders for paving of the part of the street which it occupies. The re-routing of the cars in the down-town district necessitated special work at Market and Alabama Streets, Alabama and Washington Streets, Delaware and Washington Streets, Meridian and Maryland Streets, Indiana Avenue and West Street, and Indiana Avenue and Blake Street. The re-routing also required the building of 625 ft. of double track with granite paving on Alabama Street from Market to Washington Streets and 2400 ft. of double track with granite paving from West to Blake Streets on Indiana Avenue.

Buffalo Strike Award

Verdict in Favor of Company Includes Only Actual Property Damage

Only actual property damage was included in the verdict returned in the Supreme Court of Erie County in favor of the International Railway, Buffalo, N. Y., against the county for alleged failure to protect the company's cars during the street car strike riots in the spring of 1913. The verdict was for the nominal sum of $2,862. The company brought suit for $108,000, which included $14,000 a day loss in receipts during the strike period. The jury returned a verdict of no cause of action on this part of the complaint. An appeal will probably be taken to a higher court by Norton, Penney, Spring & Moore, of counsel for the railway company.

In his testimony before the jury, E. G. Connette, president of the International Railways, declared that nearly all fares collected by the strike-breakers brought to Buffalo to take the places of the striking platform men, were held by the men and not turned over to the company, so that the company received little revenue during the strike period. Counsel representing the company contended that the county was responsible for the company's earnings because of its alleged failure to provide adequate protection, although two regiments of the New York National Guard were doing strike and riot duty. The verdict was referred to briefly in the account of the trial which appeared in the ELECTRIC RAILWAY JOURNAL of Jan. 20, page 131.

Progress on Kansas City Terminal

Station to Be Ready in Sixty Days Involves an Expenditure of $100,000

The new freight terminal for Kansas City, Mo., which is under construction at Fourth and Wyandotte Streets, will be completed in sixty days according to present indications. The site and building will involve an expenditure of $100,000. They will provide the only facilities in the city for the handling of interurban freight and express packages. The small freight depots now maintained by the various lines that enter Kansas City will be abandoned, all but one company, the Strang line, having signed a thirty-year contract to handle their freight and express matter through the Kansas City Interurban Freight Terminal Company, These roads have contracted to supply a minimum annual tonnage of 31,000 tons. The companies that have entered into this contract are the Kansas City, Clay County & St. Joseph Railway; the Kansas City, Kaw Valley & Western Railway; the Kansas City Western Railway and the Kansas City, Lawrence & Topeka Railway. The terminal company is incorporated for $100,000 and the officers are: John H. Rockwell, president; William S. Tuley, vice-president; Adolph J. Meyer, secretary and treasurer.

EXPANSION OF FREIGHT BUSINESS

Already there are indications that other proceedings will be undertaken to expand the freight business by the electric lines of the district and probably to provide connections with the steam roads. There is, it is said, a possibility that such connection can be made within a block or so of the interurban freight station; but if this cannot be accomplished, connections will be arranged for elsewhere, without doubt. Another problem that is being studied is that of deliveries of freight in the cars, as brought to the city by interurban or electric locomotive, to their destination within the city limits.

There are many instances on record, of cars consigned to Kansas City houses, that could be brought to the city limits by interurban, and delivered to the warehouses without disturbing the contents. In practice, these cars must be unloaded at a freight station, and the freight hauled by motor truck or horse-drawn vehicles to the consignee, at great cost and great waste of time. While no announcement of plans can be made now, it is said to be probable that the connection with the belt steam railroad, and the provision for delivering freight cars in the city and suburbs, may both be brought about this year.

Maryland Commission Reports

The Public Service Commission of Maryland on Jan. 19 made public its report to Governor Harrington for the year 1916. The total capitalization of the corporations under the commission's jurisdiction is $1,611,892,725. Transportation Expert Bruce W. Duer calls attention to the fact that during the year all cars in service on the lines of the United Railways & Electric Company, Baltimore, Md., were equipped with improved protecting fenders, automatic wheel guards, proper destination signs and signal bells. He also states that 560 cars of the semi-convertible, open-platform type were converted into modern vestibuled cars.

Under the heading "Accidents" Mr. Duer reports that 146 persons were killed and 8490 were injured on steam and electric railways within the State in 1916. Of the killed, 107 were of the public and 39 were employees. Of the injured 2102 were employees and the remaining 6388 were of the public. On steam roads 78 of the public and 35 employees were killed and 144 of the public and 852 employees were injured. On the electric lines 29 of the public and 4 employees were killed, while 6244 of the public and 1250 employees were injured.

The transportation expert states that the number of motor cars or jitneys in public use in Baltimore decreased materially during the year, but that there has been no decrease in the number of jitneys in the counties.

"Home-Rule" Bill for Chicago

A special legislative committee, headed by Medill McCormick, which has made a survey of the utilities in Illinois presented a proposed "home-rule" bill for Chicago to the State Legislature on Jan. 23. It is intended to restore control over Chicago public utilities to the City Council. The method of exerting this control by the City Council is not specified, although the bill which accompanies the report suggests two schemes. The first of these contemplates control through a commission to be appointed by the Mayor, while the second provides control through the City Council direct, with power vested in it to create a commission or commissions by ordinance. The bill is called a measure to restore home rule to all cities having a population of 200,000 or more, but Chicago is the only city in Illinois with the defined population.

Relief Sought in California

F. W. Webster, general manager of the Fresno (Cal.) Traction Company, discussed the problems of the electric railways in that State in an interview in the Fresno *Republican* of Jan. 3. Mr. Webster said that the electric railroads of California were operating under burdensome and out-of-date laws and that the State Legislature would be requested this session to relieve the companies of some of their obligations so that capital could be induced to invest in electric railways and thereby make needed extensions. He was quoted in part as follows:

"The last year has been most disastrous in earnings of our company, but we, of course, feel that the next year is going to make a great change and through the public sense of justice the electric roads will receive a square deal. Otherwise the future is very dismal indeed. It is true that during the past year we have not earned interest on the investment in this city.

"You cannot secure capital for extensions unless you can show a paying investment or a possibility of making it such. We cannot do this for the local lines or other lines. The electric roads of California will ask for relief from a law passed in 1876 which required the roads to pave between their tracks and on 2 ft. on each side of the tracks. That is asking too much of us under the present conditions, as our earnings are cut and the traffic now goes on our part of the pavement, as cars are stationed at the curbs. We pay 5¼ per cent of gross earnings to the State, and our other taxes bring the total amount paid by us to the public authorities to 12 per cent. We cannot continue to perate under such a burden."

Strike Declared Off.—The strike of motormen and conductors employed by the Allegheny Valley Street Railway, Tarentum, Pa., declared on Aug. 15, 1915, has been called off, according to announcement of the executive committee of the strikers. During the strike the former employees of the company operated jitney buses.

Wheeling Employees Seek Wage Increase.—The union employees of the Wheeling (W. Va.) Traction Company have asked for an increase in wages. They desire 30 cents an hour for the first six months, 32 cents an hour for the second six months, 34 cents an hour for the third six months, and 36 cents an hour after eighteen months continuous service, during the life of the contract.

Gary Franchise Negotiations Fail.—The efforts have failed which were made toward securing a new franchise for the Gary & Interurban Railroad in Gary, Ind., referred to in the ELECTRIC RAILWAY JOURNAL of Jan. 6, page 50. The segregation of the properties and a share in the net profits was proposed to the city in return for the repeal of the present franchise ordinance fixing the local fare at 3 cents.

Nine-Hour Bill in Maine.—A bill has been introduced into the Legislature of Maine which provides that no street railway and no person, firm, corporation or other employer operating a street railway shall require any conductor or motorman to work more than nine hours in any day and if any such conductor or motorman shall work nine hours or less in any day such work shall be performed within eleven consecutive hours.

Hearing on New York Central Improvements on Feb. 14.—Public hearings are to be held commencing on Feb. 14 on the "form of agreement" reached between representatives of the city of New York and the New York Central Railroad for the improvement and electrification of the company's West Side lines in New York, as made public on Jan. 16 and referred to in the ELECTRIC RAILWAY JOURNAL of Jan. 20, page 130.

Cincinnati Commission Approves Steps Taken on Local Matters.—The Rapid Transit Commission of Cincinnati, Ohio, has approved all steps so far taken by the conference committee in revising the street railway franchise and in dealing with the Cincinnati Traction Company. A financial report submitted showed that of the $100,000 appropriated at the beginning of the preliminary work of building there was a balance on hand of $65,089.

Waterfront Bus Line for San Francisco.—On recommendations of the public utilities committee, the Supervisors of San Francisco, Cal., have adopted a resolution accepting the proposal made by the State Harbor Commission to pave a strip adjacent to the sea wall for a length of several miles and to give to the city exclusive right to operate motor buses over the same. Upon the completion of the pavement the city and county are to provide the necessary means of transportation.

$15,000,000 Tunnel for Baltimore.—Representing an outlay of approximately $15,000,000, the Pennsylvania Railroad on Jan. 24 submitted plans for the improvement of its terminal facilities at Baltimore, Md., to Mayor James H. Preston for the consideration of the municipal authorities and the City Council. One of the main features of the plans provides for the construction of twin tubes paralleling generally the present tunnel under the city. No mention is made of electrification of the terminals, one of the points upon which the city has insisted.

Strike Suits Withdrawn.—The Wilkes-Barre (Pa.) Railway moved on Jan. 19 to lift the injunction obtained several months ago against all the striking carmen, many of whom are now back at work. The injunction restrained picketing and prevented the men from interfering with passengers or the service of the company. The company also asked for damages and filed with the injunction claims similar to those in the Danbury hatters' case. According to the terms of the strike settlement as published in the ELECTRIC RAILWAY JOURNAL of Dec. 23, page 1312, the company agreed to stop all court actions, to lift the injunction and to withdraw the claims for damages.

Directory of Public Service Companies of Pennsylvania.—In the State of Pennsylvania, 496 street railways hold charters of incorporation, according to a directory of public

service companies in that State just issued by the Public Service Commission. Of these companies, 120 are actually operating their own properties; 250 are operated by other companies holding leases on the properties and lines; 109 have never performed the functions for which they were chartered, and seventeen are "dormant," having ceased to perform their functions as companies. The directory shows 3715 utility companies under charter in the State, including railroad, gas, heat, light, telephone, telegraph companies, etc.

Proposed State Tax for Municipal Railways.—In its annual report the California State Board of Equalization said: "There seems to be no reason why the municipally owned utility should not bear its just proportion of a State tax. It is manifestly unfair for San Francisco and Los Angeles to take over a public utility without paying to the State the amount of taxes which would ordinarily accrue under private ownership. To do so creates a great liability for a deficiency in the State's revenues, and if resort is had to an ad valorem deficiency tax an unwarranted burden is cast upon the people of the State who do not live in the cities concerned. We recommend the enactment of a law by which the municipalities owning and operating public utilities shall be required to report to this board and pay a tax commensurate with the State's other taxpayers."

City Departments Not Permitted to Favor Other Departments.—In a written opinion by the attorney general's office of the State of Washington it is contended "that a city has no power to require one public utility to loan money to another department unless the current rate of interest is charged; that a city has no right to require a utility to furnish free service or service below the usual cost to other utilities or municipal departments; that a city council has no power to appropriate, directly or indirectly, any part of the income or surplus of one utility for the benefit of another utility." The bureau of inspection of public offices had asked the attorney general whether or not it was legal for a municipally-operated utility to receive as a gift from the general fund of a city a contribution for the purpose of providing working capital or for covering a deficit. In direct answer to the question the opinion is quoted: "We know of no provision in the statute which prohibits a municipally-owned public service from receiving a gift from any source. We are of the opinion, however, that the city authorities cannot make such a gift as that referred to in this instance."

Programs of Association Meetings

Arkansas Association of Public Utility Operators

The 1917 convention of the Arkansas Association of Public Utility Operators will be held at Pine Bluff, Ark., on May 16, 17 and 18.

Wisconsin Electrical Association

The annual meeting of the Wisconsin Electrical Association will be held at the Hotel Pfister, Milwaukee, Wis., on March 15 and 16. The program has not as yet been definitely arranged.

American Institute of Electrical Engineers

The dinner-dance of the American Institute of Electrical Engineers will be held at the Hotel Astor, New York, N. Y., on Feb. 16 at 7 p. m. The purpose of the dinner-dance is to provide a popular and informal social function for the entertainment of the members and their guests in attendance at the mid-winter convention of the institute.

Southwestern Electrical & Gas Association

The Southwestern Electrical & Gas Association has chosen Dallas, Tex., as the place for holding its annual convention on April 26, 27 and 28. The program of papers is now being arranged. The Electric Club of Dallas has already begun the work of making arrangements for the entertainment of the delegates. At the last meeting of the club a committee consisting of L. C. Bradley, chairman, W. J. Drury, Fred Slater, W. L. Marshall and H. S. Cooper was appointed to arrange the details of the entertainment.

Financial and Corporate

Blue Sky Laws Upheld

United States Supreme Court Decides That Ohio, Michigan and South Dakota Security Sale Laws Are Constitutional

The so-called blue sky laws of Ohio, Michigan and South Dakota, regulating the sale of securities, were upheld as constitutional by the Supreme Court on Jan. 22 in far-reaching decisions affecting similar laws in twenty-six States. Justice McKenna handed down the opinion of the court, to which Justice McReynolds alone dissented. The Justices admit that such statutes may curb and burden legitimate business, but hold that the interests of legitimate business are not paramount to the police power of States to protect their citizens from fraud. Federal Court injunctions suspending enforcement of the laws are dissolved.

The laws give State authorities, through security commissions or banking superintendents, authority to forbid the sale within State borders of securities which officials believe would result in fraud upon investors. The court said:

"The statutes burden honest business, it is true, but burden it only that under its forms dishonest business may not be done. Expense may thereby be caused and inconvenience, but to arrest the power of the State by such considerations would make it impotent to discharge its functions. It costs something to be governed."

The blue sky laws of Ohio, South Dakota and Michigan all had been held unconstitutional by lower Federal courts, and their enforcement by State officials was enjoined while the officials appealed. Two principal points upon which these acts were declared void and non-enforceable in the lower courts were: That they unduly burdened interstate commerce, of which stocks, bonds and other securities were declared to be instrumentalities, and that the laws exceeded the States' police powers of local supervision.

The States, however, contended that the laws prevented fraud only, and, unlike the original Kansas type of blue sky legislation, did not attempt to prevent unwise investments. Also, they contended that the laws did not restrict or burden interstate commerce, applying only to sales within the States, and in preventing frauds they were normal and wise exercise of police power.

Another San Francisco Circular

Statement by Committee Headed by J. H. Hammond Announces Reasons for Opposing Reorganization

The committee, of which John H. Hammond of Brown Brothers & Company, New York, N. Y., is chairman, has issued another circular to the holders of the 4 per cent bonds of the United Railroads, San Francisco, Cal., and to the holders of deposit certificates issued for the bonds under the reorganization plan dated Sept. 22.

It is set forth in the circular that the surplus net earnings over the total interest requirements for the underlying, as well as the 4 per cent bonds, would, under usual conditions, make a readjustment or reorganization unnecessary. It is stated that reorganization in this case is caused by other than insufficient income. Sacrifice of capital by the 4 per cent bondholders required by the present plan is declared to be unnecessary.

The Hammond committee announces that it had opposed the reorganization, namely, the expiring franchises, and the lessly large sacrifice by the bondholders which it represents without adequate compensation; failure of the plan to provide for the difficulties which form the occasion for the reorganization, namely, the expiring franchises, the necessity of refunding the debt and properly refinancing the company. With respect to the matter of financing, it is claimed that the plan does not provide for extensions, improvements and other capital purposes, such as are constantly necessary in a rapidly growing community.

Annual Report

Interborough Consolidated Corporation

The income statement of the Interborough Consolidated Corporation, New York, N. Y., for the year ended Dec. 31, 1916, follows:

Surplus, Dec. 31, 1915	$1,834,090
Income:	
Dividends on Interborough Rapid Transit stock (20 per cent)	$6,782,560
Other dividends and interest	122,876
Profit on purchase for retirement of $2,500,000 of Interborough-Metropolitan ten-year 6 per cent collateral gold notes	25,920
Total	$6,931,356
	$8,765,446
Deductions:	
Interest on $67,825,000 of Interborough-Metropolitan 4½ per cent collateral trust bonds	$3,052,125
Interest to July 1, 1916, on $2,500,000 of Interborough-Metropolitan 6 per cent collateral gold notes	75,000
Interest at 4½ per cent on $2,000,000 advance from Bankers Trust Company, from July 1, 1916	46,000
Sinking fund on above 4½ per cent bonds	300,000
Sinking fund on above 6 per cent notes	150,000
Administration and general expenses	43,619
Taxes	128,395
Total	$3,795,139
Surplus available for dividends	$4,970,307
Dividends on preferred stock, 6 per cent	2,774,430
Net surplus	$2,225,877
Appropriation for retiring above 6 per cent notes in excess of sinking fund accruals	350,000
Surplus balance, Dec. 31, 1916	$1,875,877

The gross revenue of the subsidiary subway and elevated lines for the six months' period ended Dec. 31, 1916, notwithstanding the strike, increased approximately $2,193,000. The earnings on the surface lines fell off on account of the strike, but they are said to be gradually nearing normal.

The Interborough-Metropolitan Company ten-year 6 per cent collateral gold notes, dated Jan. 1, 1915, of which there were $2,500,000 outstanding on Jan. 1, 1916, were retired during the year. For that purpose the company secured on July 1, 1916, from the Bankers Trust Company, an advance of $2,000,000 for nine months at 4½ per cent interest, the balance required for the purpose of the retirement being taken from surplus cash.

Under authority of a resolution of the board of directors whereby the sum of $300,000 was directed to be set aside out of the annual income of the company for the acquisition of the 4½ per cent collateral trust bonds of the company as a sinking fund, there was acquired in the open market bonds to the amount of $2,510,000.

During 1915 a favorable opportunity seemed to be presented to bring to a conclusion the protracted litigation arising over the funds in the hands of the Metropolitan Street Railway and the New York City Railway receivers. After six months' negotiations, matters were brought to such a state that on Feb. 15, 1916, an order was entered providing for the discharge of the receivers, and the receivers were actually discharged on March 24. As a result, the New York Railways and its affiliated companies became entitled to recover approximately $4,200,000. Of the fund thus acquired, $950,000 was employed in carrying off a real estate mortgage upon fee property of the New York Railways and $650,000 in paying a general obligation contracted by the Metropolitan bondholders' reorganization committee.

Fiscal Years to End Dec. 31

The Massachusetts Public Service Commission has ordered returns from utilities subject to its jurisdiction to be filed for fiscal years ending Dec. 31 instead of June 30, in accordance with action already taken by the Interstate Commerce Commission and by other State commissions. Returns for the year ended Dec. 31, 1916, are due March 31, 1917.

The State Public Utilities Commission of Illinois has issued an order permitting the utilities of the State to change the date of the annual report from a termination on June 30 to a termination on Dec. 31.

Electric Railway Statistics

Returns for October, 1916, Compared with Those for the Corresponding Month of 1915, Show Menace of Growing Expenses

A comparison of electric railway statistics for October, 1916, with figures for the corresponding month of 1915, made by the information bureau of the American Electric Railway Association, indicates a menacing growth in the expense burden. This is further intensified by the unsettled labor conditions in New York City. Indications point, however, to an encouraging improvement in the business conditions of the Western district. Data for October, representing 7259 miles of line of companies scattered throughout the country, show a decrease in operating revenues of 1.15 per cent, an increase in operating expenses of 5.58 per cent and a decrease in net earnings of 10.93 per cent. Data representing 6150 miles of line indicate an increase in the amount of taxes paid of 5.32 per cent, and a decrease in operating income of 14.75 per cent.

Of the three groups shown in the accompanying table, data for the Eastern, represented by 4359 miles of line or approximately 60 per cent of the total mileage, show a decrease in operating revenues of 3.64 per cent, an increase in operating expenses of 6.35 per cent and a decrease in net earnings of 17.65 per cent. Returns representing approximately 80 per cent of this mileage show an increase in the amount of taxes paid of 7.11 per cent and a decrease in operating income of 22.43 per cent. Though labor conditions in New York City in this month were constantly improving, they were still somewhat unsettled and their effect upon the earnings and expenses of the lines in the metropolitan district and consequently upon those of the Eastern district was still somewhat felt.

The Southern group, represented by 760 miles of line, is apparently beginning to feel the effects of the increasing cost of labor and materials. Though the earnings in October increased 2.22 per cent, an increase in operating expenses of 5.70 per cent caused the net earnings to decrease

Revenues and Expenses of Electric Railways for October, 1916

	Companies Not Reporting Taxes		Companies Reporting Taxes	
*United States**	Amount	Per Cent Increase	Amount	Per Cent Increase
Operating revenues	$16,258,463	†1.15	$15,219,913	†1.73
Operating expenses	10,285,255	5.58	9,643,522	5.08
Net earnings	5,973,208	†10.93	5,576,391	†11.64
Taxes	.....	....	1,030,076	5.32
Operating income	.....	....	4,546,315	†14.75
Operating ratio, per cent:				
1915	63.26	....	63.36	....
1916	59.23	....	59.25	....
Miles of line represented	7,259	....	6,150	....
*Eastern District**				
Operating revenues	$10,778,413	†3.64	$10,445,889	†4.06
Operating expenses	6,945,155	6.35	6,744,721	5.95
Net earnings	3,833,258	†17.65	3,701,168	†18.21
Taxes	.....	....	692,208	7.11
Operating income	.....	....	3,008,960	†22.43
Operating ratio, per cent:				
1915	64.44	....	64.57	....
1916	58.38	....	58.45	....
Miles of line represented	4,359	....	3,759	....
*Southern District**				
Operating revenues	$813,235	2.22	$504,674	1.50
Operating expenses	478,808	5.70	289,767	4.84
Net earnings	334,427	†2.40	214,907	†2.68
Taxes	.....	....	40,752	†3.59
Operating income	.....	....	174,155	†2.46
Operating ratio, per cent:				
1915	58.88	....	57.42	....
1916	56.93	....	55.59	....
Miles of line represented	760	....	506	....
*Western District**				
Operating revenues	$4,666,815	4.49	$4,269 350	4.14
Operating expenses	2,861,292	3.76	2,609,034	2.94
Net earnings	1,805,523	5.68	1,660,316	6.08
Taxes	.....	....	297,116	2.61
Operating income	.....	....	1,363 200	6.87
Operating ratio, per cent:				
1915	61.31	....	.....	....
1916	61.75	....	.....	....
Miles of line represented	2,140	....	1,885	....

†Decrease.

*Groupings are as follows: *Eastern District*—East of the Mississippi River and north of the Ohio River. *Southern District*—South of the Ohio River and east of the Mississippi River. *Western District*—West of the Mississippi River.

2.40 per cent. Data for companies represented by approximately 85 per cent of such mileage indicate a slight decrease in the amount of taxes paid and one of 2.46 per cent in the operating income.

Returns for the Western district show an increase in operating revenues of 4.49 per cent, in operating expenses of 3.76 per cent and in net earnings of 5.68 per cent. Data for companies represented by approximately 90 per cent of this mileage show an increase in the amount of taxes paid of 6.08 per cent, while the operating income increased 6.87 per cent.

The operating ratio is growing, that of the United States in October having increased from 59.23 in 1915 to 63.26 in 1916. Similar increases are apparent in the Eastern and Southern districts, while the Western shows a slight decrease, though its operating ratio is the highest of all.

Progress of California Utilities

Electric Railway Showing Comparatively Poor—Details of New Financing During Year

The year 1915 was the most prosperous year in the history of public utilities in California, although the electric railways in the State were not so fortunate. The total operating revenue of all the utilities, including the entire business of the interstate railroads, which was not segregated by them, was $384,617,734. The operating expenses amounted to $249,303,932, leaving net operating revenue of $135,313,802 for the year. These figures are for the calendar year ended Dec. 31, 1915, for all public utilities except the transportation lines, and for the fiscal year ended June 30, 1915, for steam railroads and electric railways. They are taken from the report of the California Railroad Commission for the year ended June 30, 1916, just available.

Statistics compiled by the commission for each class of utility show that the net operating revenue in each case was greater in 1915 than in 1913 or 1914 with the exception of steam railroads and electric railways. In the case of the former, however, there has lately been a large increase in net operating revenue, so that the record for the last fiscal year will show up better than the one for the year preceding. For electric railways, however, the outlook seems not so favorable. The operating revenue of $33,869,392 for the year ended June 30, 1915, was a decrease from $36,108,649 in 1914 and $36,077,841 in 1913. The operating expenses of $23,250,018 in 1915 were a slight decrease from those of $23,986,694 in 1914, and were greater than those of $22,983,578 in 1913, while the net operating revenue for 1915 was only $10,619,373 as compared to $12,121,955 in 1914 and $13,094,262 in 1913. The report of the commission states that the decrease in net operating revenue was no doubt caused to a considerable extent by jitney buses, but the commission formerly denied that it had any jurisdiction over such carriers.

Under a recent court ruling, however, the commission must control their rates and service when the jitneys are not operated solely within a municipality.

During the fiscal year ended June 30, 1916, the commission passed upon $242,523,095 of securities desired to be issued by public utilities, as compared to $134,271,268 during the preceding year. Of this total $231,644,870 was granted. Of the securities authorized 65.56 per cent represented stocks, 27.83 per cent bonds, 4.24 per cent notes and 2.37 per cent certificates of indebtedness. During the last fiscal year the electric railways made application for new securities totaling $28,713,194, of which $6,973,102 was authorized, including $126,000 of stock, $4,184,000 of bonds and $2,663,102 of notes. An analysis of the purposes for which new securities were authorized shows that for electric railways the $126,000 of stock was for additions and betterments. Bonds were issued as follows: Additions and betterments, $405,000; refunding, $125,000, and collateral, $3,654,000. Of the note issues $472,873 was for additions and betterments, $2,129,209 for refunding and $61,020 for collateral. To consider the new securities authorized as a whole, there were $1,003,873 for additions and betterments, $2,254,209 for refunding and $3,715,020 for collateral.

Jitney Securities Authorized

The Public Service Commission for the Second District of New York has established a precedent by authorizing the Carpenters' Bus Line Company of Watertown, a jitney line, to issue and sell at par 320 shares of its common stock, the proceeds to be used in the purchase of equipment and general development.

American Railways, Philadelphia, Pa.—Bioren & Company and Newberger, Henderson & Loeb, Philadelphia, Pa., announce that they have purchased $1,750,000 new 5 per cent collateral trust bonds of the American Railways, issued for the purpose of retiring part of the $2,500,000 of Scranton gold trust certificates, which the American Railways elected to purchase at 102½ and interest on March 1. Holders of the certificates may deposit same and receive in exchange for each maturing bond an interim certificate for one of the new bonds of the American Railways and $50 in cash, together with $25, the amount of the April 1 coupon.

Chicago City & Connecting Railways Collateral Trust, Chicago, Ill.—Harrison B. Riley, chairman of the board of the Chicago City & Connecting Railways Collateral Trust, has issued a statement reviewing the affairs of that company and dealing with the investigation of transit affairs in that city by the Chicago Traction & Subway Commission, the report of which body has been reviewed at length previously in the ELECTRIC RAILWAY JOURNAL. In that part of his statement dealing with the direct affairs of his company Mr. Riley said in part: "It is a matter of congratulation that the trust has been able to pay the full preferred dividend accruing during the last half of the year 1916. This is due to an increase of 10 per cent in the gross earnings of the Chicago surface lines during the first ten months of the fiscal year, and also to the economical management of these properties. The operating ratio is materially lower than last year. It must be remembered, however, that the continuance of the present situation will depend upon a normal increase in gross receipts, and the ability to maintain a favorable operating ratio."

Georgia Railway & Power Company, Atlanta, Ga.—When the three financial petitions of the Georgia Railway & Power Company and the Georgia Railway & Electric Company came up for hearing before the State Railway Commission on Jan. 16, after having been postponed for a week, Marion Jackson, representing the opposition, moved for another postponement. This the commission denied. The sessions of the commission on Jan. 16 completed the hearings upon the petition of the Georgia Railway & Power Company to issue scrip, and the petition of the Georgia Railway & Electric Company to issue bonds. The petition of the Georgia Railway & Power Company to issue bonds will be taken up when the commission resumes the hearing. E. H. Rollins & Sons, Boston, Mass., are offering at 93 and interest, to yield about 5.45 per cent, $500,000 of first and refunding mortgage 5 per cent bonds of the Georgia Railway & Power Company.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Indianapolis Traction & Terminal Company has issued $125,000 of 5 per cent car trust certificates, Series E, dated Dec. 1, 1916, and due in semi-annual installments from June 1, 1917, to Dec. 1, 1926, the amounts due on Dec. 1, 1918, 1920, 1922, 1924 and 1926 being $7,000, all other installments $6 000. Interest is payable in July and December at the office of the Pennsylvania Company for Insurance on Lives & Granting Annuities, Philadelphia, Pa., the trustee. The certificates cover twenty-five double-truck closed motor cars complete, operated under lease that has been assigned by the Indianapolis Traction & Terminal Company to the trustee.

Niagara Gorge Railroad, Niagara Falls, N. Y.—Mrs. Melodia Blackmar Jones, widow of the late Capt. Joseph T. Jones, president of the Niagara Gorge Railroad, Niagara Falls, N. Y., was elected a member of the board of directors of the company, at a stockholders' meeting. She will succeed Captain Jones. Other directors elected were Bert L. Jones, George C. Riley, Whitney G. Case, William H.

Hotchkiss, C. M. Bushnell, William W. Riley, C. M. Whitthauser, O. E. Foster, K. B. Hansard, Buffalo, and C. L. Corliss, Tonawanda, N. Y. The new board of directors will meet on Feb. 2 to elect officers and Mrs. Jones will probably be elected president of the company to succeed her husband.

Northern States Power Company, Chicago, Ill.—By action of the board of governors of the New York Stock Exchange the issue of $18,000,000 of first and refunding, twenty-five year, Series A, 5 per cent bonds of Northern States Power Company, dated April 1, 1916, has been listed on the exchange.

Sapulpa Electric Interurban Railway, Sapulpa, Okla.—The Salpulpa Electric Interurban Railway has been incorporated in Oklahoma with a capital stock of $200,000 as the successor to the Sapulpa & Interurban Railway, a 12-mile electric railway bought in under foreclosure by the bondholders on Sept. 9, 1916.

Standard Gas & Electric Company, Chicago, Ill.—H. M. Byllesby & Company, Inc., Chicago, Ill., are offering for subscription at 96 and accrued interest to net 6⅜ per cent, $200,000 of 6 per cent gold notes of the Standard Gas & Electric Company dated Oct. 1, 1915, and due Oct. 1, 1935. The notes are in coupon form in the denomination of $1,000, $500, $100 and $50. The total authorized issue is $15,000,000. Of this amount there are now outstanding $6,914,250 of the notes, this sum including the present offering.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Through the Empire Trust Company, St. Joseph, Mo., the St. Joseph & Savannah Interurban Railway has called for payment at 102½ and interest on April 1, 1917, all its first mortgage bonds. The company will be merged with the St. Joseph Railway, Light, Heat & Power Company and proceeds for the redemption of the bonds were secured by a sale of first and refunding 5 per cent bonds of the St. Joseph Railway, Light, Heat & Power Company.

Texas Traction Company, Dallas, Tex.—J. F. Strickland, Dallas, Tex., president of the Texas Traction Company and the Southern Traction Company, which are to be consolidated according to an agreement already reached, has returned to Dallas from Chicago, where he was called in connection with final details of the consolidation plans. Mr. Strickland said the consolidation agreement would be referred to the stockholders of the two lines at a meeting to be held in Dallas at an early date. Arrangements for the consolidation were well under way previously, but had to be abandoned for the time being owing to the discontinuance of the business of one of the financial houses participating.

West End Street Railway, Boston, Mass.—The West End Street Railway has sold to Curtis & Sanger, F. S. Mosely, and Blodget & Company, Boston, Mass., $2,700,000 of 5 per cent five-year bonds, callable in August, 1919, at 102 and interest. The bankers are offering the bonds at 101¾. The proceeds of the new issue are to be used to retire a like amount of bonds due on Feb. 1, 1917, as noted in the ELECTRIC RAILWAY JOURNAL of Jan. 20, page 136.

Wheeling (W. Va.) Traction Company.—It is stated that the Wheeling Traction Company proposes to issue $40,000 of 5½ per cent equipment trust certificates for the purchase of eight new pay-enter cars to cost $43,698. The certificates are to mature serially over a period of five years.

Worcester (Mass.) Consolidated Street Railway.—The Worcester Consolidated Street Railway has filed a petition with Massachusetts Public Service Commission to issue $240,000 of 4½ per cent gold bonds in order to retire an issue of $200,000 of twenty-year 4½ per cent mortgage bonds of the Worcester & Blackstone Valley Street Railway and $40,000 of bonds of the Uxbridge & Blackstone Street Railway assumed by the Worcester Consolidated Street Railway when these companies were taken over. The Worcester Consolidated Street Railway has also petitioned the commission to be allowed to cancel 33,750 of its total of 69,260 common shares, par $100, and issue 45,000 shares of first preferred stock, cumulative at rate of 5 per cent per annum.

Dividends Declared

Bangor Railway & Electric Company, Bangor, Me., quarterly, one-half of 1 per cent, common.

Brazilian Traction, Light & Power Company, Toronto, Ontario, quarterly, 1 per cent, ordinary.

Cities Service Company, New York, N. Y., monthly, one-half of 1 per cent, common and preferred; one-half of 1 per cent, common, payable in common stock.

Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., quarterly, 1½ per cent, preferred; quarterly, 1 per cent, common.

Grand Rapids (Mich.) Railway, quarterly 1¼ per cent, preferred.

Lehigh Valley Transit Company, Allentown, Pa., quarterly, 1¼ per cent, preferred.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., quarterly 1½ per cent, preferred.

Monongahela Valley Traction Company, Fairmont, W. Va., quarterly, 1¼ per cent, preferred.

Philadelphia (Pa.) Rapid Transit Company, $1.25.

Public Service Investment Company, Boston, Mass., quarterly, 1½ per cent, preferred.

Railway & Light Securities Company, Boston, Mass., 3 per cent, preferred; 3 per cent, common.

ELECTRIC RAILWAY MONTHLY EARNINGS

BATON ROUGE (LA.) ELECTRIC COMPANY

Period			Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Nov.,		'16	$18,680	*$8,527	$10,153	$3,540	$6,613
1 "	"	'15	17,671	*8,946	8,725	2,204	6,521
12 "	"	'16	209.545	*102,128	107,417	41,623	65,794
12 "	"	'15	189,924	*109,375	80,549	25,823	54,726

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

1m., Nov.,		'16	$8,507	*$9,769	†$1,262	$1,116	†$2,378
1 "	"	'15	7,872	*7,763	109	1,103	†992
12 "	"	'16	121,971	*108,246	13,725	13,278	447
12 "	"	'15	115,133	*96,205	18,928	13,525	5,403

CITIES SERVICE COMPANY, NEW YORK, N. Y.

1m., Dec.,		'16	$1,570,819	$20,310	$1,550,509	$314	$1,550,195
1 "	"	'15	532,195	17,789	514,406	40,833	473,573
12 "	"	'16	10,110,342	239,389	9,870,953	258,961	9,611,992
12 "	"	'15	4,479,800	172,856	4,306,944	490,000	3,816,944

DALLAS (TEX.) ELECTRIC COMPANY

1m., Nov.,		'16	$181,900	*$109,220	$72,680	$40,695	$31,985
1 "	"	'15	161.525	*98,789	62,736	34,067	28,669
12 "	"	'16	1,959,837	*1,205,992	753,845	446,828	‡326,359
12 "	"	'15	1,846,739	*1,114,800	731,939	402,090	329,849

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

1m., Nov.,		'16	$73,859	*$38,362	$35,497	$9,622	$25,875
1 "	"	'15	71,405	*33,823	37,582	8,715	28,867
12 "	"	'16	820,296	*440,086	380.210	107,245	272,965
12 "	"	'15	709,292	*382,517	326,775	105,163	221,611

EL PASO (TEX.) ELECTRIC COMPANY

1m., Nov.,		'16	$99,883	*$56,104	$43,779	$5,269	$38 510
1 "	"	'15	93,481	*44,009	49,472	4,187	45,285
12 "	"	'16	1,094,844	*645.869	448,975	57,972	391,001
12 "	"	'15	968,805	*517,508	451,297	50.378	400,919

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

1m., Nov.,		'16	$170.144	*$106,885	$63,259	$36,824	$26,435
1 "	"	'15	168,260	105,554	62,706	36,710	25,996
12 "	"	'16	1,931,555	*1,232,696	698,859	438,731	260,128
12 "	"	'15	1,965,151	*1,202,237	762,914	432,921	329,993

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

1m., Nov.,		'16	$26,089	*$14,468	$11,621	$5,241	$6,380
1 "	"	'15	22,845	*12,909	9,936	5,523	4,413
12 "	"	'16	323,507	*183,470	140,037	64,197	75,840
12 "	"	'15	271,259	*159,269	111,990	66,601	45,389

JACKSONVILLE (FLA.) TRACTION COMPANY

1m., Nov.,		'16	$48,375	*$35,394	$12,981	$15,508	†$2,527
1 "	"	'15	49,250	*35,856	13,394	14,725	†1,331
12 "	"	'16	618,511	*422,330	196,181	183,091	13,090
12 "	"	'15	614,092	*430,540	183,552	176,350	7,202

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

1m., Nov.,		'16	$731,630	*$432,984	$298,646	$184,682	$113,964
1 "	"	'15	643,822	*403,103	240,719	182,573	58,146
12 "	"	'16	8,018,193	*5,092,698	2,925,495	2,210,477	715,018
12 "	"	'15	7,577,430	*4,755,539	2,821,891	2,175,308	646,583

SAVANNAH (GA.) ELECTRIC COMPANY

1m., Nov.,		'16	$74,794	*$46,031	$28,763	$23,706	$5,057
1 "	"	'15	66,448	*43,138	23 310	23,121	189
12 "	"	'16	814,900	*548,318	266,582	282,098	†15,516
12 "	"	'15	796,988	*519,795	277,193	278,583	†1,390

*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

International Railway Attacked

Unusually Heavy Fall of Snow and Consequent Delays Seized Upon for Newspaper Campaign Against Company

Attacks which have been made upon the International Railway of Buffalo, N. Y., and its officers and directors during the last few weeks by a large afternoon daily newspaper have been repudiated by municipal and State authorities. The Buffalo City Council refused to approve the application of the Commissioner of Public Health, who recommended the enactment of a ludicrous health code which would govern sanitary conditions in the company's city cars. In its campaign the paper took advantage of traffic delays on all city lines caused by unusually heavy falls of snow and other abnormal weather conditions. The charges, however, have apparently had little effect upon the public because of the company's policy of giving the widest newspaper and other publicity to the causes for traffic delays, etc.

COMPANY ASKS FOR CRITICISMS

On the second day of the campaign against it the railway published a large display advertisement in the daily newspapers urging the public to send constructive criticism to President Connette, personally, and in other advertisements causes of traffic and other delays were given and some newspapers published lengthy news articles containing favorable interviews with E. J. Dickson, vice-president, and other officers of the company in which all of the various charges made against the company were answered and the public was asked for their support and co-operation in making suggestions for improvements in service.

Urged by this newspaper, the Commissioner of Public Health drafted a code of health laws which provided for the arrest of all platform men in charge of overcrowded street cars; that every passenger more than six years old must be provided with at least 4 sq. ft. of floor space; that the temperature in cars at all times must be at least 50 deg. Fahr., that the standing room in all cars shall be limited to one-half its seating capacity and that 350 cu. ft. of fresh air shall be provided for each passenger each hour. When the code was presented to the City Council it was suggested that it be placed on the table. This is considered as tantamount to its rejection as unfair to the company.

COMPANY IMPROVEMENTS

President Connette told the Buffalo correspondent for the ELECTRIC RAILWAY JOURNAL that never before has the company been making more active efforts to improve service and traffic conditions on its Buffalo lines. Miles of new copper wire were strung during the fall so as to prevent wire breakage during the winter storms, new car lines have been extended in several sections of the city, the new Bailey Avenue line has been placed in partial operation so as to handle employees at several East Side industries; new cars have been bought and placed in operation and other old cars have been rebuilt so as to improve the rolling stock; hundreds of additional platform men have been employed to handle rush-hour loads more efficiently; more frequent schedules are being maintained on all lines and numerous other improvements have been made within the last few months to improve service and traffic conditions.

Mr. Connette has directed that special signs be displayed on all cars leaving the industrial district in North Elmwood Avenue so that these extra cars will be for the sole use of employees of these plants. In an effort to relieve congestion on Main Street between Seneca and Allen Streets during the evening rush hour, the company will lay double tracks in Franklin Street between Chippewa and Allen Streets, and many lines now using the city's main traffic artery will be diverted through a parallel street. A franchise for the Franklin Street extension was approved at the last municipal election.

In replying to the complaint of insufficient heat during cold weather, Mr. Connette in a signed statement to the public says:

"Until March 1, when the new steam turbine is installed in the Niagara Street power station, the company will keep one point of heat turned on at all times, except during the peak load when it will be impossible. Three points of heat on three cars requires enough energy to operate two cars and during the rush hour the movement of cars, we believe, is more important. After the power shortage is relieved we will keep one point of heat turned on, and more, as the weather warrants. One point of heat will raise the temperature in a car about 25 deg."

An inspector will be placed in each carhouse by N. H. Brown, general superintendent of transportation, to supervise the cleaning of all cars. Each carhouse is now in charge of a foreman, who has charge of the cleaning, inspection and repairs and whose duty it is to see that cars are properly cleaned and kept in repair, but in order to facilitate this work Mr. Brown will employ an additional inspector at each carhouse.

On Jan. 23 the informal complaints of twelve residents of Buffalo to the Public Service Commission were consolidated by that body into one formal complaint, and it was announced that following a survey of conditions in Buffalo by Charles R. Barnes, electric railway inspector of the commission, public hearings will be held by the commission.

The company has issued for general distribution several different pamphlets setting forth its position and answering the questions directed at it in criticism of its service.

Increase in Business in Kansas City

A Pleased Public Responds to Company's Efforts with Liberal Patronage

Officials and employees of the Kansas City (Mo.) Railways have been pleased to note the gain of about 7 per cent in business during the ten and a half months since the Kansas City Railways succeeded the Metropolitan Street Railway. Although the community has grown, this alone would not account for the gain of almost $500,000 in receipts over the same period of the previous year, for the number of automobiles in the city has almost doubled. The only feasible explanation seems to be in the fact that the public is a pleased public. For the first time in years the street railway has not come in for any general condemnation by the public. The present management has considered the public demands openly, and where these demands had a measure of justice they have been granted. Since the present management took hold there have been no secrets. There have been the usual number of private conferences, but the public has always been answered truthfully, and every complaint has been honestly investigated. If a request could not be granted the real reason was given. All this has brought about a more kindly feeling toward the company than ever existed before—a kindly feeling that shows up in the dollars poured into the company's treasury a nickel at a time.

Throughout the year the people have been told that the company was spending more than $100,000 monthly among Kansas City business concerns; that nearly $300,000 monthly went for labor; that $75,000 monthly was spent for fuel, and that more than $1,000 a month went to the city water department for water alone. Added to this the people were told from time to time of the arrival of new cars, a total of seventy-five having been purchased at a total cost of $450,000. When the year was finished the people were told through the newspapers that 9.01 miles of new extensions had been built, and that 16.71 miles of old track had been reconstructed at a total cost of more than $1,000,000.

The management feels that it is partly the doing of these things that brought a more kindly feeling and helped to increase the business. Every piece of literature put out for the purpose of building up travel told of these things.

In discussing the future at the beginning of the new year, President Philip J. Kealy said:

"It has been a splendid ten and a half months. In that time we have kept in advance of the public, but each of us should remember that the public is always on the jump, and if we go to sleep the public will catch up with us. So let's keep on keeping ahead."

Spokane Traffic Case Decided

Owl Service to Continue—One-Man Cars Sanctioned —Consolidation Suggested in the Interest of Economy

The Public Service Commission of the State of Washington has decided that the Washington Water Power Company and the Spokane & Inland Empire Railroad, Spokane, shall continue the owl car service on their lines and that before they operate one-man cars in Spokane they shall submit to the commission for approval lists of routes on their respective lines upon which they desire to operate such cars and that such cars be inspected and approved by the commission before operation. The decision to this effect was rendered by the commission on Jan. 10 in the case of the City of Spokane against the companies mentioned, which came up for hearing on June 9.

CITY'S COMPLAINT

The city alleged in substance that for a long period of time the companies operated owl cars from the center of the city at about 12.30 a.m.; that many persons patronized these cars and to have such service discontinued would be a serious inconvenience; that the respondents were reconstructing cars and operating them with one employee; that there were a number of complaints that the cars were dangerous and the service inadequate and that the public was not properly protected in the operation of the cars.

COMPANIES' DENIAL

The companies denied that it would be a serious inconvenience to the traveling public to have the owl car service discontinued; that the operation of the one-man car was not dangerous or the service inadequate, and that the public was properly protected in the operation of the cars. They also pointed out that the construction and operation of their lines had not been confined to the business and thickly settled portion of the city, but had been extended to the suburbs and into thinly settled districts and that in consequence of the marked decrease in patronage due particularly to the increased use of the motorcycle, private automobile and competition of the jitney, the lines were operated at a loss and that the conditions affecting transportation in Spokane were such that they were compelled to resort to every possible means of effecting economy and reducing the cost of conducting transportation.

OPINION OF COMMISSION

In its opinion the commission said that the testimony in the case showing the financial condition of the companies reflected the true condition. It was not reasonable to presume that the stockholders would long continue to operate properties in which they not only did not receive any return on their investment, but actually suffered a loss. If no relief were found from such conditions "the trolley will come down and the rails will come up." This would be especially true in outlying districts and the commission did not know of any power that it possessed "to compel a public service company to continue to discharge its functions to the public under such conditions." With this condition in mind the commission realized the necessity of using its efforts to preserve to the public a reasonably safe and efficient service without unduly throttling the activities of the carriers in their efforts to operate their systems with the greatest economy. With reference to the owl cars the opinion of the commission was that this service could not well be discontinued without serious inconvenience to a considerable number of patrons, and that to discontinue it would result in only a comparatively small saving to the companies in operating expenses. On that account it felt that the service should be continued. With reference to the near-side stop or one-man cars the commission was of the opinion that the one-man cars could be operated with greater convenience to the public and in some respects greater safety than the cars having a rear entrance and stopping on the far side of a street; and that where cars were not too large and the traffic not too congested they could be operated with reasonable safety and convenience to the public with one man. The commission felt, however, that all cars so used should be first approved by the commission and operated on designated routes.

CONSOLIDATION SUGGESTED

On account of the large area covered by the city of Spokane as compared with the population, the commission suggested to the respondent companies the desirability of a consolidation of the two railways. The commission said that if the consolidation could be accomplished no doubt quite a saving in overhead expenses could be brought about with accruing advantages to the public in service.

B. R. T. Adopts Courtesy Code

New Standard Code of Phrases Expected to Simplify Conductor's Job and Promote Pleasant Relations with Passengers

The surface transportation department of the Brooklyn (N. Y.) Rapid Transit System has adopted a standard courtesy code for surface conductors' and motormen's use in dealing with the public on the cars. The bulletin containing the new code explains that the phrases necessary in dealing with passengers on the cars have been reduced to the smallest possible number, and also that each phrase is expressed in the shortest and simplest language possible. It is pointed out to the employees that by the use of such phrases the public will understand better the necessary requests and explanations which have to be made to them on the cars, and that the conductor who knows the right thing to say at the right time is at a great advantage in the efficient performance of his duties over the conductor who has to stop and think up the phrases in which a given request or explanation should be presented.

The code is divided into four subjects for surface conductors: Cash fares, transfers, protecting passengers when boarding and alighting, and directing passengers on cars, and one subject for surface motormen, comprising the phrases for use in dealing with passengers who are boarding or alighting from the front platform.

Beginning Jan. 27, one of these subjects will be taken up each week in the regular weekly efficiency bulletins of the surface transportation department and the employees will be required to learn during the ensuing week the phrases relating to the subject so presented, and start using them on the cars at once.

The elements of courtesy in the code are presented by three phrases: "Please" when a request is to be made of passengers, or directions given to them; "Excuse me" when a conductor is required to disturb a passenger in a car in any way, and "I am sorry" when a request or a desire of a passenger has to be denied. It is explained that these three phrases will carry the employees through almost any situation that may occur, and they are therefore fundamental in the code.

Missouri-Illinois Fares

I. C. C. and I. T. S. File Motions for Dismissal of Fare Injunction Proceedings

Motions requesting that the United States District Court dismiss the injunction suit filed against them on Dec. 27 by the City Counselor asking that the Illinois Traction System lines be restrained from raising the fare between St. Louis, Mo., and the so-called tri-cities in Illinois from 5 to 10 cents were filed on Jan. 17 by the Interstate Commerce Commission and the Illinois Traction System. Former Governor of Missouri Joseph W. Folk, its counsel, signed the motion of the Interstate Commerce Commission. The motion declares that the Illinois Traction System is a corporation engaged in interstate commerce and as such is subject to the Interstate Commerce Commission by federal act, and that any contract between it and the city, whether by ordinance or otherwise, is subordinate to the powers of the commission. It further states that the District Court has not the jurisdiction to restrain the collection of published interstate rates approved by the commission. The District Court has not yet had any hearings on the injunction suit. The 10-cent fare is now being charged.

Increased Fares Proposed

Schenectady Railway Files Notice of Increase for Its Schenectady-Troy and Schenectady-Saratoga Divisions

The Schenectady (N. Y.) Railway has filed notice with the Public Service Commission of the Second District of New York that it intends to increase fares 5 cents each way on two of the company's lines, the Schenectady-Troy division and the Schenectady-Saratoga division. The increased tariff is to take effect on Feb. 16. The sale of commutation books for travel between Ballston Spa and Schenectady, Ballston Lake and Schenectady, and Troy and Schenectady will be continued at present rates. The increased rates are to be brought about by increasing the 5-cent zones from five to six on the Schenectady-Troy division, making the one-way fare between these cities 30 instead of 25 cents; increasing the 5-cent zones from seven to eight on the Schenectady-Saratoga division, an increase from 35 cents to 40 cents, one way. The company contends among other things that its net income has fallen off until it has reached a point where it is insufficient to maintain the integrity of the company's investment, and is inadequate to enable the company to comply with the requirements of the public service law in regard to providing a fund to care for depreciation and contingencies.

Answers Complaints on Heating

The Southwest Missouri Railroad, Webb City, Mo., has reprinted in pamphlet form part of the testimony presented at hearings before the Public Service Commission for the First District of New York, on the subject of car heating, held during October and November, 1909. The commission had previously issued a regulation that all cars between Oct. 15 and April 15 should be heated to a temperature of not less than 45 deg. or more than 65 deg. Fahr., unless the company was temporarily prevented from doing so by storm, accident or other controlling agency for which it was not responsible, and that a thermometer should be carried in each car displayed conspicuously so that the temperature could be read. At the hearings which followed a number of the New York and Brooklyn railway officials explained the practical difficulties of carrying out a regulation of this kind. In consequence of this testimony the commission modified the order by fixing the minimum temperature at 40 deg. and omitting the provision in regard to the thermometer.

The testimony as published in the pamphlet is taken from the reports of the hearings as printed in the ELECTRIC RAILWAY JOURNAL at the time. The pamphlet also contains a copy of a letter written by Mayor Gaynor of New York to a resident of Brooklyn who had complained to him that the cars in that city were not sufficiently heated. Mayor Gaynor replied that he wished that the companies did not heat their cars at all and recommended to the complainant that he walk back and forth from his office for a month and expressed a belief that at the end of that time he would not care so much about heat in the cars or finding fault with everybody and everything. The Southwest Missouri Railroad has a few extra copies of this pamphlet and so long as they last will send one to any manager who is having a cold car controversy.

In a recent letter, A. H. Rogers, president of the Southwest Missouri Railroad, says: "As a matter of fact we receive more complaints of the cars being too hot than of not being hot enough. From my observations, however, the chilly people are the ones who write letters to newspapers and make complaints to city officials."

Uniform Eight-Cent Fare Asked.—The United Railways & Electric Company, Baltimore, Md., has applied to the Public Service Commission of Maryland for permission to charge a regular fare of 8 cents to Curtis Bay all the time, instead of 5 cents in some instances and 8 cents in others, as at present.

Increase in Wages Demanded at Hamilton, Ohio.—Conductors and motormen on the local lines of the Ohio Electric Railway at Hamilton, Ohio, have asked for an increase of wages, which would give first-year men 25 cents an hour, with an increase of 1 cent for each year of service up to 30 cents an hour.

Petition to Require Sale of Tickets in Books.—The Mayor of Newburyport has petitioned for legislation to provide that every street railway in Massachusetts shall sell tickets or books of tickets for not more than 100 rides within limits of any city or town at a cost not to exceed 5 cents per ride within that city or town.

Non-Parking Ordinance Recommended.—The local transportation committee has recommended to the Chicago City Council the passing of an ordinance prohibiting the parking of automobiles in the loop district during rush hours. It is expected that this ordinance will be passed by the Council and become effective on March 1.

No-Smoking Movement at Toledo.—A letter, signed by 500 employees of the Toledo Shipbuilding Company, was received by E. R. Kelsey, of the Toledo Railways & Light Company, on Jan. 16, asking that smoking on the cars be prohibited. Mr. Kelsey has requested a member of the Council to introduce legislation to that effect.

Safety Campaign Aided by Movies at Toledo.—E. R. Kelsey, manager of the publicity department of the Toledo Railways & Light Company, recently made an address before the Scoutmasters' Association on "What the Boy Scouts Can Do for Safety in Toledo." This was accompanied by pictorial lessons in safety first on a moving picture machine.

Massachusetts Road Asks for 7-Cent Fare Unit.—The Worcester & Warren Street Railway has petitioned the Public Service Commission of Massachusetts for authority to increase its passenger fare unit from 6 to 7 cents, effective on Feb. 19. The road extends from West Warren to Spencer, where it connects with the Worcester Consolidated Street Railway. A 6-cent fare unit has been in force on the road for about ten years. The commission will hold a hearing on the application at Boston on Feb. 1.

Jitneys May Be Summarily Removed.—Chief of Police W. J. Petersen of Oakland, Cal., has announced that he will recommend to the City Council that jitneys be summarily removed from the city streets for violation of the traffic ordinance, if the San Francisco-Oakland Terminal Railways will agree to provide better service during the rush hours and an owl service. Mr. Petersen said that the jitney operators have not been obeying the ordinances and in order to remain on the streets they will have to show that their services are needed.

Near-Side Stop Opposed Because of Unpaved Streets.—New traffic ordinance that has been drawn at Galveston, Tex., for adoption by the City Commission contains several features to which objection is made by the Galveston Electric Company and the Galveston-Houston Electric Railway. One of these is the "near-side" stops. Alba H. Warren, general manager of the Galveston Electric Company, says that lack of paved streets in the residential section of Galveston will make this practically impossible. A public hearing on the proposition will be held by the commission, and consideration will be given to the reasons for the opposition.

Fort Worth Jitney Zone Ordinance Upheld.—Jitneys in Fort Worth, Tex., have lost their fight for an injunction to restrain the city authorities from enforcing the city ordinance prohibiting their operation on Main and Houston Streets, which in effect bars them from the business district of the city. The jitney drivers had appealed to Judge R. E. L. Roy of the Seventeenth District Court, alleging that the city ordinance was illegal in that the city had no authority for issuance of such a regulation as a police regulation. Judge Roy held that the city has authority from the Legislature to deny to public carriers for hire, including jitneys, the use of some of its public streets, and that the ordinance is not invalid because it forbids the use of a portion of Main and Houston Streets to jitneys.

Interstate Fare Increase.—The fare from Portland, Ore., to Vancouver, Wash., is to be increased by the Portland Railway, Light & Power Company from 25 cents to 30 cents for the round trip, when the Interstate Bridge across the Columbia River between the two cities is opened for

traffic. The one-way fare of 15 cents will remain as at present. The fact that the tolls on the bridge will be 3½ cents for each street car passenger that crosses the bridge is responsible for the increase. The new tariffs will become effective on Feb. 15, the date it is expected cars will begin to use the bridge. Until the jitneys began to cut into the travel on the Vancouver run, the fare charged by the railway was 30 cents for the round trip. Later, the company cut the fare to 25 cents to those who bought round trip tickets, and the reduced rate was continued after the jitneys quit the run.

Inquiry Asked Into Binghamton Service.—The Council of Binghamton, N. Y., has requested the Public Service Commission of the Second District of New York to conduct an inquiry into the service furnished by the Binghamton Railway. Among other things the Council requests an improvement in the transfer system, cleaner and warmer cars, a half-fare rate for school children and hourly service on all lines from midnight until 6 a. m. The company has issued a statement in rebuttal in which it declares it has spent $500,000 for improvements since September, 1914. It has also recited these improvements in detail and has answered each charge made against it. Among other things, it says that whereas in 1913 the daily number of pull-ins was between thirty-five and forty the rolling stock has been brought to that point of fitness for service where there are only three or four pull-ins a week now.

Sedalia's Advertising Campaign Told in Booklet.—In an endeavor to acquaint its patrons with its operations, expenditures and aims, the City Light & Traction Company, Sedalia, Mo., operated by Henry L. Doherty & Company, ran a series of bi-weekly advertisements, and at the termination of the campaign compiled the advertisements in a booklet and distributed it among its patrons. The company states in its advertisements that its policy can be expressed in one word, "Friendship," for if the citizens have a feeling of real friendship for the company they will extend their patronage, and the company on its part will respond with "Improved Track Conditions," "More Continuous Service," and "Brand New Equipment." In its publicity campaign the company related that it has expended more than $60,000 in the last four years in an endeavor to prove its desire for the friendship of the public.

Efforts to Relieve Congestion at Columbus, Ohio.—The Council has instructed Director of Public Safety Barry to co-operate with the Columbus Railway, Power & Light Company, Columbus, Ohio, in working out a general re-routing plan for the purpose of relieving congestion and overcrowding of cars. Former efforts to re-route cars have met with opposition, but it now seems necessary to take some of them off High Street. Railway officials say that much of the overcrowding is due to congestion on the streets during the rush hours. H. W. Clapp, general superintendent of the company, said that during the past year eleven new cars have been purchased and eighteen rebuilt, modernized cars have been added. Besides, 136 of the large cars have been rebuilt and standardized. For the present year the company will purchase ten new cars and rebuild and modernize eight cars of the summer type.

C. E. R. A. Distributes Joint Time-Table Folder.—The first issue of the new joint interline folder published under the authorization of the Central Electric Railway Association, covering electric railroads in the association territory in Indiana, Ohio, Michigan and Kentucky, has been distributed for general circulation during the past week. This folder is the result of action taken by the C. E. R. A. as an association, for the promotion of increased passenger travel on the lines of the member companies, and the dissemination of information regarding schedules and the possibilities of interline travel to the patrons of these lines. Only those companies having membership in the C. E. R. A. are allowed to subscribe to the publication of this folder. The first issue of the folder is 50,000 copies, which will be increased in future issues in accordance with the demand. More than 80 per cent of the entire mileage of interurban roads in the C. E. R. A. territory is included in this joint folder. The distribution of the folder through approximately 700 time-table racks in ticket offices, hotels, etc., covers seven states, including ninety-five different cities.

Personal Mention

J. O. Shinn has been elected treasurer of the Water, Light & Transit Company, Carrollton, Mo.

H. E. Weyman has been appointed master mechanic of the Levis County Railway, Levis, Quebec.

John Cotter has been appointed roadmaster of the Joplin & Pittsburg Railway, Pittsburg, Kan.

A. F. Lane has been elected president of the Ephrata & Lebanon Street Railway, Ephrata, Pa.

C. A. Trimble has been elected treasurer of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill.

J. C. Phillips has been appointed secretary and treasurer of the Missoula (Mont.) Street Railway.

F. W. Cherry has been appointed receiver of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill.

G. E. Troll has been appointed auditor of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill.

S. A. Moss has been appointed claim agent of the Wichita Railroad & Light Company, Wichita, Kan.

A. H. Dennis has been appointed chairman in charge of the Fort William (Ont.) Electric Railway.

Homer G. Brown has been elected president of the Sacramento Valley Electric Railroad, Dixon, Cal.

J. H. Berry has been appointed electrical engineer of the Maryland Electrical Railways, Annapolis, Ind.

H. O. Evans has been elected vice-president of the Ephrata & Lebanon Street Railway, Ephrata, Pa.

Phifer Smith has been appointed electrical engineer of the Bangor Railway & Electric Company, Bangor, Me.

F. M. Turnbull has been appointed auditor of the Trans-St. Mary's Traction Company, Sault Ste. Marie, Ont.

Penrose Spencer has been elected president of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col.

H. L. Hansen has been appointed assistant treasurer of the Rutland Railway, Light & Power Company, Rutland, Vt.

W. J. Devine has been appointed assistant secretary of the Kentucky Traction & Terminal Company, Lexington, Ky.

H. F. Kirk has been appointed purchasing agent of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind.

J. J. Smith has been elected second vice-president of the Sacramento Valley Electric Railroad with office at Brooks, Cal.

W. J. Bohon has been appointed secretary and general manager of the Glendale & Montrose Railway, Glendale, Cal.

Philip J. Kealy, president of the Kansas City (Mo.) Railways, was married on Jan. 23 to Miss Josephine H. Crowley of Washington.

Frank O'Brien has resigned as master mechanic of the Wheeling (W. Va.) Traction Company to accept the position of master mechanic of the Lansing shops of the Michigan Railway.

Edward A. Maher, Sr., vice-president and general manager of the Third Avenue Railway, New York, N. Y., on Jan. 26 was elected president of the company to succeed the late Frederick W. Whitridge.

Col. Bruce Cameron, superintendent of the United Railways, St. Louis, Mo., acted as chief of staff to Governor Frederick D. Gardner of Missouri, at the latter's inauguration on Jan. 8 in Jefferson City.

P. C. Paddock has been appointed purchasing agent of the United Railroads of San Francisco, San Francisco, Cal. Mr. Paddock before his recent appointment had been assistant purchasing agent snce last June.

Travis H. Whitney, member of the Public Service Commission of New York, First District, contributed a communication to the New York *Evening Sun* of Jan. 23, out-

lining the problems attending the construction of New York's new rapid transit facilities.

H. G. Louser, superintendent of the Reading Transit & Light Company, at Lebanon, Pa., has resigned this position in order to take an active interest in the Lebanon Electric Company.

Oliver H. Hughes has been appointed by Governor James M. Cox as a member of the Ohio State Public Utilities Commission, to succeed Louis M. Day. Mr. Hughes had been a member of the commission eleven years, previous to the administration of Governor Frank Willis.

S. J. Witt has been made master mechanic of the West Penn Railways, with office at Connellsville, Pa. Mr. Witt has been in the employ of the company for eleven years and has been night foreman, day foreman and general foreman. He takes the position formerly held by Daniel Durie, who for some time has been superintendent of railway operation of Division A of the West Penn system.

E. J. Mehren has been elected first vice-president of the McGraw Publishing Company, Inc., New York, N. Y., publisher of the ELECTRIC RAILWAY JOURNAL to succeed Hugh M. Wilson, whose resignation took effect on Jan. 1. Mr. Mehren has been editor of the *Engineering Record* for a number of years and will still continue as editor of that paper, devoting to that duty about half of his time.

Eliot Wadsworth of the firm of Stone & Webster, Boston, Mass., has retired from this organization in order to assume the direction of the American Red Cross as acting chairman of the Central Committee in Washington. Mr. Wadsworth graduated from Harvard in 1898, and in the same year entered the employ of Stone & Webster. First at Tampa, and later at El Paso and Dallas, he represented the firm in various capacities. In 1901 he organized the corporation department, and in 1902 the securities department. In 1909 he was admitted to partnership.

George H. Pegram, chief engineer of the Manhattan Elevated Railroad, the Interborough Rapid Transit Company, the Rapid Transit Subway Construction Company and the New York Railways Company, was elected president of the American Society of Civil Engineers at the annual meeting in New York this week. Mr. Pegram's experience in the civil engineering field covers a period of forty years, most of it in railroad work. In 1898, when the construction of a subway in New York City first was being urged strongly and seemed likely to be undertaken, the Manhattan Railway decided to build a number of extensions. It was then that Mr. Pegram was offered the position of chief engineer. The extensions were developed, but the introduction of electricity as a motive power added to the engineering department's responsibility. His appointment as chief engineer of the Interborough Rapid Transit Company and of the Rapid Transit Subway Construction Company came in 1905. Seven years later he was made chief engineer of the New York Railways Company. Among important works to be credited to him are the invention of the Pegram truss, the design of the Kansas City Elevated Railroad and that of the train-shed of the Union Terminal Station at St. Louis.

GEORGE H. PEGRAM

Obituary

James A. MacElhinny, counsel and secretary of the New York & North Shore Traction Company, Roslyn, N. Y., since its organization, died on Jan. 18 at his home in Port Washington, L. I., from pneumonia. Mr. MacElhinny was a graduate of Georgtown and Columbia Universities and was admitted to the bar in 1879.

Construction News

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

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

RECENT INCORPORATIONS

***Springfield-Carbondale Railway, Springfield, Ill.**—Incorporated to construct an electric railway from Springfield to Carbondale, via Hillsboro, Greenville, Carlyle, Nashville and Pinckneyville. Capital stock, $100,000.

***Transcona Electric Railway, Winnipeg, Man.**—Application for incorporation has been made to the Legislative Assembly by the Transcona Electric Railway, with power to construct, operate and equip electric railways, and also to carry on an electric light, power and gas business. Moran, Anderson & Guy, 402 Electric Railway Chambers, Winnipeg, are solicitors.

Coatesville (Pa.) Trolley Company.—Incorporated to construct a 5-mile trolley line. Capital stock, $30,000. H. I. Schotter, Coatesville, president. [Dec. 23, '16.]

FRANCHISES

San Diego, Cal.—The Los Angeles & San Diego Beach Railway has received a franchise from the Council to construct a line in San Diego.

San Diego, Cal.—The San Diego & South Eastern Railway has received a franchise from the City Council of San Diego to construct tracks on several blocks of N. Street, National Avenue and other streets.

East St. Louis, Ill.—The East St. Louis & Suburban Railway has received a franchise from the City Council of East St. Louis granting the company the exclusive right to operate cars over Piggott Avenue. The ordinance gives the company authority to sublease any portion of the Piggott Avenue line to any company desiring to enter the city.

Quincy, Ill.—The Quincy Railway has asked permission from the City Council for the construction of two loops, one at the northeast corner of Tenth and Sycamore Streets and the other at the southwest corner of Ninth and Locust Streets.

Waukegan, Ill.—The Chicago, North Shore & Milwaukee Electric Railroad has submitted a new franchise to the Council of Waukegan. Among the features of the proposed new ordinance are the possibilities of the extension of the Washington Street line and the construction of a powerhouse and carhouse in Waukegan. While the company is not willing to pave Glen Flora Avenue, it is considered likely that it will pay the $60,000 lump concession which has been tentatively agreed upon. The company is replacing all wooden poles with steel or iron, and will relay all tracks with 90-lb. rails, the tracks on North Avenue and Glen Flora Avenue to the tannery to be laid within eighteen months after the franchise is passed.

Canton, Ohio.—The Northern Ohio Traction & Light Company has received a franchise from the Council to construct extensions of its lines in Belden Avenue N.E. and Eighth Street N.E. and in Belden Avenue S.E., both lines to connect with the Tuscarawas Street E. line.

Vancouver, Wash.—With only one or two minor changes, the City Council of Vancouver passed the franchise ordinance granting the Portland Railway, Light & Power Company the right to lay tracks on three streets adjacent to the Interstate Bridge approach across the Columbia River between Portland, Ore., and Vancouver, Wash. The franchise extends for five years, and the company is to maintain the paving between the rails, and for 1 ft. each way. It is optional with the Council to renew the grant after Dec. 31, 1921.

Neenah, Wis.—A new franchise will be granted by the City Council of Neenah to the Wisconsin Traction, Light, Heat & Power Company for extending its lines in Neenah.

TRACK AND ROADWAY

Arkansas Northwestern Railroad, Bentonville, Ark.—Plans are being made to resume operation of this company's line between Bentonville and Rogers. Service was discontinued several months ago, when the St. Louis & San Francisco Railway Company increased the rental on a portion of its track which was used by the company.

The Pine Bluff (Ark.) Company.—This company reports that during 1917 it will construct 1¼ miles of new track.

Northern Electric Railway, Chico, Cal.—The Railroad Commission of California has issued a supplemental opinion in the application of the Vallejo & Northern Railway for permission to build its tracks at grade across the tracks of the Southern Pacific Company in Suisun, extending the time in which the Vallejo Railway & Northern must complete a subway ordered to be constructed by the Commission. A temporary grade crossing was installed to enable the company to secure an entrance to Suisun, and business in Suisun has been adjusted to fit this new line.

Grass Valley, Cal.—The Empire Mines Company has received a permit from the Board of Supervisors to construct an electric railway to connect the Empire and Pennsylvania mines. [Sept. 30, '16.]

Municipal Railways of San Francisco, San Francisco, Cal.—Construction of the line through the Twin Peaks Tunnel will be begun by the Municipal Railways of San Francisco on July 1, and it is expected that the line will be in operation by Sept. 1.

Lordship Company, Bridgeport, Conn.—This company plans to construct a line from Lordship Manor to Hard's Corner, Stratford, this summer. When complete, the Lordship Company will connect with the Connecticut Company's lines at Hard's Corner, extending southerly in Main Street, Stratford, to Lordship, and through Lordship Manor to Hollister and Stratford Avenues, again connecting with the lines of the Connecticut Company. The company recently decided to construct a boardwalk at Lordship, along the shore for about a third of a mile, a building to be used as a restaurant, a large pavilion on the beach for public use, and other features.

Bristol & Plainville Tramway, Bristol, Cnn.—This company has filed a petition to the General Assembly for an amendment to its charter to extent the time to construct and operate a line of not more than two tracks on Main Street, South Street, Wolcott Street, Hill Street, and West Street, Bristol.

***Washington, D. C.**—It is reported that a contract has been closed with the Southern Finance & Construction Company, Nashville, of which John K. Parsons, Wilmington, Del., is president and R. B. Herzer, Nashville, is secretary, to construct a line from Washington, D. C., to Gettysburg, Pa., 75 miles.

Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill.—The Urbana & Champaign Railway, Gas & Electric Company will soon place in service two new turnouts in the eastern part of Urbana to facilitate meeting the city cars of this company with the interurban cars of the Illinois Traction System. The company will also construct some special work in Urbana in order to give the Kankakee & Urbana Traction Company, operating over its lines through trackage agreements, physical connection with the tracks of the Wabash Railway.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—The rehabilitation of this company's property in Waukegan this year includes expenditures to the amount of $250,000, the plans including new lines to be laid on North Avenue and Glen Flora Avenue and improvements along the right-of-way of the West line.

Southern Illinois & St. Louis Railway, Harrisburg, Ill.—This company reports that construction will be begun this spring on its proposed line to connect Harrisburg, Pittsburgh, Marion, Johnston City, West Frankfort, Benton and Herrin, 60 miles. Contracts have been awarded to the American Car Company, St. Louis, Mo., for eighteen motor cars; to the General Electric Company, Schenectady, N. Y., for the electrical equipment; to the Illinois Steel Company, Chicago, Ill., for 70-lb. rails; to the Rail Joint Company, Chicago, for rail joints and to the Indiana Tie Company, Evansville, Ind., for ties. Frank Payne, Marion, general superintendent. [Dec. 2, '16.]

Lincoln Railway & Heating Company, Lincoln, Ill.—A company of local citizens is being organized to take over the railway business of the Lincoln Railway & Heating Company. Operation was suspended about two months ago.

St. Joseph Valley Railway, Elkhart, Ind.—It is reported that this company's proposed extension to Pioneer will be completed this summer. It is expected that the line will connect with the Toledo & Western Railroad at Pioneer.

Interstate Public Service Company, Indianapolis, Ind.—This company will construct 2900 ft. of second main track near Indianapolis.

Louisville & Southern Indiana Traction Company, New Albany, Ind.—This company proposes to construct an extension from Jeffersonville to the Howard Shipyards for passenger and freight traffic.

Fort Dodge, Des Moines & Southern Railway, Boone, Iowa.—A report from the Fort Dodge, Des Moines & Southern Railway states that during this year the company will construct 10 miles of line connecting Fort Dodge and Brushy to permit operation to Webster City and Lehigh on the old Crooked Creek Railway, now a part of the Fort Dodge, Des Moines & Southern Railway.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—The new bridge over the Kaw River has been completed and is now being used by the Kansas City, Kaw Valley & Western Railway. The temporary bridge is now being torn down.

***Wichita, Kan.**—William R. Burr, Washington, D. C., is interested in the construction of an electric railway to connect Wichita with the oil fields of Augusta and El Dorado.

Kentucky Traction & Terminal Company, Lexington, Ky.—This company plans the expenditure of $200,000 during 1917 for improvements and extensions to its system.

***Boothbay Harbor, Me.**—Luther Mattocks, Boothbay Harbor, is interested in the proposed construction of an electric railway to connect with the Lincoln and Knox County division of the Maine Central Railroad. It is estimated that the cost would be about $150,000, and it is stated that financiers have agreed to furnish half of this amount.

Kansas City (Mo.) Railways.—The following extensions have been ordered by the Kansas City Railways for this year: Indiana Avenue from Thirty-sixth to Forty-third Streets; Twenty-fifth Street from Grand to Troost Avenues; Broadway from Southwest Boulevard to Twenty-fifth Street; Twenty-fifth Street from Broadway to Summit Street; Troost Avenue from Forty-eighth to Fifty-fifth Street; St. John Avenue from Belmont to Bennington Avenue; Cambridge and Winchester Avenues, Kansas City and Independence electric line to Fifteenth Street; Woodland Avenue from Forty-third Street to Swope Parkway; Hardesty Avenue from St. John Avenue to Saida Avenue; Twenty-seventh Street from Chelsea to Denver Avenue; Thirty-ninth Street from Summit to Main Street.

United Railways of St. Louis, St. Louis, Mo.—A report from the United Railways of St. Louis states that it will construct 1 mile of new track in the city of Maplewood during 1917.

Brooklyn, N. Y.—Plans have been approved for the construction of a new bridge across Sheepshead Bay at the foot of Ocean Avenue. The proposed structure will be 700 ft. long and 80 ft. wide, of concrete and steel, with room for a double trolley track. The structure will cost about $200,000.

Brooklyn (N. Y.) Rapid Transit Company.—Bids are now being invited by the Public Service Commission for the First District of New York, to be opened on Feb. 7, for the relocation of the tracks in New Utrecht Avenue, Brooklyn, between Thirty-ninth and Eighty-first Streets, about 2½ miles. Half the cost of the work is to be borne by the Nassau Electric Railroad, a subsidiary of the Brooklyn Rapid Transit Company, and half by the city. There are two surface tracks at the present time on New Utrecht Avenue, located near the easterly curb. They were formerly used for the operation of West End trains, but upon the construction of the New Utrecht elevated line the tracks were given over to trolley operation. The

new tracks will be located approximately in the center of the street.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—This company expects to construct 2 miles of new track in Erie, Pa., during 1917.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission for the First District of New York has awarded two contracts covering the construction of the Livonia Avenue extension of the Eastern Parkway in Brooklyn. The contract for supplying the necessary steel was awarded to the American Bridge Company, New York, the lowest bidder, at $1,431,755. The contract for the erection of the steel, and other construction work, was awarded to W. G. Cooper, New York, the lowest bidder, at $257,164. The Livonia Avenue extension is a two-track elevated line to be operated by the Interborough Rapid Transit Company when completed. All work under these contracts is to be done within fifteen months of the delivery of the contracts.

New York, Westchester & Boston Railway, New York, N. Y.—It is reported that this company will construct an extension from White Plains to Danbury.

Empire United Railways, Syracuse, N. Y.—Plans are being made by the Empire United Railways to double-track its line on West First Street, Oswego, from Bridge to Utica Streets, at a cost of about $30,000.

Goldsboro (N. C.) Electric Railway.—This company expects to construct an extension from Belleme to Greenleaf, ½ mile.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.—The Cleveland, Southwestern & Columbus Railway has asked the Public Utilities Commission of Ohio for permission to issue $213,278 in bonds to finance improvements and extensions.

Hillsboro, Cynthiana, Bainbridge & Chillicothe Traction Company, Hillsboro, Ohio.—At a recent meeting of the Hillsboro, Cynthiana, Bainbridge & Chillicothe Traction Company, which proposes to construct a line from Hillsboro to Chillicothe, the following officers were elected: J. W. Watts, Hillsboro, president; N. J. McGuire, Indianapolis, Ind., first vice-president; Berry W. Spargur Marshall, Ohio, second vice-president; J. C. Anderson, Chillicothe, Ohio, secretary-treasurer; and R. R. Faulkner, Indianapolis, general manager. [Dec. 30, '16.]

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—This company plans to construct a temporary track across the South Avenue viaduct which will connect with the Cedar Street and Poland Avenue lines until the new bridge is built.

Port Credit, Ont. — The hydro-radial by-law has been passed by all the municipalities interested from Port Credit to St. Catharines and from Welland to Bridgeburg, with the exception of Hamilton.

Toronto (Ont.) Civic Railway.—The construction of a civic car line on Dufferin Street from the city limits to the Exhibition Grounds is under consideration.

Toronto (Ont.) Railway.—An order has been issued by the Ontario Railway Board to the Toronto Railway to begin the construction of the Pape Avenue extension not later than April 1. The order states that a double track shall be laid on Gerrard Street northerly along Carlaw to Guelph Avenue, then east to Pape Avenue and north to near Danforth.

Southern Pacific Company, Portland, Ore.—It is reported that the Southern Pacific Company plans to construct a line between Portland and Salem.

Jackson Railway & Light Company, Jackson, Tenn.—Work has been begun by the Jackson Railway & Light Company reconstructing its track on Market Street and Highland Avenue.

***Martinsburg, W. Va.**—Surveys are being made for a proposed electric railway from Martinsburg through Jefferson County and into Loudoun County, Va., to connect with the Washington & Old Dominion Railway, which operates a line from Washington, D. C., to Bluemont, Va. The Martinsburg Power Company, Martinsburg, is reported interested.

Milwaukee Western Electric Railway, Milwaukee, Wis.—At the annual meeting of the stockholders of the Milwaukee Western Electric Railway, a plan was adopted, by which a holding company will be formed under the laws of Delaware, to supervise and control the railway. This corporation will be known as the Milwaukee Western Railway Company, with a capital of $2,750,000, of which $2,000,000 will be common stock and $750,000 will be 6 per cent cumulative preferred stock. The property will be owned and operated by the Milwaukee Western Electric Railway Company. Eighty per cent of the stock of the company has been transferred to the holding company, and a committee of Milwaukee business men will shortly start a campaign to complete the right-of-way from Milwaukee through New Butler to Alderly. Committees of business men from towns along the line have been organized to connect the links from Alderly to Fox Lake. With franchises secured for hauling freight, milk, express and mail through Milwaukee, and over the entire route of 74 miles, and with most of the right-of-way held by deeds, ownership of depot sites, and land for park purposes established and gravel purchased, actual construction work will soon be under way. In Milwaukee, the electric railway will pass over the tracks of the Milwaukee Electric Railway & Light Company on Lisbon Avenue, Walnut and Third Streets to the Public Service Building. Fox Lake will be the terminal for the first division of the road to be built now. Eighteen lakes and resorts will be served by the Milwaukee Western Electric Railway, J. W. Barber, Milwaukee, secretary. [Mar. 4, '16.]

SHOPS AND BUILDINGS

Illinois Traction System, Peoria, Ill.—It is reported that this company plans to erect a new modern passenger and freight station in Danville. The new building will have a frontage of 125 ft. on Vermilion Street and will extend west 200 ft. to Walnut Street. The train shed will extend west from the Vermilion Street side and the freight house will be on the Walnut Street side. New tracks will be laid and the cars will avoid passing through the congested public square.

POWER HOUSES AND SUBSTATIONS

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—During 1916 the Arkansas Valley Railway, Light & Power Company constructed 37½ miles of 13,000-volt transmission line and 32 miles of 22,000-volt transmission line, serving the mining and agricultural districts. The 1917 program of the company includes the construction of 10 miles of 13,000-volt transmission line to serve several large irrigation projects. Transformers are being installed in the Cripple Creek district by the company for the 200-hp. slime pumps at the Portland mill. Wires and circuits in the Canon City district are being rearranged.

Morris County Traction Company, Morristown, N. J.—The Morris County Traction Company has closed down its plants at East Dover and Chatham and now secures energy from a substation erected at the foot of Mine Hill, which is operated by the New Jersey Power & Light Company, Dover, N. J.

Lehigh Valley Transit Company, Allentown, Pa.—This company is installing a new 10,000-hp. steam turbine at its power plant in Allentown.

Reading Transit & Light Company, Reading, Pa.—The Metropolitan Electric Company, operating in Reading and vicinity, has constructed nearly 100 miles of transmission lines during the past year in the territory served by that company and the Reading Transit & Light Company. Connections have been made with the properties of the American Gas Company at Pottstown and the United Gas Improvement Company at Norristown. Construction is well along on the transmission line of the Reading Transit & Light Company at Lebanon, which, it is expected, will be finished early in the spring.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—Plans are being prepared for the erection of an addition to the power plant of the Milwaukee Electric Railway & Light Company in Racine, to cost about $18,000, it is estimated.

Manufactures and Markets

Discussions of Industrial Conditions
A Department for the Manufacturer, Salesman and Purchasing Agent
Rolling Stock Purchases Business Announcements Trade Literature

Checking Up the Cost of Last Year's Maintenance Material

A Review of Purchases, Amounting to More Than $1,000,000 for the Last Twelve Months, Shows Large Increases

BY H. J. VANCE
Purchasing Agent Illinois Traction System

At the end of one busy year and at the beginning of another that apparently will excel in complexities, a thorough review of just how prices have been averaging is being made by the purchasing department of the Illinois Traction System and other McKinley System public utilities. This review takes into account the total purchases for maintenance purposes covering a period of twelve months. These purchases will amount to more than $1,000,000. The accompanying list covers a little less than one-fourth of the total.

Each article or class of material bought for maintenance use is considered separately, and the percentage of increase in price is shown. It should be noted that the percentages do not mean the actual percentage of increase in the present market over that of normal times but represent the actual percentage so far as the individual purchase of the McKinley properties are concerned.

The list here shown covers $274,125 worth of purchases for maintenance purposes, of which amount $49,133 is for material which through contract or forced buying does not show any increase over normal times, and, of course, this reduces the percentage as a whole. On the basis of the purchase of $274,125 worth of material, $49,133 of which bears no increase, the actual percentage of increase on the whole is 22½ per cent.

It will be noted, however, from the list, that it does not include copper wire nor steel products to any great extent. When these are included in the other three-quarters of the completed list, it is estimated that the general increase will be between 35 per cent and 40 per cent.

French Industrial Conditions

Report of Commission Discloses Large Field in France for American Manufacturers After the War

The American Industrial Commission to France has made public parts of its report to the American Manufacturers' Export Association on the probable conditions which will confront the industries of France at the close of the war. Interest in the report to electrical manufacturers is heightened by the character of the commission. At its head was W. W. Nichols, assistant chairman Allis-Chalmers Manufacturing Company, Inc., and among the other twelve American engineers or business men who were members of the commission were Dr. C. O. Mailloux, consulting engineer, New York, and J. E. Sague, former New York Public Service Commissioner. The president of the American Manufacturers' Export Association is E. M. Herr, president Westinghouse Electric & Manufacturing Company. The commission sailed from New York on Aug. 26, 1916, and after landing at Bordeaux, made a comprehensive tour of the industrial regions of France.

The portions of the report made public say, in part:

"Even at this time, with the war raging, it was found that there is much reconstruction and new building ready to be undertaken. When peace comes, the amount of construction of industrial plants generally will be large. This applies both to France and Belgium. Since the war a number of companies in the north, unable to operate their mills, have started new plants in other sections of France. We often heard the hope expressed that—after the war—American manufacturers and American capital would cooperate with French interests and erect new plants in France.

"France and America are not likely to be serious competitors in the world market because their strength lies in different directions. Our manufacturing practice is the result of a great uniform steady home demand from one end of the country to the other. Our manufacturers export

INCREASE IN MAINTENANCE MATERIALS FROM RECORDS OF ILLINOIS TRACTION SYSTEM

	Per Cent		Per Cent		Per Cent		Per Cent
Acids	67	Brushes, carbon	6	Connectors, miscellaneous	30	Files, office	8
Alcohol	43½	Brushes, copper	22	Compensators	6	Fillings, spark cap arrester	66
Aluminum sulphate	140	Brushes, paint	11	Compounds, various kinds	4	Films, duplicator	4
Ammonia	11	Brooms, mops, etc.	16⅔	Cones, lightning arrester	2½	Fire extinguishers, etc.	1
Armature coils, etc.	14	Busbar copper	200	Contact fingers	5	Fire clay	7
Armored conductor	25	Burners	9⅓	Contactor repairs	7	Fittings, miscellaneous	16
Asbestos cement	25⅔	Bushings	8	Controllers and repairs	15	Flags and staffs	24
Asbestos mill board	120	Buttons	5	Copper cable	141	Forms	24
Ash, soda	7	Cabinets, cut out	4	Cord, sash	14	Fuses	16⅔
Attachments	25	Cams	6½	Crucibles	190	Fuse cutouts	29
Axes	11	Candles	20	Couplers, miscellaneous	12	Gas bags	15
Axles	19	Canopies	10	Covering, pipe	25	Gas and hose cocks	33⅓
Awnings	72	Cans, waste	31	Cups, grease	6	Headlight repairs	4
Badges, property	2½	Canvas	25	Cuspidors	25	Heater repairs	1⅓
Bars, angle	221	Caps	7	Cutters, miscellaneous	3	Hinges, butts, etc.	9
Bars, claw	32	Cases, bond	10	Covers, miscellaneous	1	Lamp cord	41
Bars, digging	31	Cases, pillow	22	Dampers	8	Lanterns, switch lamps, etc.	8⅓
Bars, lining	10	Cases, transfer	9	Detector, voltage	10	Lightning arresters	14
Bars, oval	27	Casings, tire	4	Dextrine, yellow	20	Long pull bar ends	6
Bars, trolley	40	Castings	14	Dimelites	15	Lock nuts, washers, etc.	36
Bearings	12	Castings, bronze	25	Discs, valve	21	Money drawer	17
Bellows	11	Catchers, trolley	11	Disinfectants	5	Motor cars and repairs	17
Belting	3⅔	Catches	20	Drills, carbon steel	20	Oil repairs	14
Bends	29	Carbons	20	Drills, twist	63	Pails, galvanized, etc.	56
Binders	5	Cards, index	35½	Drilling	19	Paper clips	6
Bits	88	Carpet	3	Duck, canvas	34	Paper, fish	19
Board, miscellaneous	17	Cells	57	Dynamite	30	Retriever parts	6⅓
Bodies, socket	11	Circuit breakers	9	Ells, miscellaneous	21	Sand paper and emery	26
Boiler cleaners	1	Claim backs	55	Ends, aisle	4	Smithing coal	8
Bolts	71½	Clamps, miscellaneous	7	Envelopes	25	Spring cotters	48
Bolts, track	53	Clevices	15	Eyes, suspension	9	Stove pipe, etc.	21⅔
Bonds, rail	31	Clips	12	Eyes, screw	31	Switch blocks	8
Books	11	Clock dials	3	Eyelets	25	Tool bags	28
Borax	20	Cloths, miscellaneous	15	Fans, exhaust	10	Torpedoes	13⅓
Boxes, miscellaneous	8	Chain, lamp	34	Fasteners, paper	45	Trolley cord	8
Blades, hacksaw	27	Chairs, office	4	Faucets, petroleum	7	Trolley crossings and crossovers	24
Blocks, tackle	31	Chamois	8	Fenders, car	33	Trolley harps, etc.	13⅓
Blotters	100	Chisels	8	Felt, tarred	31	Trolley poles, bases, etc.	18½
Braces, crossarm	42	Coil chain	17	Ferrules, condenser	30	Twine	48
Brackets	7⅔	Coin bags	6	Fiber, drags	3	Twine, Barbour's	86
Brake beams	2¾	Cogs, bevel	4	Fiber, sheet	67	Valve chambers	10
Brakes, hand wheel	10	Coke	100	Figures, steel	6	Water backs	2
Brass	48	Collars, miscellaneous	7	Files	24	Wheelbarrows	20
Brasses, journal	54½	Commutators	10	Files, machinists'	23		

only their surplus products, and they can only export them as they are, as they cannot profitably make a smaller amount of merchandise differing from their usual output. Wherever, therefore, the American manufacturers turn out a product which as it stands meets the requirements of foreign trade, they are strong. Certain typical American specialties, sewing machines, cash registers, typewriters, etc., fear no rivals.

"Broadly speaking, French industry has arisen to satisfy its own home wants, which are not large, but very diversified. France has adapted her industry to meet the varied wants of Europe and America, and this has qualified her in a peculiar degree to fill relatively small orders in special artistic goods with special imprints and in special styles with great profit to herself."

So far as railway supplies are concerned, the commission believes that after the war America may be called upon to supply a considerable number of the detailed parts of locomotives and cars, such as axles, journal boxes, wheels and tires. The commission said that it could see no good reason why chilled cast-iron car wheels should not be extensively used on the French railways in freight service. In track material, this country could probably furnish rails to good advantage until the French, Belgian and British mills are able to produce them in sufficient quantity.

Boston Elevated Purchases Thirty-five Large Cars

Permission has been granted by the Massachusetts Public Service Commission to the Boston Elevated Railway to purchase thirty-five steel cars for service in the Cambridge subway and Dorchester tunnel extension to Andrew Square. The contract for the cars has been awarded to the Pressed Steel Car Company, Pittsburgh, Pa., and the trucks to the J. G. Brill Company, Philadelphia. It is expected that the contract for motors will be awarded this week. In a recent letter to the commission, President Matthew C. Brush of the railway company stated that the cost of these cars complete will be about $18,500 each, compared with $11,415 each for similar cars in 1912. Mr. Brush expressed regret at being obliged to purchase cars at the above advance, but informed the board that such action is necessary in order to be prepared for the opening of the tunnel to Andrew Square. The new cars are similar to those already in service in the Cambridge subway and are 69 ft. 2½ in. long over all, seating seventy-two passengers each. The distance from center to center of trucks is 51 ft., and the total estimated weight loaded with 291 passengers at 140 lb. each is 127,147 lb. The total weight of the car light is 86,407 lb., various included weights being body, 41,393 lb.; trucks, 21,961 lb.; two motors without gears, 12,300 lb.; air-brake equipment and piping, 3518 lb.; controlling equipment and conduit, 5620 lb.; miscellaneous, 1615 lb.

National Foreign Trade Convention

The chief topic of discussion at the fourth National Foreign Trade Convention, held in Pittsburgh, Pa., on Jan. 25-27, was the future of the foreign trade of this country after the cessation of hostilities in Europe. In a special report the National Foreign Trade Council called for the immediate enactment of the Webb bill, establishing authorized co-operation among American exporters. Except for certain House amendments, the elimination of which was urged, the Council declared the bill necessary to avert a disastrous condition of "European co-operation versus American-compelled competition" after the war.

Willard Straight, vice-president American International Corporation, New York, N. Y., in speaking on "The Foreign Trade Aspect of the Tariff," stated that the tariff might be utilized for the encouragement of export trade in either or both of two ways—through reciprocal tariff concessions, or by the threatened application of retaliatory measures to prevent discriminations.

Lewis E. Pierson, chairman Irving National Bank, New York, N. Y., was of the opinion that foreign credit practices could be improved. In the course of his address on this subject he said:

"With a few notable exceptions the attitude of American banks toward the extending of credit to foreign customers is very much open to criticism. If we are to become the great creditor nation of the world we must assume the responsibility and develop the liberality which go with that exalted position.

"There is no legislative panacea for the ills of our banking situation in foreign trade. As a basis for constructive results I would suggest the appointment by the National Foreign Trade Council of a committee to co-operate with a committee of the American Bankers' Association to study the question of American banking in foreign trade and make recommendations."

CURRENT PRICES FOR MATERIALS

Quoted Thursday, Jan. 25.

Copper (electrolytic)	New York, 31 cents per pound
Rubber-covered wire (base)	New York, 38 cents per pound
Tin (straits)	New York, 45½ cents per pound
Lead	New York, 7¾ cents per pound
Spelter	New York, 10 cents per pound
Rails, A. S. C. E., O. H.	Mill, $40 per gross ton
Rails, A. S. C. E., Bess	Mill, $38 per gross ton
Wire nails	Pittsburgh, $3 per 100 pounds
Steel (bars)	Pittsburgh, 3.25 cents per pound
Sheet iron (black, 28 gage)	Pittsburgh, 4.50 cents per pound
Sheet iron (galv., 28 gage)	Pittsburgh, 6.25 cents per pound
I-beams over 15 in.	Pittsburgh, 10 cents per pound
Galvanized wire	Pittsburgh, 3.65 cents per pound
Cement (carload lots) without rebate for sacks,	New York, $1.97 per barrel
Cement (carload lots)	Chicago, $1.96 per barrel
Cement (carload lots)	Seattle, $2.20 per barrel
Linseed oil (raw, 5-bbl. lots)	New York, 96 cents per gallon
Linseed oil (boiled, 5-bbl. lots)	New York, 97 cents per gallon
White lead (100-lb. keg)	New York, 9¾ cents per pound
Turpentine (bbl. lots)	New York, 55½ cents per gallon

OLD METAL PRICES

Copper (heavy)	New York, 28½ cents per pound
Copper (light)	New York, 24 cents per pound
Red brass	New York 18 cents per pound
Yellow brass	New York, 17½ cents per pound
Lead	New York, 6.85 cents per pound
Steel car axles	Chicago, $34 per net ton
Zinc	7½ cents per pound
Iron car wheels	Chicago, $19 per gross ton
Steel rail (scrap)	Chicago, $24.50 per gross ton
Steel rail (relaying)	Chicago, $30 per gross ton
Machine shop turnings	Chicago, $9.25 per net ton

Track Circuit Signaling Work Inactive

The manufacturers of track-circuit control automatic block signals report little activity in new work in the electric railway field. Probably the most important job recently completed was the installation of 11 miles of automatic blocking on the Brazil division of the Terre Haute, Indianapolis & Eastern Traction Company in Indiana. One or two prominent interurban systems have recently made inquiries regarding a considerable amount of blocking, but the activity is not sufficient to warrant the statement that these roads will shortly purchase signaling material in any considerable quantity.

Some interurban roads which installed automatic blocking within the last two or three years purchased, at the time of the first installation, certain equipment for future construction work. It is stated that these roads still have the material in their storehouses and that financial and operating conditions have not warranted the erection cost.

The managers of the electric railways, particularly in the interurban territory of the Central States fully recognize the value of signaling, and there is no doubt that when financial conditions are relieved and the high cost of manufactured products seeks its earlier level, there will be an active resumption of block signal work.

ROLLING STOCK

International Railway, Buffalo, N. Y., announces that it will purchase fifty new cars of the front and rear entrance and center-exit type to be used on the city lines.

Montreal & Southern Counties Railway, Montreal, Canada, has placed an order with the Ottawa Car Company for three motor and three trailer cars.

Public Service Railway, Newark, N. J., has ordered fifty open and 100 closed cars from the Cincinnati Car Company. The open cars will be similar to the large open-bench cars described in the ELECTRIC RAILWAY JOURNAL of June 19, 1915, and will be equipped with GE-200 motors with PC control.

The closed cars are similar to those built in the company's shop and described in the ELECTRIC RAILWAY JOURNAL of Jan. 15, 1916, with the exception that seventy-five of them will be equipped with four West. 514 motors, with HLD control, and the remaining twenty-five, intended for the Southern division, will each have two West. 307 CV motors with HL control.

Ft. Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., noted in the ELECTRIC RAILWAY JOURNAL of Dec. 22 as being in the market for three-passenger cars and one freight motor car, has placed the orders for these cars with the St. Louis Car Company and the Cincinnati Car Company respectively. The following details have been specified for this equipment:

	Motor Car	Freight Car
Type of Car	3 Compartment Interurban	Freight motor
Seating capacity	46	
Weight (car body only)	26,500 lb.	17,500 lb.
Bolster centers, length	28 ft.	22 ft.
Length of body	42 ft. 2 in.	38 ft.
Over vestibule	47 ft.	Over vestibule 40 ft.
Width over sills	8 ft. 9 in.	8 ft. 0 in.
Height, rail to sills	43 in.	39 in.
Sill to trolley base	8 ft. 8½ in.	8 ft. 10 in.
Body, wood or metal	Steel	Wood
Interior trim	Wood, cherry finish	
Headlining	Agasote	
Roof, type	Arched	Arched
Underframe, wood, metal or composite	Composite	Composite
Air brakes	Westinghouse Type D2 EG	Westinghouse Type D2 EG
Axles	Baldwin AERA Standard	Baldwin AERA Standard
Bumpers	Channel	Channel
Cables	Westinghouse	Westinghouse
Car trimming	Statuary, bronze finish	
Conduits and junction boxes	Crouse Hinds	Crouse Hinds
Control, type	Westinghouse HL	Westinghouse HL
Couplers	Tomlinson MCB radial	Tomlinson MCB radial
Curtain fixtures	Ring No. 88 Curtain Supply Co.	
Window fixtures	Forsyth Bros. brass sash	
Curtain material	Pantasote	
Fenders or wheelguards	Steel locomotive pilot	Locomotive pilot
Gears and pinions	Nuttall	Nuttall
Gongs	Crewson pneumatic	Crewson pneumatic
Hand brakes	Peacock no staff	Peacock no staff
Heaters	Peter Smith hot water	
Headlights	Luminous arc and incandescent	Luminous arc and incandescent
Journal boxes	Symington	Symington
Motors, type and number	Four West. No. 306 CVG	Four West. No. 306 CV
Motors	Inside hung	Inside hung
Paint	P.R.R. Standard Flood & Conklin	Yellow car builders System Pan
Sanders	Knight pneumatic	Knight pneumatic
Sash fixtures	O. M. Edwards	
Seats, style	Stationary, cross, St. Louis Car Co.	
Seating material	Plush, leather in smoking room	
Springs	Standard Steel Company	Standard Steel Company
Step treads	Lead filled	
Trolley catchers or retrievers	No. 2 Knutson	No. 2 Knutson
Trolley base	U. S. No. 14	U. S. No. 14
Trucks, type	Baldwin No. 73-18-K	Baldwin No. 73-18-K
Varnish	Flood & Conklin	Flood & Conklin
Ventilators	Railway Utility	
Wheels	Rolled steel standard	Rolled steel

TRADE NOTES

Jarrett Chambers Company, Inc., New York, N. Y., engineers and contractors, announce that C. S. Rindsfoos, C. E., has become associated with the firm.

Railway Improvement Company, New York, N. Y., has received an order of 3800 Rico sanitary straps from the Detroit United Railway.

McGuire-Cummings Manufacturing Company, Paris, Ill., manufacturer of cars and trucks, will rebuild its machine shop during the coming year. The estimated cost of the building is $18,000.

Naugle Pole & Tie Company, Chicago, Ill., has opened an office at 305 Masonic Temple, Cedar Rapids, Iowa, with J. B. Wilmott in charge. This will better enable the company to serve its customers in this territory.

Gulick-Henderson Company, consulting and inspecting engineer, which has physical and chemical laboratories in Pittsburgh and other cities, announces the removal and consolidation of its general offices from 30 Church Street and 120 Broadway to 13-21 Park Row, Suite 1932-1939.

W. L. Batt has been made sales manager of the Hess-Bright Manufacturing Company, and will have entire charge of its sales after Feb. 1, 1917. Mr. Batt has been connected with this company since its early days, and has for many years engaged in doing much of the pioneer work that was necessary to develop the industry in this country.

E. G. Long Company, New York, N. Y., announces that Arthur A. Hebert has joined its staff and will have charge of railway materials and steel products. Mr. Hebert has been identified with the New York office of the Midvale Steel Company for the past fourteen years, being in charge of that office previous to the purchasing of the company by the Midvale Steel & Ordnance Company.

Haese Track Sander Company, Milwaukee, Wis., announces that it has opened new offices at 426 Merchants & Manufacturers Bank Building, Milwaukee, Wis. This company reports orders for sanders from the following street railways: Milwaukee Northern Railway, Chattanooga Traction Company, Eastern Wisconsin Railway & Light Company and the Joplin & Pittsburgh Railway.

Bates Expanded Steel Truss Company, Chicago, Ill., reports the following sales of its expanded steel poles for trolley and line construction work: Chicago, Ottawa & Peoria Railway, eighty-two poles; Chicago Surface Lines, fifty poles for a new extension on South State Street. The Milwaukee Coke & Gas Company has just placed its seventh order for Bates poles which are used for supporting heavy cables and distribution lines.

Johnson Fare Box Company, Chicago, Ill., through its St. Louis agents, the Grayson Railway Supply Company, has received an order for 345 fare boxes from the United Railways Company of St. Louis. With this order completed, the company will have more than 800 Johnson fare boxes in service on its lines. This company also has placed an order with the Johnson Fare Box Company for 200,000 metal tickets of 5-cent denomination, which will be sold to the public in place of paper tickets.

ADVERTISING LITERATURE

Searchlight Company, Chicago, Ill., is distributing a private mailing card on its Searchlight oxy-acetylene welding outfit.

Portland Cement Association, Chicago, Ill., has issued a twelve-page bulletin of suggested specifications for concrete floors, streets and structures.

Electric Storage Battery Company, Philadelphia, Pa., has issued bulletin No. 162 on the progress made in the construction of its new buildings since June, 1916.

Thompson Electric Company, Cleveland, Ohio, is distributing a bulletin on its automatic safety disconnecting hangers, cable clamps and pulleys. This bulletin also illustrates and describes a bracket attachment and spreader arm made by the company.

Western Electric Company, Chicago, Ill., has issued an attractive folder containing reproductions of eleven 4¾ in. x 6¾ in. photographs illustrating the use of its Davis flood lamps in lighting Niagara Falls, the Denver post office, typical railroad and factory yards, etc.

American Railways Equipment Company, Dayton, Ohio, is distributing a postcard folder entitled, "Takes All the Tricks," descriptive of the American fare box, which registers all fares on the fare box and the coins and paper tickets through the fare box.

Barber Asphalt Paving Company, Philadelphia, Pa., is distributing a well-illustrated 20-page booklet on its nonexide wood blocks for use on city streets, bridge floors, piers and in shops. A number of railways, among which are the Philadelphia & Reading and the West Jersey & Seashore, are using these wood blocks for floors in shops and car houses.

Rickard & Sloan, Inc., New York, N. Y., advertising agents, have issued an attractive 24-page booklet on productive publicity, "A Mark and Its Import." The booklet contains reproductions of a large number of two and three-colored plates of catalogs, pamphlets and bulletins which this company has furnished its customers, together with methods of planning advertising campaigns, catalogs, bulletins, etc., for publicity purposes.

Esterline Company, Indianapolis, Ind., is distributing catalog No. 369, describing its graphic instruments, permanent magnets and other electrical specialties. Illustrations and wiring diagrams of graphic meters and clocks are given, and also detailed descriptions of the parts used in their manufacture. Some of the specialties listed are switchboard-type voltage multipliers, transformers, speed recorders and shunts. Several pages contain tables giving the kilowatt capacities of the different types of meters for different currents and voltages, and also tables of dimensions of portable, wall or switchboard-type meters.