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This Is as It Should Be

UNDER the caption "An Unreasonable Request" a prominent New Haven paper a few days since devoted an editorial to a defense of the Connecticut Company as to its refusal to carry free the soldiers encamped at the Yale Field. With the usual willingness of public bodies and individuals to spend other people's money, the Board of Aldermen had petitioned the company to carry the soldiers free, but the management did not feel justified in thus further reducing the already meager profit from its operation. The writer of the editorial in question explained that the company had already done more things of a patriotic nature than most people realized and gave examples to prove it. By way of analogy he said that, much as the newspaper would have liked to supply the soldiers with free copies, it was out of the question to do so. The answer to the free transportation suggestion, the writer continued, is a fair wage for the soldiers and their prompt payment. In these trying times no corporation or individual enjoys being put in the position of appearing to be unpatriotic. The public press has an excellent opportunity to prevent misunderstanding when such a condition comes about inadvertently, and the public as well as the vindicated will appreciate its courtesy in so doing.

Scheduling the Work of the Way Department

TIME studies of work to be performed in industrial shops have been a striking feature of the progress made by American manufacturers during the past few years, but there is nothing inherent in the method which limits it to industrial plants. It is equally adapted to electric railway repair shops, as shown in the articles on the Portland (Ore.) shops published in our Maintenance Issues of 1916 and '17. The same general principles have now been applied in Denver to track work, and the results, as given in the leading article this week, seem eminently satisfactory. No work is begun until the principal details connected with it have been scheduled in advance by a planning board. The duration of the undertaking, the hours of work, the date of the receipt of materials, etc., are all determined so that the theoretical lost time is reduced to a minimum. The work then becomes one of dispatching the men and materials to the point of use, just as cars are dispatched in transportation service to pass at determined meeting points. Those who read the article on the Denver system will recognize many points of re-

semblance to the various systems of shop planning with which mechanical engineers are familiar in shop applications. There is the central authority or bureau, the checking of estimates, the routine following of the work through and the records of work completed and to be performed. In Denver the method described is not confined to the way department but applies to all engineering work, although most of the examples cited in the article this week relate to outside construction. Altogether the article is one which we believe will prove most helpful to railways in the economical conduct of their engineering departments.

Efficiency Awards to All Employees

A GREAT deal of hard thinking has been applied to methods of rewarding motormen for better work. In the past many of these have been based on plans which have singled out only the highly skilled few, leaving the large majority discouraged over the prospect of ever attaining a "triple A" class. For instance, where awards are made on the basis of records shown by energy-checking devices, it is not uncommon for the awards to go only to the top-notchers, whereas men who are several points lower, often because of conditions beyond their control, get nothing—and nothing in any event is also the reward which the majority receive. Quite a different method has been pursued by some railways in dividing accident savings among all the men, either by an equal division or on some seniority or wage basis. It is this plan, rather than individual bonuses, which has worked out successfully on a property equipped with coasting recorders. When these devices were installed, the management frankly told the men that certain savings could be accomplished if the men would help. No promise of any kind of award was offered, but when a year's operation had shown a most gratifying saving, the wages of every man were voluntarily advanced 1 cent an hour. The men were advised that this increase had been made possible only through their co-operation. The result was an immediate jump in coasting efficiency and some plain talk to the low coasters by their fellow-motormen. The way the men on this road encouraged one another to coast speaks volumes for their loyalty to the management. While the example just quoted may appear unique of its kind, it shows that more may often be gained by interesting and rewarding the men as a whole than by restricting the bonuses to the few. The greatest gains to the railway must come from a high general average rather than from a few star performances and many poor ones. If all are to be interested, all should be rewarded.

What Publicity Does to the Employees

THE head of a large electric railway system received a real mental jolt one day when a publicity man told him that an aggressive publicity policy would show its first and some of its best results in his own organization. He hadn't thought of publicity in that light. In fact, all the thinking he had done on the subject had been in connection with the probable effect of the printed word upon the car-riding public. He had overlooked the fact that it is just as important for the employees of a public utility to have a clear and honest understanding of the company's attitude on service and public relations as it is to establish that understanding with the people served. Without such mutual understanding trouble is inevitable. But, by the same token, once a company makes an honest effort to educate both its employees and the public to an appreciation of the kind of service it wants to give, good results are certain.

An incident that illustrates this point occurred recently in one of the big Eastern States. A certain traction company was the object of an attack by the newspapers. Among certain things it was charged that the cars were dirty, the windows gummy around the edges, etc. It was also alleged that the platform men were uncivil to passengers, that the officials could not be seen, and that their policy was of the "public-be-damned" sort.

Some of these things were true. But the managers were not of the "public-be-damned" type. They were keen in their sense of duty to the public and of the public's right. But their conductors and motormen were often uncivil, and their cars were not so clean as they should have been—a too economical carhouse man had been saving money.

When the charges were made the company placed cards in its cars saying: "This company intends to make a reputation for clean cars. We want your help."

Another card bore this inscription: "The life of a street car conductor is no bed of roses. He is human, but he is aware of his duty to be courteous to our passengers. Help him."

Now, what happened? The company put on some cleaners to keep the windows and cars clean. They had to live up to that notice. The windows of those cars glistened, as one of the officers of that company said, "like the Kimberley diamond."

Moreover, the publicity reacted on the men. With that "courtesy" car card staring him in the face, it was not so easy for the conductor or the motorman to be "short" with passengers. Unconsciously they began to absorb some of the company officials' spirit, and complaints concerning incivility declined with most pleasing speed. All of which points a simple but useful moral:

Your car cards, your bulletins and all your literature should be brought to the notice of all your men. They are a part of the company. It is their publicity as well as yours. Incidentally, the office boy, the chief clerk or the superintendent's office sometimes makes as many

enemies for a company as the platform men. Let them see your publicity, too.

There is sometimes a feeling on the part of managers that the adoption of a publicity policy will cause too much attention to be focused on them. They do not want to get in the limelight. One manager once said he didn't want his name signed to car cards because "people would get sick of seeing it around so much." He was told that the very object was to make his name and his personality synonymous with good service and consideration for the public's rights. It put the subject to him in a new light.

Publicity, intelligently and persistently followed, increases the efficiency of a company to a marked extent. Every man in its employ knows that what he does is part of the company's public record. He is only human when he wants to have a good record. A company with enough employees imbued with this spirit can stand the full glare of the limelight, and publicity will inculcate this spirit.

Publicity itself is the most human thing in the world. If it is not human it is not worth anything. It must represent the real policies—they should be human—of the management of a company. When it does, and the public becomes acquainted with these policies, the company will get a fair and square deal. For the public really wants and means to be fair, and will be if it has an honest chance.

Large Pinions on City Cars Not Only Useless but Costly

NOW that the search for economies in the electric railway field is so thoroughly under way, it might be well to call attention again to two well-known but somewhat neglected principles governing gear ratios for cars in city service. The first of these is that capacity for high maximum speed does not necessarily produce high schedule speed; in other words, a city car's ability to run fast is usually worthless as a time saver. The other principle is that the only effect of a low gear ratio, or the use of large pinions, is to provide high maximum speed, which has no value in city service, and that it provides this high speed at the expense of energy consumption and schedule speed, which have great value.

That these very definite laws governing gear ratios for city service should be disregarded to the extent that companies retain the numerous sixteen-tooth and seven-tooth pinions that are in operation to-day under congested traffic conditions may perhaps be due to the complication arising from the common custom of considering both distance and time elements in connection with the subject of city car movement. However, consideration of only the time element is quite feasible. Thus it may be said that the reason why high maximum speed is worthless in city service is that the stops come at intervals of only about forty seconds, or some other figure of that order. If a six-second stop is assumed, the net time interval devoted to movement of the car between stops becomes thirty-four seconds, and even with straight-line acceleration and braking at a rate

of 1.5 m.p.h.p.s. the maximum speed that the car could attain would be 25.5 m.p.h. In other words, with thirty-four seconds devoted to car movement, only seventeen seconds could be allowed for acceleration, the remainder having to be reserved for braking in order to make the next stop. Even if the car was geared to make 30 m.p.h. and had motors large enough to accelerate at 1.5 m.p.h.p.s. with that gearing, it would be impossible to attain the 30-mile speed.

It is of interest now to consider, under the more or less academic assumption of straight-line acceleration, the effect of limiting the maximum running speed of the above assumed equipment by changing the gear ratio. If a pinion small enough to reduce the maximum speed from 30 m.p.h. to 22.5 m.p.h. should be installed, the rate of acceleration would obviously be increased to about 2 m.p.h.p.s. With a braking rate of 1.5 m.p.h.p.s., as before, and the same number of stops (which, it may be said, works out to about eight per mile), two alternatives are presented to the operator. Of these, one is that of retaining the same schedule speed and devoting the whole advantage gained by the smaller pinion to saving energy. In this case power may be shut off after 9.75 seconds of acceleration, allowing the car to coast for 12.25 seconds, and then applying brakes for twelve seconds to complete the run in the same time interval as before. The saving in energy will be 43 per cent, because of the greatly reduced time during which power is applied.

The alternative procedure is to carry acceleration up to 22.5 m.p.h., the limit set by the reduced pinion size, and then to coast. In this case the acceleration will last for 11.25 seconds, the coasting for about seven seconds and the braking for about 14.25 seconds, making the duration of the run 32.5 seconds instead of thirty-four seconds obtained with the large pinion. There will be a 34 per cent saving in energy under these conditions, but the major result is the saving of time, which amounts to an increase of about 4 per cent in schedule speed.

Here is a case where a decrease in a car's ability to run fast actually brings a faster schedule. Admittedly it is a highly special example, but the conditions required in practice to parallel it involve merely a frequency of stops sufficient to limit the average time for acceleration beyond resistance to four or five seconds—a not abnormal situation with congested traffic. This is reflected by the number of new cars that now are being fitted with fourteen-tooth and fifteen-tooth pinions when they are built, the latter pinion size being set by some engineers as an arbitrary minimum on the grounds of tooth strength.

However, the point that we wish particularly to emphasize is that of the desirability (in cases where stops are reasonably frequent) of changing over old city cars now fitted with pinions having sixteen or more pinion teeth. Under such circumstances no generalizations can be made in regard to the concrete results attained because of the many different factors involved, but a rough guide at least is afforded by consideration of the resistance losses during acceleration. The change, for

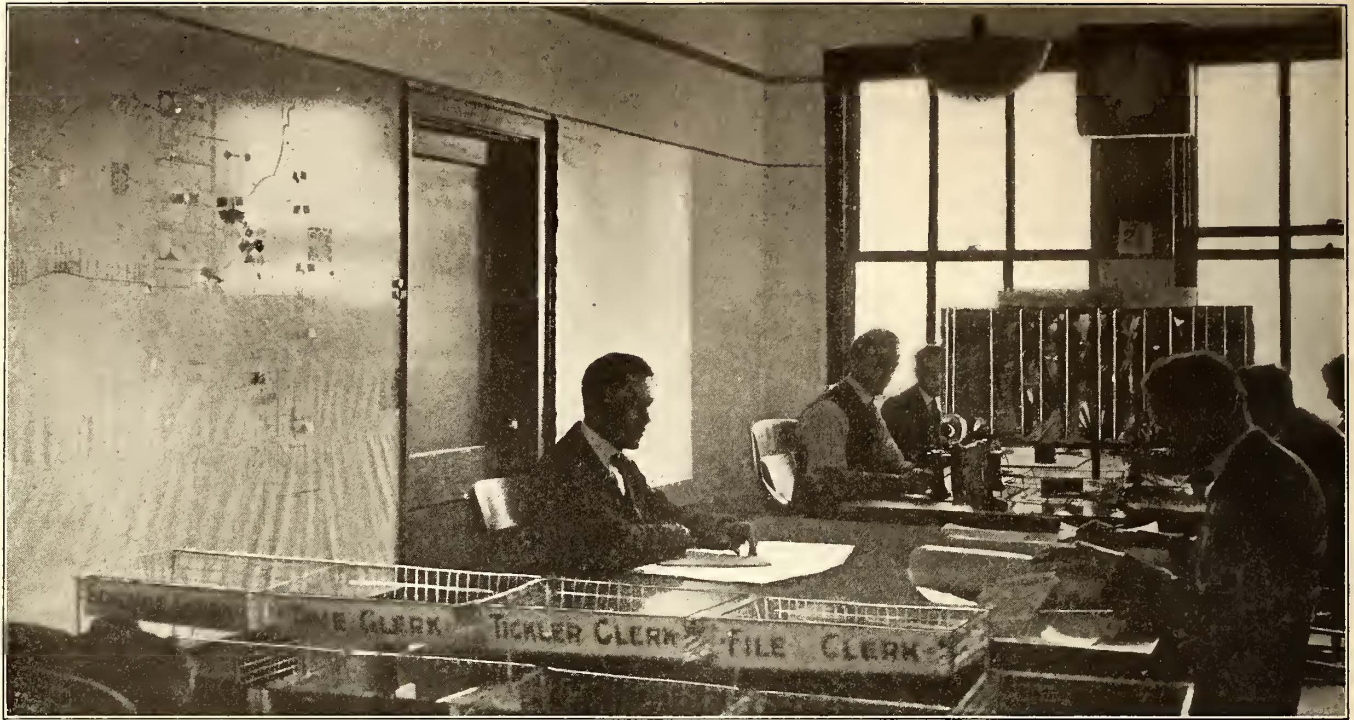
example, even from a sixteen-tooth pinion to a fifteen-tooth pinion involves about 6 per cent less time spent on resistance, and this alone during the course of a year means a saving of about \$20 per car. The capital expense involved is, of course, nothing at all, provided the change is made at the time when worn-out gears are being replaced. This is so near an approach to getting something for nothing that the industry can hardly afford to neglect it.

Pay for Rainy Days Might Help to Hold Track Labor

GENERAL difficulty is being found in keeping a sufficient force of track laborers to carry on planned construction and maintenance work at anywhere near schedule. One Middle West road has been compelled to hire approximately 7000 laborers in the past year to maintain a force of 2000 to 2500. Whenever a rainy day occurs, and especially when two or three such days follow in succession, the next good-weather day usually finds the force depleted by two or three or a dozen men, depending on the size of the gang employed. This is a condition following rather naturally the abnormal nature of the times. There is too great a demand for labor for a workman to be content to sit idle for a day or two and lose his wage. The rule of "no work, no pay" among the laborers is a time-honored custom which many managers are loath to break; but would it not be to their best interests to give full or at least half pay for the rainy days, as an additional inducement in holding the men?

In canvassing the practices of a number of companies relative to their track labor, we find that it has become the custom on some properties to pay one hour's or two hours' time to the men on a completely rainy day for reporting on the job in the morning. This is to induce them to come out on the chance that by the time they reach the job the rain may have ceased. One company pays its laborers full time if a shower forces them off the work for an hour or two during the day but states that on a full rainy day the men do not as a rule report in the morning. Three of the companies canvassed pay their track men full time on completely rainy days, believing that this helps to keep the men on the job. Where this is done an effort is made to put the men at inside work and thus consume at least part of this rainy-day time.

As an alternative one way engineer suggests that it would do more good to increase the rate per hour than to allow the men time for idleness. The relative value of the two plans is hard to estimate, but we believe that to allow as near straight time as possible regardless of weather conditions will sound better to the average outdoor laborer than a few cents an hour additional pay. However, one or the other of these inducements is almost imperative. The railways cannot expect to pay materially lower wages than the contractors in competition with them for labor, and at the same time dock for bad weather as the latter do, and still keep any labor worth having.



THE PLANNING BUREAU AT WORK, WITH FLAG MAP AT LEFT

Dispatching Work of Engineering Department

System of Planning All Details, Timing Operations and Making a Central Bureau Responsible for All Work Gives Better Control of Men, Makes Possible Handling of Large Volume of Work and Releases Chief Engineer from All Minor Responsibility

WHAT IN EFFECT is a complete dispatching system for the work of every branch of the engineering department has been placed in operation by the Denver Tramway Company, of which Edward A. West is chief engineer. In brief, this system consists of a concentration of all the preliminary work and detail routine connected with every job with a small group of men centrally located. It substitutes a sys-

tem which permits of definite and thoroughgoing supervision of every piece of work for the haphazard control so frequently found and relieves the foremen on the job of all the details of material delivery, tool provision, etc., so that they may devote their entire attention to getting the work of the job itself done. All work is scheduled in advance. The assignment of tools and materials, the movement of them to the job, the instructions as to what is to be done, who

is to do it, how it is to be done, etc.—all are preplanned and timed, and this central group of men in control, called the planning bureau, acts as the dispatcher. The system thus eliminates lost time and duplication of work and gives the same control over all work, no matter what the volume in progress at one time may be. The big feature that stands out prominently is the fact that all work is started and carried on under written instructions.

PRELIMINARY to an understanding of the workings of the planning bureau of the Denver Tramway Company, it is interesting to point out the organization plan of the engineering department of the company. This is so constituted as to facilitate the systematic handling of any work in progress and to concentrate all routine and detail work of all the divisions of the department in this one planning bureau. The general supervision of work is administered by a committee of control of which the chief engineer is chairman and the four division heads, the superintendents of track, overhead and bonding, bridges and buildings, and power, are the other members. Directly responsible to the chief engineer and these four department heads is the planning bureau, at the head of which is the superintendent of planning, who is the ranking officer of the department in the absence of the chief

engineer. The seven men in the planning bureau report to the superintendent of planning, and various other employees in the engineering department report to the division heads. One of the features of the organization is that there is always a man in training for every position and prepared to fill the vacancy in the next higher job.

A very large part of the work of the purchasing agent being closely allied to that of the engineering department, his office is located in the engineering department, although he reports to the general manager. For the same reason a group of clerks, who are responsible for the cost accounting and estimates and balance of stores records, etc., are located in the engineering department in order that they may be in close contact with it and facilitate the handing of work back and forth, although they report direct to the auditor

FORM 757 DENVER TRAMWAY COMPANY		SHEET NO.		SHEET NO. D. T. CO.		WORK ORDER	
ROLL NO.-----				NO.		DAY	
				YEAR		19	
CHECK NO.	NAMES	RATE	TOTAL HOURS	AMOUNT	ACCT. NO.	OPERATIONS	UNITS
						ELECTRIC SWITCH	
						SIGNS	
						TELEPHONE	
						POLES	
						POLE FITTINGS	
						STUBBING DEFECTIVE POLES	
						TROLLEY WIRE	
						HANGERS	
						EARS	
						REPAIR BROKEN TROLLEY	
						LIGHTNING ARRESTERS	
						D. C. FEEDERS	
						FEED TAPS	
						A. C. FEEDERS	
						BONDING	
						BOND TESTING	
						LIGHTING BY W. O.	
TOTAL							
REMARKS							
NO. OF MEN	PLANNING BUREAU	PAY ROLL	COST ACCT.			FOREMAN	
						DIVISION HEAD	

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 3—TIME SHEET FILLED OUT BY TIME CLERK AS TRACK FOREMEN CALL IN

which this work will take is estimated in days. The schedule clerk then lays out the work order for a particular foreman by a horizontal red line (shown dotted in the reproduction), the length of which is the number of days which that work order will take. In this way no foreman is called upon to do two work orders at the same time. When the material is ready and taken to the job, the schedule clerk marks the layout for that job with a rubber stamp, "Mat. Del." (material delivered). At the completion of that work order the schedule clerk stamps "Comp." (complete) over the layout line. When the job is finished he draws a black line over the red line.

Briefly, then, the layout sheet shows all unfinished work by red lines. It also shows when a work order is ready for the foreman, when the foreman is through with his work, and when the job is finished, so that no further attention need be paid to it. If the estimate made of time required is low, this condition is shown by the black line falling behind the scheduled date; if too large, the black line gets ahead of the date.

All instruction sheets to the various members of the organization pass through the hands of the schedule and route clerk, as do also any requisitions for material in addition to that called for by work-order estimates or any change that may affect methods. By these means, his schedule shows a record of any interruptions and their frequency, due to alterations and additions not covered in original work order estimates. In brief, his position is that of a train dispatcher except that he is dispatching men, material and work instead of trains.

THE TIME CLERK'S DUTIES

The time clerk of the planning bureau makes up the time record of all employees of the engineering department, thus relieving the various foremen of this detail work. The foremen simply call in each morning and give the work-order number on which they are assigned and the number of men working. The time clerk then carefully checks over this information to see that no

time is turned in for any work not covered by an instruction sheet properly approved in advance by the superintendent of planning, except in cases that require emergency measures, such as line trouble, track trouble, fires, wrecks, etc. These time sheets, of which a typical one is shown in Fig. 3, are also checked against the work order, and any work shown as performed that was not covered in the original work-order estimate is questioned and brought to the attention of the superintendent of planning. The latter, after investigating, may approve it, if it is of no consequence, or he will probably request a revised work order to cover this additional work.

The time clerk and his assistants are also responsible for the proper distribution of labor charges. This requires careful attention and handling in order that the labor may be charged to the proper work order with proper distribution. Instances where more men are being worked on a job than the estimate calls for are caught in this check by the time clerks, and the matter of overtime charges is also carefully checked and a list of these made up daily for the chief engineer, showing all work requiring overtime and the amount, together with the reason for this overtime.

A separate time sheet is made out for each foreman for each work order (Fig. 4). This time sheet has a row for each day worked, and a red line (shown solid black in the reproduction) is drawn below the day when the work should be completed. If time is turned in below the red line, it automatically calls attention to the fact that that work order is taking too long. The upper part of the sheet shows the distribution of time to various operations on the work order, the lower part shows the total time for each man who worked on that work order. The upper part shows the cumulative total of amounts finished on each operation and the time which special equipment was used. Hours only are carried on the time sheet.

Each man's time is posted daily on the pay-roll sheet. At the completion of a pay period the labor distribution is extended at a gang rate for each class of labor and sent in to the cost department. At the completion of the work order a bonus time allowance is figured, and distributed among the various operations and among the men, proportionately to the actual time worked.

ORDER-OF-WORK CLERK'S DUTIES

The order-of-work clerk of the planning bureau assigns the "next" job to be done by the various gangs and workmen. This involves the necessity for a very close observation of the information which the schedule and route clerk has as to the progress of work. If the chief engineer has no particular knowledge which fixes a date for the completion of certain work, then the order-of-work clerk arranges for such a date, taking into consideration the various items which enter into this as elements. Through his constant contact with the progress of work and from time studies which are constantly being made, this clerk is able to determine approximately the length of time required to do any certain job and is therefore able to place a date for the beginning and ending of work on any particular job. With this determined, he fills out instruction sheets for the planning board for each operation involving a separate set of workmen, gangs or conditions. These instruction sheets cover the work order or account num-

Start		Finish		Foreman		men.		Std. Time		man hrs.		Approx. Days		Location		Sheet No.																					
6/22		6/27		C. H. Johnson		4		200				6		17th & Gaylesville, O.		2233																					
OPER.		Excavating				Surfacing				Tinning				Splicing				Backfilling				Watching				MACHINE HOURS											
No. Units		120 RT				120 RT				60 Lbs				60 Lbs				120 FT																			
Date	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	Hr	Ov	Dy	Tot	
6/22	20		90	90	7		40	40									9	2			36	2		38	9			16	16								
6/23	8		30	120			52	92	6		12	12	5		10	10					36	2		76	9			24	20	6	6						
6/25					4		38	120	10		18	30	13		20	30					36	2		114	9			30	70	10	16						
6/26									12		22	52	10		18	52					36	2		182	9			28	98	12	28						
6/27								4		8	60	5		8	60	18	92	120			36	2		190	9			16	114	4	32						
ACTUAL TIME		26				21				24				33				23				48				10											
SAVED		96				78				117				128				88				166				37											
WASTED		35.6				28.7				43.7				45.4				31.5				260.7															
HOURS BY		489		621		882		988																													
DATE		6/22		6/23		6/25		6/26		6/27																											
TIME		9		9		9		9		2																											
ACTUAL TIME		45				45				45				10																							
SAVED		166				166				166				37																							
TOTAL		616				616				616				137																							

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 4—FOREMAN'S TIME SHEET SHOWING DISTRIBUTION OF TIME

ber and location of the job, the foreman's name and the number of workmen who are to do the particular operation involved as shown in the work order estimate, the date the order for work was received, the time the operation is scheduled to start and, finally, the time in hours or days estimated for the gangs to complete each operation.

These completed instruction sheets are filed in the bull wheel pictured in Fig. 5 in the tier of pockets assigned to the particular foremen who will perform that work, and these instruction slips are filed in the order of the date received. In the case of rush jobs, the instruction sheets are, of course, placed on the board ahead of the regular jobs. At least to the extent of 20 per cent more than the various gangs of workmen can handle, jobs are kept scheduled ahead. With such work as requires an instruction sheet to go out periodically, these sheets are hektographed and a number of them placed in the tickler file to come out two days before the date wanted. This applies to such matters as bi-monthly cleaning and sweeping out of stations and waiting rooms on interurban lines, etc.

MATERIAL-ORDER CLERK'S DUTIES

The material-order clerk of the planning bureau makes up the material requisitions for all divisions of the engineering department. With the detail work orders before him on the bull wheel and the dates on which work is to begin plainly in evidence, he assigns the necessary material and tools to the job and has them there by the end of the day previous to the beginning of work. This may require a number of instruction sheets issued to several of the traffic men who collect the material from perhaps several places on the company's property. But the specific duty of this clerk is to see that the material is delivered on the job and ready for use when required. This function, of course, makes it necessary for the clerk in charge to be familiar with the amount of material of the various varieties on hand at any time and the status of orders for additional material for delivery at such time as will provide for the

need. Material for all jobs is made ready in advance of the time it is called for by the material transit men, and the prearrangement for this, of course, falls to the material-order clerk to do. This clerk also is charged with crediting various jobs with material removed and any material left over. Before marking any job complete, he checks it over for unused and removed material and compares his information with that of the cost clerk and balance-of-stores clerk to make sure that credit memoranda have been put through showing proper debit and credit.

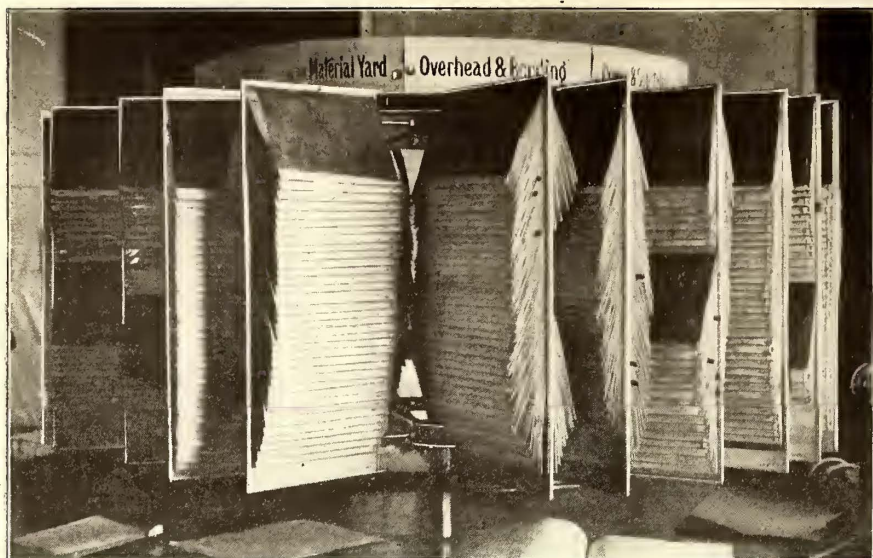
A copy of all requisitions for material comes back through the planning bureau and is checked by the material clerk. If requisitions for material in addition to that originally assigned to any job come through in sufficient number to have any significance individually or because of the large number of them, the material clerk sends a notice of this to the superintendent of planning with the notation of the number of requisitions above the original allowance. The latter then passes on these or checks up to find out the cause. This gives an absolute check on materials going into any job and will cause an investigation and bring reasons to the chief engineer when there is any considerable overrun.

The material clerk also keeps a record of all auto and team hire and from this record checks the monthly bills before they are sent to the auditor for payment. He maintains a record of all cases of transfer or switching of materials and supplies and is able to check these bills monthly.

DUTIES OF TICKLER AND OTHER CLERKS

Other employees reporting to the superintendent of planning are a tickler clerk, who is responsible for keeping matters progressing through the hands of the various members of the engineering organization as rapidly as each completes his part and for bringing up all matters at the proper time for consideration; a material yard clerk, the material transit men and the tool foreman. The office engineer, also reporting to the super-

Per Cent Bonus is Bonus Time divided by Actual Time.
 To get Bonus Time for any Actual Time on this sheet multiply Actual Time by Per Cent Bonus.
 If Actual Time is less than Standard Time Allowed Time = Standard Time multiplied by 30%.



W. O. No. — Despn	FTH INSTRUCTIONS TO	DATE SENT OUT	DATE RETURNED
	Office Engineer	AM PM	
Field Engineer	AM PM		AM PM
Drafting	AM PM		AM PM
Track Div.	AM PM		AM PM
B. & B. Div.	AM PM		AM PM
O. H. Line Div.	AM PM		AM PM
Shop Estimate	AM PM		AM PM
Blue Print Sketches	AM PM		AM PM
Contracts	AM PM		AM PM
File Clerk	AM PM		AM PM
Office Engineer	AM PM		AM PM
Division Head	AM PM		AM PM
Hektographing	AM PM		AM PM
Pricing	AM PM		AM PM
Office Engineer	AM PM		AM PM
Authorization	AM PM		AM PM

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 5—BULL WHEEL CARRYING INSTRUCTION SHEETS FOR EACH JOB, AND FIG. 6—PINK TICKLER FOLLOW-UP FORM

intendent of planning, sizes up each job as proposed to determine roughly what work will be necessary and then issues instruction sheets to the various men in the departments interested, asking for the detailed information on which to base cost estimates and work-order instructions for the various operations involved.

HOW THE ENGINEERING DEPARTMENT WORKS

All construction or large maintenance jobs to be done by the engineering department are initiated by the chief engineer. This introduction of work may come about through the approval of recommendations made by division heads, through requests for certain work by the management, through inspection by the chief engineer, as the result of inspection reports from the field which may show the necessity for doing certain work, or through work-order estimates made up by the office engineer from the yearly budget. Small maintenance or emergency work is handled through the planning bureau by the issuance of instruction sheets directly to the parties concerned, or in some instances where this seems necessary by the issuance of work orders, which must then be approved by the chief engineer or superintendent of planning.

After any job has been approved by the chief engineer, the order-of-work clerk in the planning bureau takes out a work-order number and places it, together with a brief description of the work to be done, on a pink work-order tickler, Fig. 6. This sheet is then placed in the work-ahead file in the bull wheel where the jobs are arranged numerically, and is used by the tickler clerk in the planning bureau to follow up the various steps necessary before a work-order estimate is written up and authorized. After the work-order estimate is authorized, it takes the place of the pink work-order tickler in the bull-wheel pocket.

The order-of-work clerk issues instruction sheets to the office engineer to make up a work order, and this is followed up daily by the pink work-order tickler. The work involved in a particular job may require information from several divisions in order to make up the estimate. To secure this the office engineer then writes instruction sheets requesting field or drafting work,

and these sheets are routed to the division heads or individuals performing the work by the order-of-work clerk in the planning bureau.

When all data, including necessary sketches and blueprints, have been received by the office engineer in reply to his instruction sheets, he proceeds to make up a preliminary work-order estimate, Fig. 8. All labor items are priced, and on the back of a sheet giving instructions to the planning board the first and second choice of foremen to do that work is indicated. The board is also told the number of men to be used and the estimated time required to do the job. The office engineer designates the number of copies of the work order which will be required, including a copy for each foreman involved and a copy for the storekeeper. This preliminary work order is then checked with the division heads concerned. On all work orders a credit estimate to take care of the original installation value of the material estimated to come out is also included. When everything is ready for typing, the office engineer initials the order and places it in his outgoing mail drawer.

The tickler clerk, collecting the interplanning bureau mail, notes the signature of the office engineer on the preliminary copy, retains the pink sheet on top and passes the work order to the file clerk for typing. At the same time he files any sketches or blueprints attached to the preliminary work order in the tickler blueprint drawer assigned to that job. After being typed, the preliminary copy is clipped to the typed copy and both are sent back to the tickler clerk's basket and thence to the office engineer's incoming drawer. The latter checks and initials the typed copy in the upper part of the "estimated by" space, fills in the date wanted and returns it to the planning board.

When properly signed by the division head the work is forwarded to the auditing department for hektographing. Upon its return to the planning bureau it is sent to the balance-of-stores clerk, who adds the prices of the material items. With the labor and material estimated costs totaled, the balance-of-stores clerk returns it to the planning bureau, where the sketches or blueprints which were held in the tickler blueprint

drawer are attached, and the whole file is sent to the office engineer. With the completion of each step in the formulation of a proper work order as noted above, the matter is returned to the tickler clerk in the planning bureau, who immediately charges it out to the next person concerned and delivers it to him. Thus by referring to the pink slip, Fig. 6, it is possible to see at any time exactly how far along the work order is and in whose possession it is at that moment.

Each work order for \$25 or more, together with a letter of transmittal, Fig. 7, written by the office engineer showing the title of the work order and the nature of the work covered, the reasons why the work is necessary and a distribution of the total expense, is forwarded to the general manager. The letter of transmittal also contains a statement made up by the office engineer in conjunction with the auditor, covering the retirement of property and how that retirement is to be taken care of on the books. If the work covered was included in the annual budget, this is mentioned. When completed, the tickler clerk passes the work order, together with the letter of transmittal, sketches, blueprints, etc., attached, to the chief engineer, who approves it and forwards it to the general manager for authorization, except for such work as the chief engineer has final jurisdiction over.

After authorization the work order is returned to the planning bureau and the tickler clerk places it in the incoming mail drawer of the superintendent of planning. When the latter has taken note of it he places it in the tickler clerk's basket again, and the latter passes it on to the schedule clerk, who lifts the pink tickler copy and gives proper distribution to the various copies of the work order. The order-of-work clerk stamps the planning bureau's copy of the work order with the time stamp and writes instruction sheets covering each operation called for in the work order. These operations may involve the necessity for instructions to the surveyors, the material yard foreman, the tool and equipment foreman, the work-car crews, the grading crews and teams, etc. In addition, instructions arrange for the assignment of men and gangs, the prompt clean-

THE DENVER TRAMWAY CO.										WORK ORDER NO.				
DESCRIPTION										LOCATION				
ACCT. NO.	REQ. NO.	EST. QUAN.	OPER. OR MATERIAL ITEMS	ACTUAL QUAN.	EST. LADOR	COST MAT.	ACTUAL LADOR	COST MAT.	ACT. UNIT COST					
			CARTAGE											
			TOTALS											
			TOTAL		L. & M.			L. & M.						
MAT. TO COME OUT QUANT.			REMOVALS		LABOR REMOVAL EST. ACTUAL		REPLAC. VALUE	EST. PR. VAL.	ACTUAL CRED. VAL.					
			CARTAGE											
			TOTAL											
NET COST OF WORK ORDER														
DATE OF PRIOR CONSTRUCTION					ESTIMATED POSSIBLE LIFE									
ESTIMATED BY			APPROVED BY			AUTHORIZED BY			WANTED		STARTED		COMPLETED	
DAY	MONTH	YEAR	DAY	MONTH	YEAR	DAY	MONTH	YEAR	DAY	MONTH	YEAR	DAY	MONTH	YEAR
		1916			1916			1916			1916			1916
COST CLERK														

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 8—WORK ORDER ESTIMATE MADE UP BY OFFICE ENGINEER. SPACE ON BACK IS LAID OUT FOR SKETCH OF JOB AND SPECIAL INSTRUCTIONS TO PLANNING BUREAU AND FOREMEN

ing up of the job, the return of all unused and removed material, the final inspection of work, advice to the statistician who has a copy of the work order that the work is completed, and for a final checking of quantities by the field engineer.

When the instruction sheets have been written up and this has been noted on the work order, the order-of-work clerk passes the work order on to the material clerk in the planning bureau, who immediately orders and assembles the necessary material for that job. No work is started until the planning bureau has a properly authorized work order made out in sufficient detail so that it can intelligently order the necessary material and arrange for the best scheduling of work cars, crews, gangs, tools, etc. Then, the day in advance of the time work is scheduled to begin on a certain job, the instruction sheets for the various operations involved in the actual work are sent out in proper sequence and the work goes on with one dependent operation following another or with independent operations going on simultaneously when this is advantageous. In other words, all tools and materials reach the job just when they are needed, just as a train arrives at a passing point or the various units of a train arrive at the make-up point—a matter of dispatching.

GRAPHICAL RECORD OF WORK IN PROGRESS

As a means of picturing at a glance all the information contained in the bull wheel as to what jobs are in progress and where, the work is plotted out on a large map in the planning bureau office shown at the left in the engraving at the head of this article. Early each morning the construction foremen report to the planning bureau office as to the place they are working, the order number, the number of men working and whatever special equipment they have. This information is

THE DENVER TRAMWAY COMPANY ENGINEERING DEPARTMENT	
Subject: Letter of Transmittal Accompanying Work Orders Calling for an Expenditure of \$25.00 or over. Mr. F. W. Hild, Gen'l Mgr.	
Dear Sir:	
1. Attached hereto please find.....Work Order..... made out to cover the cost of	
2. The work outlined above is necessary on account of	
3. The distribution of the cost (debit estimate) is as follows:	
Abandonment	Maintenance
Betterment	Replacement
Depreciation	
4. The net "cash" required is \$.....	
5. The probable life of the proposed installation is...yrs.	
6. From the credit estimate retirement of property constructed in is taken care of as follows:	
Replacement value of	
Property removed.....	Credited to.....
Salvage value of	
Material removed.....	Credited to.....
Difference	Charged to.....
Respectfully,	
Distribution Approved: .....	..... Chief Engineer
Cost Clerk for Auditor	

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 7—STANDARD LETTER OF TRANSMITTAL OF WORK ORDER TO GENERAL MANAGER FOR AUTHORIZATION

INSTRUCTION SHEET													
IF THESE INSTRUCTIONS ARE NOT UNDERSTOOD TAKE UP WITH PLANNING BUREAU BEFORE BEGINNING WORK													
WRITTEN 191													
TO BE DONE BY						DIV FOREMAN			AND			MEN	
J. N.	RED NO.	TIME SHEETS	MATERIAL	MATERIAL	WORK	WORK FINISHED BY			INSPECTED	CHECKED BY	FILED BY		
ACCT	WRITER	WRITER	BECK	MOVED	STARTED	DATE	Yr	NO.	DAY				
W.O. DESCRIPTION										Yr.	Mo	DAY	
										WANTED			

MATERIAL USED		
RECEIVED FROM	QUANTITY	DESCRIPTION

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 9—WORK ORDER INSTRUCTION SHEET, FRONT AND BACK. CIRCLE AT BOTTOM OF FRONT INDICATES WORK IN PROGRESS ON THAT JOB

checked by the schedule clerk and taken down on a certain form by the tickler clerk and is later transferred to the map already mentioned and called the flag map. This map shows all lines of the tramway system as well as all buildings, substations, power plants, carhouses, sidings on the interurban lines, etc. When flags are placed on this map at the location a gang is working, it is possible to see at a glance approximately how much work is going on at any one time, its nature and where it is being done. The flags are of different colors to indicate different types of work. For instance, green indicates track work; red, overhead work; yellow, carpenter or bridge and building work, and purple, material yard work. The name of the foreman is written on the tag, together with the work order number and the number of men working under him. Whenever any foreman moves from one job to another he calls in to the planning bureau and the tag is then changed on the map. This map is brought up to date each day.

THE PLANNING BUREAU BULL WHEEL

In the center of the large table around which the four clerks of the planning board work is the large bull wheel, Fig. 5, to which frequent reference has been made and on which are placed all the work-ahead and work-in-progress orders. These are divided up among the several departments and again among the several foremen. When complete the work orders are slipped in a little celluloid pocket and thereafter every instruction sheet or notation of any kind pertaining to that work order is placed in this pocket also. The instruction sheets are made out so that the work order number and a brief description, the date work is to begin and be completed, etc., appear at the bottom edge. This narrow strip with a brief description of the job projects below the pocket above on the bull wheel and makes it readily possible for the clerks, looking for any particular job, to glance down the bottoms of the various pockets and quickly pick out the work order sought. When work has been started on any job, the original instruction sheet is taken off and forwarded, leaving the duplicate showing. This blank, Fig. 9, has a red circle printed at the bottom edge, and this circle makes it very simple to pick out the work orders on which work is in progress.

When a work order has been placed in the bull wheel

for work ahead and the material clerk has arranged for all material and tools necessary for that particular job and has received notification back that this is all ready, he places a small red flag on the pocket containing this work order. This makes a ready reference to what jobs are all ready to go ahead with among the work-ahead items. On jobs requiring no material, the material clerk puts a green flag on the pockets to indicate this fact.

Among the advantages of the close check of all work in progress which is maintained by the planning bureau clerks is the fact that the cost from day to day is turned in to the cost department and added to the work

		To Come Out	
		Yr.	Mo. Day
TICKLER			
Mr. E. A. West:			
The charges to date on W. O. No.			
..... are now in excess of estimated cost.			
This job is still open and charges coming in. Please advise.			
<i>Charges to date</i>			
	<i>Estimate</i>	<i>Actual</i>	
Labor	_____	_____	
Material	_____	_____	
Total	_____	_____	
..... Chief Cost Clerk			

DISPATCHING ENGINEERING DEPARTMENT WORK—FIG. 10—FORM FOR WARNING CHIEF ENGINEER OF OVER-RUN ON ANY JOB

order estimate, and when this actual cost is approaching or has reached the estimated cost, and the work is not yet near completion, a warning is immediately sent to the chief engineer on the blank shown in Fig. 10. This of course frequently happens where unexpected work is involved in a job, and usually it is taken care of by a revision of the estimate. But through this system it is impossible for any estimate to involve a large over-run without the matter first coming up to the chief engineer and obtaining his approval.

Higher Fare Publicity

New York Companies Begin to Tell Their Story to the Public in Campaign for 6-Cent Fare

In their campaign for higher fares in New York State, the electric railways in the Second District some time ago appointed a sub-committee on publicity of the committee on ways and means. This sub-committee, of which T. C. Cherry of Syracuse is chairman and B. E. Tilton of Syracuse is secretary, decided that each company should present its own case in the way it should consider best. To assist in this work, however, a series of eight advertisements was prepared. They are set three columns wide and about three-quarters of a column deep in the average newspaper. The typography is simple and dignified, avoiding the flamboyance that often mars advertising of this type.

The text of the first four advertisements is presented herewith. The fifth of the series is devoted to "expenses" and gives figures of the increased cost of labor and materials during the last five years with the decreased rate of income. The sixth is a talk on "taxes" and shows not only that taxes have greatly increased but that the company has to pay certain special taxes, like the paving tax, from which it receives no benefit. The seventh is on "prosperity," and its argument is that cities cannot be prosperous without efficient utilities, and utilities cannot be efficient without prosperity.

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 1—What We Must Prove)

When we petitioned the Public Service Commission to change the street car fare in Syracuse from 5 cents to 6 cents, we knew perfectly well that no such increase would be allowed until the necessity for it had been proved up to the hilt.

The Public Service Commission will demand a *complete show-down* of the economic facts; and they will put—as Public Service Commissions in all states do—the burden of proof absolutely on the street railway companies.

What does that mean—the burden of proof on the companies? It means that nothing is taken for granted in their favor. They must prove everything. In order to get an increase in fares the companies must prove positively:

1. That they are not getting a fair return on the capital "honestly and prudently" invested, as the law phrases it.
2. They must prove that their financial situation is not due to temporary or sudden conditions.
3. They must prove that the management and operation of the business are honest and efficient.
4. They must prove that the increase is just and reasonable, and that no other plan of getting it is better.

The company cannot charge a higher fare in this city to make up losses elsewhere, nor do we propose any such thing.

Every fare question raised by any opponent whomsoever of the increased fare must be satisfactorily answered. The public interest, in short, is thoroughly safeguarded. Now, the companies want nothing in the world but to show the exact facts and get a *fair hearing* and a just verdict. We believe the public wants nothing else, and that both you and the Public Service Commission will give us exactly that.

We are fully aware that a rise in street car fares is not popular. We're asking it because we have to in order to get money to keep up the service which the city *must have or suffer*, and to pay our investors a return that will prevent their going into investments that pay better. That is all there is to it.

No business can be permanently run at a loss, and investors must get a fair return or they will not invest. Without this we cannot make improvements, build new lines, or even keep up the old.

We shall show that in Syracuse they are not getting a fair return and have no prospect (unless fares are increased) of such a return. This is due to great increases of cost, running over years in materials, operation and taxes.

THE STREET CAR NICKEL WILL NO LONGER PROVIDE THE BEST STREET CAR SERVICE.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 2—On Profits)

"Why isn't a 5-cent street car fare enough in Syracuse?" you ask. A perfectly fair question, entitled to a frank answer. It's because *the street car nickel is shrinking in value*.

It will not supply the best street car service. The reasons are:

1. Expenses have gone up by leaps and bounds, but the rate of income is fixed at a nickel a ride.
2. Investors must have the prospect of a fair return or they will not invest.
3. Street railroads in Syracuse are not getting return enough to attract investors.

Now, let us ask you a fair question. If you have the chance to invest money in street car business at 5 per cent return or in numerous other businesses just as safe at 8 per cent or more, where will you invest it?

Our accounts show that the return to total investment in the street railroad business of Syracuse, on the average for the last ten years, has been under 5 per cent. While our gross income has increased the net income has not increased with it. These figures are from the official accounts prescribed by the Public Service Commission. They are on file at Albany and open to all. When the Public Service Commission takes up this matter it will refuse to allow an increased fare unless we can ourselves absolutely prove:

1. That the return to investors is not a "fair return" under the law.
2. That our management is efficient and honest.
3. That our capital is honestly and prudently invested and is entitled to a return.

We shall also have to show that we are not proposing to make this city pay for losses elsewhere. And we are not making any such proposition.

If we prove all those things, we believe every man in Syracuse is fair enough to say that we should gain our request.

The problem is not peculiar to Syracuse. It's the same all over the United States. Already 67 companies *have had fares increased* in various states, and numerous applications for increased fares are pending.

Everywhere the street railroad companies are suffering for exactly the same causes. *Investors can do better in other businesses.*

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 3—Depreciation)

Depreciation—Many of the street car troubles of to-day trace right back to depreciation, or wearing out of cars, rails, etc. Street car companies have failed to provide adequately against it, either because they didn't understand the need or because a 5-cent fare doesn't provide enough income.

According to evidence taken in important cases before the Wisconsin and the Massachusetts Public Service Commissions, as well as the general experience of traction companies, plants depreciate (or wear out) on the average about 5 per cent a year. This depreciation must be provided for from current income. The Supreme Court of the United States, and courts generally, have held that an allowance for depreciation in making up fares or rates is not only constitutional *but a duty*.

The public service law of New York provides for it and requires that the companies provide a reserve out of their income for depreciation.

If you don't get enough out of fares to provide for the depreciation you must borrow it. But this method was denounced by the Public Service Commission in these words:

"The consequences of such financing are too obvious to require restatement. An end to *such rottenness of method* when the regulating hand of the law does not interfere finally comes in a dilapidated and useless plant."

Now this is all very fine. But the street railroad companies are between the devil and the deep sea—

The Devil—They are required by law to provide from their income for depreciation.

The Deep Sea—The 5-cent fare doesn't produce enough income.

The Public Service Commission reports having the following facts and figures; in 1915 thirty-two (about half) of the traction companies in the Second District operated at a loss. (The average rate of return of the up-State companies on their total capital *has never been above 5 per cent* in the last five years.)

Less than half of the companies could set aside any reserve for depreciation. The amount they did set aside in the last five years fell gradually from 1.49 per cent in 1911 to 0.75 per cent in 1915. In Syracuse we set aside 3.5 per cent. It ought to be fully 5 per cent in order to protect investors in their investment and the public in its service. With a 5-cent fare this is impossible.

This makes a great deal of difference to you and every one interested in the city's prosperity. Here is why and how:

To provide for depreciation by borrowing money to replace a worn-out plant would mean that in time the stock and bonds would exceed the value of the plant. This tendency (to use the language of the Supreme Court of the United States) "*would inevitably lead to disaster*, either to stockholders or to the public or both," and as the New York Public Service Commission phrased it, "bondholders have nothing from which to collect their money, stockholders have lost all they invested, and the public is given a wretched and wholly inadequate service."

WE CANNOT POSSIBLY PROVIDE PROPERLY FOR DEPRECIATION WITHOUT MORE INCOME.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

THE STREET CAR NICKEL WILL NO LONGER PROVIDE STREET CAR SERVICE

(Letter No. 4—Investment)

INVESTORS are fighting shy of street railroads. If this keeps up, the companies cannot improve service, add new lines and better types of cars, or even keep up the quality of the old.

We showed you that the companies are not able to provide for depreciation (wearing out) of plant from current income. The depreciated nickel will no longer provide funds for replacements. Borrowing more money for such a purpose lessens the security the investor has on what he has already loaned.

It has been impossible since 1911, in New York State, to get more money for street railroads by the sale of stock. The chance for dividends has been too slender.

But this is not all of it. It's getting more and more difficult to even borrow money (i. e., sell bonds). If in addition to meeting the interest on its bonds a company is paying good dividends and laying aside reserve against depreciation and for surplus, there's a good margin of safety for the bondholder. But when dividends cannot be paid the investor thinks perhaps the interest on bonds may next fail to be paid. The margin of safety is narrower.

The "margin of safety" for bonds has fallen rapidly, and it's away below normal now. The "margin of safety" is the ratio of net income (remaining after paying rentals and interest on bonds) to gross income. A normal margin of safety, as investment bankers figure it, is, say, 40 per cent. In New York street railroads it has fallen gradually each year from 41.1 per cent in 1911 to 9.1 per cent in 1915. **SUCH A CONDITION INVITES DISASTER.**

If the nickel fare was reasonable ten years ago, it is unreasonable now, because

1. The service rendered is greater and costs more.
 2. The value of the nickel is less.
- The street car nickel, in short, no longer provides the best street car service.

B. E. TILTON, General Manager
New York State Railways (Syracuse Lines).

The eighth relates to "wages elsewhere." It explains the conditions under which passengers pay a fare of less than 5 cents in Cleveland and the favorable franchise terms there under which the contract with the city guarantees a return on the capital invested in the electric railway system. This, the statement concludes, is all that the railways in New York State want, namely, a fare sufficient to pay the cost of service and a fair return on the capital used in the electric railway service.

In addition to their advertisements, practically all of the companies are using car cards and pamphlets. They all tell tersely the story of fixed nickel fare and rising costs that the nickel will no longer meet. The pamphlets are illustrated.

Cost of Electric Freight Service Discussed at New Haven Hearing

An analysis of the cost of electric freight and express service on the lines of the Connecticut Company was a feature of a recent hearing at New Haven, when the Public Utilities Commission investigated the complaint of various shippers in New Haven, Hartford and Bridgeport that the rates established by the company May 21, 1917, are excessive. Among the representatives of the company who appeared were R. S. Baldwin, chief clerk of the purchasing department; Victor S. Curtis, general traffic agent; J. M. Hamilton, general agent; W. Earl Jones, statistician of the Connecticut Company, and L. H. Kentfield, general freight agent New Haven system. The complainants urged that the company's action in abolishing its second, third and fourth-class freight rates and placing them in class 1, with further upward changes for bulky products, etc., and also in increasing its express rates, was unreasonable. For example, the lower-class electric freight rates from New Haven to Hartford were formerly from 15 to 10 cents per 100 lb. (second to fourth class). The first-class rate is 18 cents. In general, there was a former minimum express rate charge of 15 cents, which has been increased to 25 cents with a flat rate of 50 cents per 100 lb. Various witnesses testified that as a result of the changes their bills for electric express service had increased 30 to 70 per cent.

In the examination of the complainants it was generally conceded by them that the electric express and freight service are far superior to that rendered by the steam lines in the territory. Mr. Kentfield maintained that trolley express rates should be somewhat lower than those of companies like the Adams and American but higher than steam railroad freight rates between the same points. Freight classification, in his opinion, has no place in the electric express field. The trolley line does a freight business only when it handles full car loads of trap rock or similar freight, which is a service by itself, as contrasted with the carrying of general merchandise in competition with automobile express trucks and the regular express companies. Mr. Kentfield said that the Connecticut Company's new tariff provides for double and treble first-class rates on some classes of products, surveyors' instruments, for example, being three times first-class.

Evidence regarding the increased price of materials entering into electric freight and express service was then presented by Mr. Baldwin. Supplementing these data, he presented estimates of the yearly consumption

INCREASES IN PRICES OF MATERIAL ENTERING INTO ELECTRIC EXPRESS AND FREIGHT SERVICE, CONNECTICUT COMPANY

Equipment or Material	Spring of 1916	1917	Per Cent Increase
Gears	\$23.52	\$32.51	38
Pinions	4.18	6.86	64
Rail bonds .....	.....	.....	17
Track spikes, per 100 lb.....	2.10	4.10	95
Track bolts, per 100 lb.....	2.85	4.50	58
White lead, per 100 lb.....	9.55	13.00	36
Ties	0.625	0.70	12
Armature, G.E.-80 motor.....	25.50	35.05	38
Field coils, G.E.-1000 motor.....	25.77	35.57	38
Window glass .....	.....	.....	43
Trolley poles, 12 ft.....	1.35	3.00	122
30-ft. steel poles, per lb.....	2.25	3.75	66
Journal box packing (Perfection).....	0.13	0.20	53
Colored thread waste.....	0.07	0.11	57
Air-brake parts .....	.....	.....	25
Wood screws .....	.....	.....	110
Cement, per bbl.....	2.25	2.65	17
Manila rope, per lb.....	0.14	0.30	114
Linseed oil, per gal.....	0.55	1.30	136
Tie rods in track.....	0.35	0.75	116
Rattan brooms, per doz.....	4.25	8.75	105
Ink, per doz. qts.....	7.65	8.50	11
Manila folders, per 100.....	8.00	20.00	150
Coal at mine, per gross ton.....	1.30	3.75	188

of a number of staple articles by the company.

Mr. Curtis said that the old rates of the company failed to bring a proper return for the freight and express department. In the six months ended May 31, 1917, the earnings of the department were \$177,841; the operating expenses were \$119,916, and the net was \$57,924. Taxes, \$8,290; interest on investment, \$11,720, and depreciation, \$9,766, reduced the net to \$28,146. The proportionate interest and depreciation on the total investment of the company less express and freight facilities and equipment came to \$39,179, leaving a deficit of \$11,032 for the period. The company handled 71,743 tons of merchandise in this period. The company owns forty-six express cars, costing \$168,429, and nineteen express stations, representing an investment of \$211,485. These ranged in cost from \$500 in the case of stations at Westport and Woodmont to \$52,000 at New Haven. The total value of the equipment used in the department as of July 9, 1917 (filed since the hearing), was \$390,677. Mr. Curtis pointed out that through electric express it is possible for a dealer to carry a smaller stock and thus reduce his overhead charges, even when located a considerable distance from the city. The company uses the telephone in tracing goods, something unknown to steam railroad practice. The cost of cars has increased from about \$4,800 to \$8,200 within the year. The only difference between the company's express and freight service is that in the cities of Bridgeport, New Haven, Hartford and Waterbury a wagon pick-up and delivery is included for a rate of 50 cents per 100 lb. The witness said that the company hopes to get a 33 1/3 per cent increase in revenue from the new rates.

Mr. Hamilton testified that the wages of messengers have increased 48 per cent and of freight handlers 40 per cent within two years. The pay of clerks and agents has also risen. The company has lost 75 per cent of its short-haul business to motor trucks. About half the cars sent out from the New Haven station return empty. The witness said that canned goods and flour are troublesome classes of merchandise to handle on account of flimsy packing, losses in package lots and the ease with which damages can occur. Dressed beef is far preferable to iron castings from the handling standpoint. It was brought out that 5 per cent was allowed for depreciation and 6 per cent for interest in determining the cost of the service. Counsel for each side agreed to file briefs with the commission, and the hearing was closed.

Tell Your Story Frankly

Experience of Northern Ohio Traction & Light Company Shows That the Public Can Be Led to Understand Railway Problems if a Company Manifests an Honest Desire to Please

PUBLICITY has a wonderful power when focused upon specific points. The public generally likes to be led and is willing to learn. These thoughts form the basis of the new publicity work of the Northern Ohio Traction & Light Company—work which in a few months has met with a favorable public response.

ILL-WILL CONFRONTING THE NEW MANAGEMENT

A short time ago Eastern capitalists bought the property of the Northern Ohio Traction & Light Company, operating interurban lines between Akron and Cleveland, Akron and Canton, Akron and Ravenna, and the city lines of Akron, Canton and Massillon. The transaction involved a huge sum of money. But the physical property was not all that the new owners obtained in the negotiations.

When the new owners took possession of the property, they were confronted with a most unusual condition which had developed. The city of Akron had grown from 60,000 inhabitants to 140,000 in less than two years. This was due to the extension of the rubber industries. Factories had sprung up almost over night, and people had come to Akron in train loads. No public service corporation, gas, telephone, express or railway, could keep up with the procession. In the case of the Northern Ohio Traction & Light Company extensions had been called for on every hand, and increased equipment had become necessary not only in rolling stock but also in power equipment.

The new arrivals had thought that these changes should be wrought over night. When this proved impossible, they began to express their dissatisfaction. This had grown enormously as the traction company, seeking every available means to improve its service, found itself hampered by a scarcity of available material, owing to the over-demand in the market. The situation had soon become acute as far as unfavorable expressions were concerned, the humorist in the papers picking the company for the "goat" and the comedian on the stage brightening his lines with "knocks."

To a certain extent city officials in the past had attacked the railway to clear their own selves from responsibility. In some respects, however, the company was at least partly at fault. Promises made had never been fulfilled, and, even where this might have been excusable, the public had not been made to see that there were extenuating reasons.

DECIDING TO EXPLAIN MATTERS TO THE PUBLIC

The new management realized the company's needs as well as did the general public. The public, however, did not understand the causes as well as did the management. Hence it belabored the company with letters and personal visitations in such number that the time which the new management desired to expend in improving the system was largely consumed in waiting upon complainants.

When, therefore, H. C. Field, an Akron newspaper man with experience in Eastern publicity work, submitted a publicity plan early in 1917, the management, realizing the need of a more direct approach to the public generally, gave immediate consideration to the feasibility of the proposition. No time was wasted in bewailing the past or in criticising the public for its lack of understanding. An unhealthy condition existed, and the only question was—is this proposed plan a good remedy?

"I will give you an answer to-morrow at 4 o'clock," said A. C. Blinn, the general manager of the company. The next day, on the dot, Mr. Blinn did as he had promised. The answer was: "Go ahead." Large orders for advertising space were immediately placed with the newspapers in the cities affected, and the company began to set forth, in simple language, its policy and aims.

OUTLINING THE MANAGEMENT'S POLICY

One of the first of the advertisements emphasized the fact that the policy of the company is to take the public into its confidence, and, by treating it fairly and with the utmost consideration, to obtain its hearty co-operation. The full draft of the company's platform follows:

OUR POLICY WITH THE PUBLIC

We desire at all times to take the people of Akron and vicinity into our confidence, especially on matters which involve the welfare of the street-car service and also the lighting. We are a public service corporation essentially, but even so the people of this city have a right to know just what is being done to improve the traction service.

Since we are mutually interested, we feel that by treating the matters in a mutual sense we can more conscientiously ask the people for their support in our undertakings. We want the people to know at all times just where we stand.

Judgment by intelligent public opinion is all that an honest public service corporation expects or desires.

Sane and honest public opinion is found only where efforts have been made to give the public an intelligent understanding of the actual conditions in connection with public service.

It is our desire that every transaction between this company and an individual shall be satisfactory. If, perchance, it is not, it should be brought to a definite source, the general manager.

Let us co-operate to the end that all will be better satisfied and greater things may be accomplished.

A follow-up advertisement along somewhat the same line stated that the words "service satisfaction" sum up the ultimate attainment for a public service corporation. Continuing, this advertisement said:

When a utility has met the reasonable demands of the public it serves, it has accomplished its prime purpose.

Thereafter its chief aims must be to maintain that service which satisfies its patrons and to extend its facilities to meet natural growth of the service demand.

Service satisfaction means as much to a public utility as it does to the public served.

In the history of public service corporations, satisfactory service has not been attained without co-operation.

"He must be truly honest who is willing to be always open to inspection by honest men."

We are willing to be "always open to inspection by honest men."

If matters don't go just as you think they should, we want to know it. With co-operation of the right kind, we can readily afford Akron the street-car service its importance demands.

Let us be fair with each other and by co-operation we can do this.

GIVING FACTS TO THE PUBLIC

Following out its policy of giving the public facts about the street-car situation, the company, for example, cited a few incidents to show how it had been hampered in carrying out its promises to the local people. As shown by the accompanying reproduction of the advertisement in question, the company frankly admitted that the service was not what the people demanded or what the company aimed to offer, but it explained that under existing conditions it was doing all it could to relieve congestion until more equipment could be obtained. The failure of manufacturers to fill orders as promised had upset the company's calculations and prevented it from keeping its agreements with the public. Thereafter, the advertisement said, the public would

states in the Union. It told of the payment of a million and a half dollars in wages to employees, the major portion of which was diverted into the commercial channels of the various municipalities throughout which the railway operates.

Occasionally an advertisement was inserted setting forth the company's policy relative to the conservation of human life and suggesting methods and means of preventing accidents. These advertisements referred especially to children who, because of crowded residential districts, were forced to play upon the highways.

PUBLIC NOW BETTER UNDERSTANDS COMPANY PROBLEMS

Advertisements of the foregoing sorts have appeared weekly since the beginning of the year. The public has read them and has become better acquainted with conditions as they exist. Instead of censuring the company for negligence, the average citizen is now inclined to say: "The company is certainly up against it,

IMPROVING STREET CAR FACILITIES

Extensive improvements are to be made in the traction service in Akron during the coming year. Work is to begin as soon as the weather will permit in the spring.

It is the aim of this company to do all within its power to afford Akron the trolley service that will meet the demands, providing the materials and equipment required can be obtained. Improvements in the past have been seriously hampered because of the inability to obtain the necessary materials. However, contracts have now been placed that give reasonable assurance of the delivery of materials and equipment.

Among the improvements planned for Akron are the extension of various lines now in operation. These extensions will be made as follows:

West Exchange St.—Four thousand feet of double track from S. Maple to Delta; east on Delta to Madison, and 1,200 feet of single track on Madison.

Goodyear Ave.—Two thousand and four hundred feet of double track will be laid from the intersection of East Market street to the crossing of the A. C. & Y. road. Thon 7,000 feet of single

track east and northward beyond the city water works plant.

Grant St.—Seven thousand feet of single track will be laid from the present end of the line, near South street, into and through the Firststone allotment.

Wooler St.—From present end of the line west to the intersection of East avenue, thence south-west to the intersection of Manchester road. This improvement calls for 3,600 feet of single track.

In addition to these extensions, the West Exchange street line from Locust to Maple will be improved with new double and single tracks, an extension of 2,835 feet of single track being provided.

Improvements will also be made to the present tracks on North Howard and West Market streets. A large part of these tracks is not in condition for satisfactory transportation of passengers and repairs and alterations will be made.

To relieve the traffic congestion, ten trailer cars have been bought and will be given a test. In event they prove a success here as they have in Cleveland and Detroit, more trailers will be added as soon as delivery can be obtained.

NORTHERN OHIO TRACTION AND LIGHT COMPANY.

OUR POLICY WITH THE PUBLIC

Following out our policy of giving the public plain facts with reference to the street-car situation from our point of view, we will cite a few incidents showing how this company has been hampered in carrying out its agreements with the Akron people.

We admit the car service is not what the people demand, nor is it the service we aim to afford, but under existing conditions, we are doing all that we can to relieve the congestion and afford a partial service until more equipment can be obtained.

This company, like every other public service corporation throughout the country, has been unable to obtain the equipment it has contracted for, because of the prosperous condition of manufacturing plants which are now overcrowded with orders. As a consequence of this, we have not been able to keep our agreements with the public.

To cite a few concrete examples of the position we find ourselves in today:

In the latter part of 1915, this company contracted with a firm to build 25 cars for the Akron line. The cars were to be delivered and ready for operation May 15, 1916. The builders failed to keep their word because of a shortage of labor. Two cars were delivered in its late last summer, and 170 more came on in the early fall. Five are still missing and some of those delivered are in the company's carshop awaiting the arrival of the necessary motors.

The effect has been that, as the traffic increased and we tried to make arrangements to meet it, we have not been able to do so because of the builders failing to deliver the cars.

A contract was made for eight boilers in December, 1915, and also two 20,000 kilowatt turbines were contracted for. The contract specified both were to be in operation in November 1916. Two of the boilers arrived a few days ago and two more are on the way. Parts of the first turbine have arrived but it will be April 1st or 15th before it will be erected and ready for use.

The effect was that we were unable to meet the requirements of contracts we had made with business interests of Akron and vicinity to supply them with electric power. We had based our contracts upon the provision of those we had made with the manufacturers. They failed to keep their word, and, as a result, all of our calculations were upset.

Many improvements have been planned for the Akron service, but the delay in delivery of material and equipment has prevented us from carrying out our plans.

We will try to keep the public fully informed in the future through these letters. We invite honest criticism, but honest judgment can be based only when both parties know both sides.

NORTHERN OHIO TRACTION AND LIGHT COMPANY

GAMBLING WITH YOUR LIFE

No doubt you have heard the story of the man who was in a hurry to cross a street. His head was bent low and he was unmindful of the rush of traffic about him. He saw a street car coming toward him and he made a rush for the rear door.

He had gone but half the distance when an automobile, coming at a high rate of speed, ran him down. They took him to the hospital, where for days he hovered between life and death.

That man gambled. He gambled with his life and the welfare of his family. His family needed him, it needed his pay envelope and his care. Could he give it while in the hospital?

To save ten seconds of time, he gambled. Had he witnessed a man making such a foolish wager, he would have derided him a fool. Yet he gambled and with loss to himself and his family.

Ten seconds out of the hospital are more promising than ten seconds in such an institution.

Co-operate with the N. O. T. in firmly fixing in the minds of all the value of Safety.

NORTHERN OHIO TRACTION & LIGHT CO.
Per A. C. BLINN, V. P., and Gen. Mgr.

SPECIMEN ADVERTISEMENTS USED BY NORTHERN OHIO TRACTION & LIGHT COMPANY

be kept informed on such matters in order that it might make honest criticisms based on facts.

OTHER ADVERTISEMENTS USED

Among other advertisements used by the company, some of which are shown in the accompanying illustration, was one telling in detail what the company was doing to provide for more efficient service. It was announced that work would be begun on certain extensions as soon as the spring weather permitted, and that new cars had been bought.

Another advertisement, "Going Back a Few Years," called to mind the old days when the straw on the car floor did not keep the feet warm, when horse power was used and the cost of a ride of only a few miles was 5 cents. The advertisement then showed the much greater advantages of electric railway transportation to-day, all for the same nickel.

Still another advertisement gave facts to show how the company in one year carried 69,000,000 passengers, or more than the population of fifteen of the largest

so why kick? It'll do better at the earliest opportunity." Moreover, the average citizen has a better knowledge of what the company means to the community and is less inclined to "bite the hand that's feeding him."

Men high in municipal government have lauded the policies of the company in regard to service and its business dealings generally. Members of the Real Estate Board have expressed themselves as willing to co-operate, and the safety work of the company has been indorsed by the officials of the Automobile Club and the public press.

Only a short time ago a member of the Board of County Commissioners made this significant statement: "From the tone of the company's advertisements and from what I have learned of the management, I feel certain the company aims to give the best service possible. The men at the head of the organization are business men, say what they mean and mean what they say."

While occasionally a kick is heard, it is much more friendly in form than a few months ago. Moreover, it

comes not from the men who are in control of municipal and public affairs and the general thinking part of the public, but from the people of less importance.

The good results already secured have been accomplished primarily through the advertisements. An official car bulletin is issued by the company, but it is used in the main for publishing news items about the company, the schedule of limited trains and general entertaining notes about the electric railway industry. Often the bulletin contains matter referring to the policy of the company, but this is used simply as a follow-up and

does not as a rule go into such vital details as do the advertisements.

From its experience even thus far the company is firmly convinced that it can successfully use advertising to cultivate closer and more harmonious relations with the communities served. The public has shown itself open to enlightenment regarding utility problems; the company frankly says that service satisfaction is its yet unattained but ultimate goal. When each party thus appreciates the viewpoint of the other, better relations are no longer a dream—they are a reality.

Progress of New York Fare Hearings

Of All Cases Pending in New York City, Only One Is Nearly Closed—Detailed Hearings Just Begun in Albany on Petitions of Three Companies Outside Metropolitan District

ALTHOUGH the case of one company in New York City in support of its petition for financial relief has been practically completed, the other cases before the Public Service Commission for the First District have been postponed for several weeks. Outside of the metropolitan district the Second District Commission at Albany has just begun hearings on three of thirty-one pleas for higher fares. The details of this situation are published below.

New York City Line Closes Case

Evidence of New York & North Shore Traction Company All Presented—Prompt Decision Anticipated

On July 23 and 25 the Public Service Commission for the First District of New York continued hearings on the application of the New York & North Shore Traction Company, Roslyn, N. Y., for an increase in fare from 5 cents to 7 cents on its lines in Queens Borough in New York City. The company and the commission have now completed their cases, and the city has been given until Aug. 3 to present any additional evidence on its side. A decision may be rendered by the commission when it meets on Aug. 15. References to this case and to the recently granted increase in zone rates for the lines under the Second District Commission in Nassau County were made in the *ELECTRIC RAILWAY JOURNAL* of July 14 and 21 respectively.

ARGUMENT ON JURISDICTION

The city, through its special counsel, E. E. Baldwin, urged a dismissal of the case before the First District Commission on the ground of a lack of power to increase the rates above the 5-cent fare maximum prescribed in the company's franchise. He urged that the question of law involved had been decided in the company's favor only by the Appellate Division and not by the Court of Appeals in New York, and that a final judicial determination should be obtained now in order to save time and money.

William L. Ransom, counsel for the commission, however, pointed out that a decision could not be obtained in less than six months and possibly not for a year. Besides, he said he had a reasonably clear personal conclusion as to what the New York courts would hold on this question, and that is that the Legislature has

vested the commission with the power to increase the fare to 6 or 7 cents within the city limits if the facts are shown to require such an increase in order to permit the company to earn a fair return on its used and useful property. Moreover, he stated, the case would be compactly and expeditiously presented, and it might be a good one in which to get the legal question settled, if the city or anyone doubted the commission's power to act, should the facts show need for action.

CITY CHARGES LACK OF FORESIGHT

The commission reserved decision on the motion of dismissal made by Mr. Baldwin. The city attorney then endeavored to show from the company's record of earnings that the railway had been improvidently built. John G. Moran, secretary and general manager of the company, testified that the builders still had faith in the enterprise, in spite of the unforeseen operating burdens that have developed since the days of construction. In reply to a hypothetical query from the commission as to what relief could be granted to a company conceived in error, Mr. Baldwin reserved his answer. He intimated later, however, that all possible means should be used before raising fares.

George W. Kuhn, valuation engineer of the commission, testified that on the basis of his table of lives (somewhat shorter in some cases than the lives set by the company) the total accrued depreciation in fixed assets up to June 30, 1917, was \$577,048. The total expended for repairs and renewals was \$152,426, leaving a balance of \$424,622 that should be in a depreciation reserve or, if not, should be deducted from the fixed assets for rate-making purposes. The company's exhibits showed fixed assets of \$1,612,008, including \$1,100 of unused property.

DISCUSSION REGARDING ZONE SYSTEM

In view of the future rapid-transit competition for a 5-cent fare in the company's territory, the commission asked whether a zone system would not be desirable in Queens Borough instead of a 7-cent fare. In a statement to the commission the company averred that the 7-cent fare would solve its financial problems, at least temporarily, and would permit the laying aside of some surplus to meet better the situation that will arise

when the rapid transit lines become operative. Even if the company were to charge a 5-cent or even smaller fare, it would still lose the riders having the choice of either system. Moreover, the Long Island Railroad, through its comparatively small fares and its book trip system, already has the bulk of the riders that will use the rapid-transit system. The present trolley passengers are mostly those who are inconvenienced by being left at their doorsteps.

Taking up the zone question, the company stated that the paramount difficulty in such a system arises from the fact that probably 65 per cent of its riding in New York City is through riding between Flushing and Whitestone, and Flushing and Bayside. This would be likely to result under a zone plan in an equivalent of the 7-cent fare. Besides, because of the comparatively small distance the company operates within Whitestone and Bayside, the result of dividing either place by a fare point would probably mean that many passengers would walk rather than pay the extra zone fare.

The company asked, therefore, that it be permitted to charge a 7-cent fare, at least until the rapid-transit operation shows that it is cutting down the company's revenue to such an extent that it would be advisable for the company to apply for a zone system of fares. If the commission should think, however, that a zone system now would mean more revenue than a 7-cent fare, the company would suggest in general two zones—a minimum 5-cent fare with a fare point allowing the use of a 2-cent ticket beyond.

On this point the commission called J. P. H. De Windt, Jr., chief of its transit bureau, who described a copper zone system which in his opinion would substantially increase the company's revenue without involving so great a hardship on patrons as a 7-cent fare. In general his plan provided for three zones on one main line, with a minimum fare of 5 cents and 1 cent for third-zone travel, or 6 cents for a continuous trip. The other main line would, in a similar way, have four zones, with a fare of 8 cents for a continuous trip.

Counsel for the city expressed a desire to look into the zone question and complete his examination of the company along other lines. The commission stated that he might have a hearing before or on Aug. 3, in the absence of which the case would be closed on the basis of the evidence already presented.

Transfer Charge Hearings Postponed

Third Avenue Case Goes Over Until Sept. 10—All Cases in New York City Except One Now at Standstill

On July 23 the Public Service Commission for the First District of New York postponed until Sept. 10 the hearings upon the application of the Third Avenue Railway, New York, N. Y., for permission to charge 2 cents for transfers. The postponement was at the request of company counsel, the commission's desire for a recess in August also being considered.

This means that no further hearings will be held for about a month and a half on the question of financial relief for the street railways in New York City. As originally planned, the applications of the Third Avenue Railway, the New York Railways and the Brooklyn Rapid Transit Company for a 2-cent transfer charge were to be taken up in order by the commission. Thus far, however, only the Third Avenue Railway has begun the presentation of its case.

Other lines in New York City that have submitted petitions to the First District Commission are the New York & Queens County Railway and the Second Avenue Railroad, which asked for general relief, and the two lines on Staten Island, the Staten Island Midland Railway and the Richmond Light & Railroad Company, which requested authority to charge a 6-cent fare. The first two companies were directed to file amended petitions specifying the form of relief desired, but this step has not yet been taken. The hearings on the Staten Island cases have also been postponed until Sept. 10.

The only fare increase case in New York City that shows signs of receiving a settlement in the next few weeks is that of the New York & North Shore Traction Company. The almost complete closing of this case is described in the preceding article.

Higher Fare Hearings in State

First Three New York State Companies Begin Presentation of Cases Before Second District Commission

Before the Public Service Commission for the Second District of New York at Albany there was held on July 25 a hearing in the matter of the petitions of the Putnam & Westchester Traction Company, the Peekskill Lighting & Railroad Company and the Hudson River & Eastern Traction Company for authority to raise their fares within the corporate limits of the municipalities where they operate. These companies desire to increase their fares to 7 cents for one continuous trip, discontinue free transfers and issue tickets good for four trips for 25 cents.

These petitions are the first three of a group made by twenty-eight traction companies doing business within the jurisdiction of the commission. All the petitions first filed asked for a 6-cent fare, but in the cases just cited supplementary applications were made for authority to charge the higher rates noted.

Witnesses called by the petitioners testified that the railways were operating at a loss and explained the exact financial condition for the last five years. The testimony tended to show that a falling off in passenger traffic, a considerable drop in freight revenue and increased operating expenses are making it necessary that the petitioners increase their fares.

According to the petitions laid before the commission, the Putnam & Westchester Traction Company last year had a net corporate deficit of \$2,974, the Peekskill company a net corporate deficit of \$11,020 and the Hudson River company a net corporate deficit of \$10,591.

Corporation Counsel Robert F. Barrett of Peekskill appeared in opposition to the proposed increase. He stated that the franchise given the traction company is a contract which cannot be broken. He insisted that the commission cannot change the fixed rate.

Included in the list of the twenty-eight original petitions presented to the Second District Commission was an application for an increased fare for the Empire United Railways, Inc. This petition has been revised so that separate petitions are now on file for the Empire United Railways, Inc., and each of two of its constituent lines, the Rochester, Syracuse & Eastern Railroad and the Syracuse, Lake Shore & Northern Railroad. An application for an increased fare has also been made by the Buffalo, Lockport & Rochester Railway. The total number of applications before the commission, therefore, is now thirty-one.

Introducing Coasting Records at Houston

A Formal Debate on Coasting and a Platform Men's Study Committee Are Among Several Notable Features

DURING October and November, 1916, 143 Rico coasting recorders were installed on cars of the Houston Electric Company and the Galveston-Houston interurban line, both of which are under Stone & Webster management. Previous to the operation of the recorders, private stop-watch tests showed that the average coasting on about 175 trips did not exceed 10.2 per cent. After all but ten Houston cars had been equipped (ten recorders having been taken away to equip the interurban cars), the following results in coasting percentages were noted:

October, 1916	24.2 per cent
November, 1916	18.8 per cent
(Loss due to winter weather, temporary change due to near-side stop and carnival parades.)	
December, 1916	21.8 per cent
January, 1917	24.7 per cent
February, 1917	26.6 per cent
March, 1917	30.0 per cent

Much higher average records can hardly be expected, as the motors used in Houston have comparatively low rates of acceleration.

Daily records are posted according to the six inspection divisions of the property. To encourage the men, a bogie is set up for each division. This bogie is easily within the attainment of any motorman. The men are, therefore, further encouraged by being urged to beat the average coasting of the division. For instance, the bogie may be set at 25 per cent, whereas the line average is 31.6 per cent.

Another unusual feature of the daily bulletins is the comments of the coasting analyst on the performances of the different men. These comments are tactful in tone with a full realization of the individual's character and naturally are intended to inspire instead of dispirit the low coasters. The following remark is of additional interest in showing that the aid a conductor can be in coasting is fully appreciated: "Patterson used to be a good coaster when he had Cunningham for a conductor."

In referring to a case where the bogie was 35 per cent and the line average 47 per cent, the frank comment was: "We didn't think it could be done."

Here is a typical remark about a low coaster who is a tried and true veteran: "Woolery ought not to be discouraged and give up trying. Other men as old and 'set in their ways' as he is have gone to work and made good. We believe that he is capable of doing as well as others."

PLATFORM MEN DEBATE ON COASTING

The Houston Electric Company is by no means satisfied that it has exhausted the possibilities of the coasting recorder in raising the standard of service. It realizes, particularly, that much can be done by securing the interest and advice of its men. To this end it recently arranged a set debate on the question: "Resolved, that the use of coasting recorders is beneficial to an electric railway system." It must have been truly humorous when the committee which had been appointed to take the negative asked: "Say, you don't really want us to knock coasting, do you?" They were told to go ahead and think up every objection possible.

Naturally this debate of the platform men brought

out a great many inside points that might never have come to light otherwise. For instance, one man thought coasting implied drifting to a very low speed and then jerking the controller suddenly. Another mentioned that a greater number of time points would prevent unfair jockeying of cars.

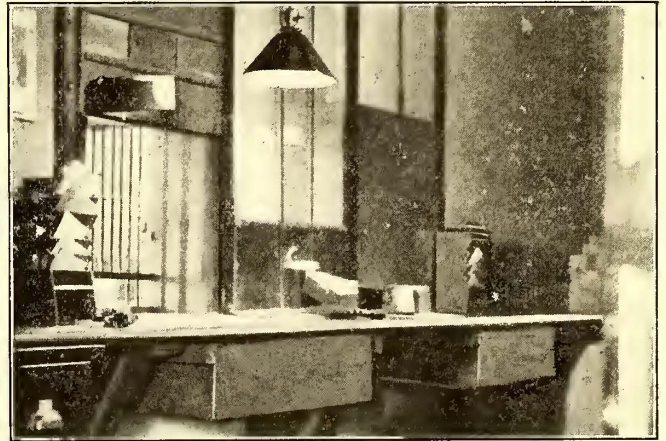
COMMITTEE TO STUDY COASTING

As the result of this debate the company has appointed a platform men's committee consisting of anti-coasters, pro-coasters and just plain neutrals. This committee, which will receive regular pay during its studies, is to take a given line, analyze its running and traffic conditions, revise its schedules and headways upward or downward, and, in general, do all it can think of to take full advantage of coasting in the attainment of better service. This experiment in democratized management should bear good fruit in putting at the disposal of the entire organization the best knowledge of its best operators.

Burglar-Proof Cashier's Cage

THE Washington Water Power Company has burglar-proofed one of its cashier's cages located in a car-house in an isolated district, having been impelled to do so by an attempted hold-up which occurred some years ago.

The cage is sheathed with iron on the outer walls and the door, and the windows are provided with steel



BURGLAR-PROOF CASHIER'S CAGE FOR USE IN ISOLATED CAR-HOUSE IN SPOKANE, WASH.

curtains, counterweighted, which can be lowered for complete protection. In the bottom of each steel curtain is a trap or hinged box which can be swung inside or outside without at any time affording a direct opening into the room. Cash is placed in the trap on the outside, which is swung in to give the cashier access to it. A small peek-hole with sliding cover is provided just above the trapdoor.

On Jan. 1, 1913, practically all the stock of the Durham (N. C.) Traction Company was acquired by the Cities Service Company. In the last four years the sales of electric current increased 80 per cent and the number of customers served 90 per cent. Likewise, the number of revenue passengers carried in a year has increased by more than 300,000. Due to the growth of the electric business, a new turbine is on order which will more than double the present capacity of the station.

COMMUNICATION

The Privately Conducted Publicity Bureau

PUBLIC UTILITY PUBLICITY BUREAU

CHICAGO, July 21, 1917.

To the Editors:

We note in the issue for July 7 of the *ELECTRIC RAILWAY JOURNAL* a communication from Leake Carraway, director of publicity Southern Public Utilities Company, urging the establishment by the American Electric Railway Association of a publicity bureau. The writer, like Secretary Burritt of the association, believes "that the exact form which such an organization should take should be carefully considered."

The fact that established privately conducted public utility publicity bureaus or companies have been for some ten or fifteen years in the field should, we believe, receive consideration. Probably Mr. Carraway does not realize the extent of the service now being furnished to public utilities by these privately operated concerns. This bureau alone furnishes service of various kinds to more than 400 public utility companies, including gas, electric and street railway companies, and other publicity concerns and experts, we believe, do an equally large volume of business.

We are publishing a company's employees' magazine for electric railways to distribute among their men which is giving such good service at a reasonable cost that some companies have discontinued their individual publications and are using this. By inserting a few pages of original matter each month they virtually secure an individual publication at a great saving in expense. It is now possible for companies with but twenty-five or thirty employees to secure the advantages of this kind of publicity at a small outlay.

To say, as Mr. Carraway does, that efficient results cannot be obtained from these co-operative publications is like claiming that an isolated plant can give better and cheaper service than a central station, or that a city can be best served by three or four competing electric railways instead of one system.

The fundamentals of public utility operation are the same whether the utility is in San Francisco or New York. And this is true as to public utility publicity. You don't teach trainmen one kind of courtesy in Jacksonville, Fla., and another kind in Portland, Ore. There is not one brand of safety first which can be used in Denver only but would result in disaster in Newark, N. J. Inspiring your employees to loyalty and higher ideals is not a matter of location. An article of inspiration will have just as much effect if read by a conductor in Salt Lake City or a motorman in New Haven. For that matter many Canadian companies use the publicity matter which these bureaus prepare for American companies and secure gratifying results. The general movement for higher fares, too, is applicable everywhere.

Another great advantage of this co-operative publicity service is that it is furnished at so low a cost that the company is not required to seek advertising from manufacturers of supplies to help defray the high cost

of individual publications. This kind of advertising is not profitable to the advertiser, but is more like a tribute exacted from the manufacturer.

Of course there are cases where the publicity is strictly local and which require strictly local treatment. In such cases, if the conditions involve labor or operating questions, special matter covering the cases is inserted in the co-operative magazines at cost. In other publicity work, dealing with rate situations or public relations to cover a special case, direct local treatment is also required. In these cases comparative statistics from other cities are of little use, and each situation must be handled on its merits. The bureaus furnish men for this work where the company has no publicity department.

The privately operated publicity bureaus and firms and individuals engaged in this work believe they are giving efficient service and would be inclined to look upon the establishment of a publicity bureau by the association which would be in direct competition with them as unfair and unwarranted.

W. F. BRASHEARS, Director.

Pacific Claim Meeting Postponed

The convention of the Pacific Claim Agents' Association, which was scheduled to hold its annual convention last week at Portland, has decided to follow the example of the other electric railway associations and indefinitely postpone its meeting on account of the present unsettled conditions in the country. It is understood that the executive committee of the association will meet shortly to take up any matters of special importance which cannot well be postponed.

Accident Figures from Columbus

The following announcement by the Columbus Railway, Light & Power Company tells its own story:

Accident Prevention Record

Three Months Period Ending March 31, 1917.

In the four principal classes of accidents occurring in connection with operation of street cars, our record for the first three months period of 1917 as compared with the same period of 1916 is as follows:

1. Boarding moving cars 6% decrease.
2. Leaving moving cars 11% decrease.
3. Collisions—cars and wagons . . . 15% increase.
4. Collisions—cars and automobiles 86% increase.

There were 44% more automobiles in operation on the streets on March 31, 1917, than on the same date of 1916, accounting for a large part of the increase in class 4.

In *The Federalist* of Nov. 3, 1787, John Jay wrote—

"Among the many objects to which a wise and free people find it necessary to direct their attention, that of providing for their safety seems to be the first."

That sentiment of 130 years ago holds true today as we think of the principles of liberty and public safety our nation must defend, but even amid the war-time responsibilities which Americans gladly assume and the dangers which will come to so many of us, let us not fail to give heed to and take the necessary precautions to reduce the preventable accidents and dangers of the streets.

The Columbus Railway, Power & Light Company

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?

—Pass It Along

In This Issue: S. A. Bullock Tells the Causes
of Car Nosing and How to Remedy It.

Car Nosing

The Author Discusses Reasons for This Action of
Moving Cars and Suggests Means for
Limiting It

BY S. A. BULLOCK

Manager Electric Truck Department, the Baldwin Locomotive
Works

Car nosing, which is horizontal oscillation of the car body about instantaneous axes, occurs on tangent track and is usually negligible on curves. In passenger service a slight amount of nosing is preferable to the rigid transverse shock of non-swinging bolsters, but when these oscillations become excessive, nosing becomes a question of serious moment.

Some of the factors to be considered are: (1) Irregularities of the track; (2) lateral play in the moving parts; (3) overhanging weights.

In general, as compared with steam roads, electric lines are more subject to car nosing, since they operate under worse track conditions. The proportion of longitudinal overhanging carbody weight is greater, and there is the further consideration of the overhung motor weights. Hence, it will be necessary to confine consideration only to the nosing of the electric motor cars.

The initial cause of nosing is poor track; that is, low joints and irregular gage, which force the wheels to slide horizontally, producing a horizontal force at the wheel. This horizontal blow is transmitted through the axle, to the brass, to the journal box, to the truck frame, to the transom, to the top of the swing links, to the bottom of the links, to the spring plank, to the bolster springs, to the truck bolster and finally to the carbody center plate and the carbody.

Lateral play in the wearing parts tends to augment the nosing by permitting the horizontal force to act through the total lateral play. This accounts for the fact that there is more nosing when the trucks are worn than when they are new. Also, the overhanging weights of the motors cause the wheels to "dig in," and this is particularly the case with outside-hung motor trucks.

Since swing links are used to transform the quick-acting, horizontal, transverse forces into slow movements of a greater mass, the question of swing link design is important. If the links are extensible—*i.e.*, with a spring within the link—the nosing is excessive. If links are too short, the nosing is sharp and abrupt. If the links are too long, the nosing is languid.

A combination of short links on one truck and long links on the other has given good results. One end of the car tends to oscillate at a quicker beat than the opposite end, and in this way the synchronism of the movement is broken up, the nosing being neutralized.

Theory and practice both prove that nosing is reduced with long distances from center to center of king pins and with heavy passenger loads.

Nosing can be minimized by the following practices:

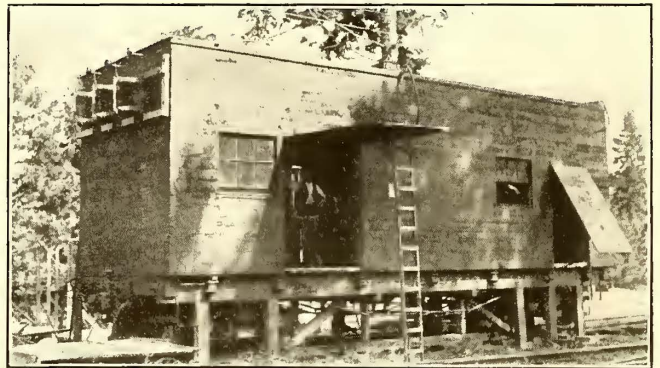
(1) Improve track conditions by leveling the low joints, keeping normal track gage, and using proper weight of rail.

(2) Reduce lateral play in the transverse moving parts by renewal of worn pieces, and break up synchronism of the movements by variable dampening of the transverse motions in the front and rear trucks.

(3) Reduce the overhang of the carbody by lengthening the distance center to center of king pins and reduce the overhang of the motors by placing the motors inside of the wheels.

Railway Substation on Flat Car Supplies Army Post

A new army post at American Lake, about 10 miles south of Tacoma, Wash., is served by one of the lines of the Tacoma Railway & Power Company. The increase in traffic over this line has been so great that an



EMERGENCY SUBSTATION FOR SUPPLYING RAILWAY SERVICE TO
ARMY POST

additional substation was required. The picture shows an emergency substation that is serving the purpose until the company decides upon the proper site and builds a permanent substation.

The emergency station is mounted on a 10-ft. by 36-ft. flat car which is shored up by short lengths of wooden timbers. The energy is transformed from 13,200-volt, three-phase, 60-cycle alternating current to 600-volt direct current. The apparatus used is all equipment which the company had on hand. It consists of two 180-kva., 13,200-2200-volt, three-phase-two-phase transformers; two 150-kva., 2200-400-volt, two-phase transformers and a 250-kw., two-phase rotary converter.

Switch Which Prevents Failure of Signal Current

Pennsylvania Railroad Has Developed a Switch Which Transfers Signal Feeders from One Source of Supply to Another in Less than One-Twentieth of a Second

BY H. K. LE SURE

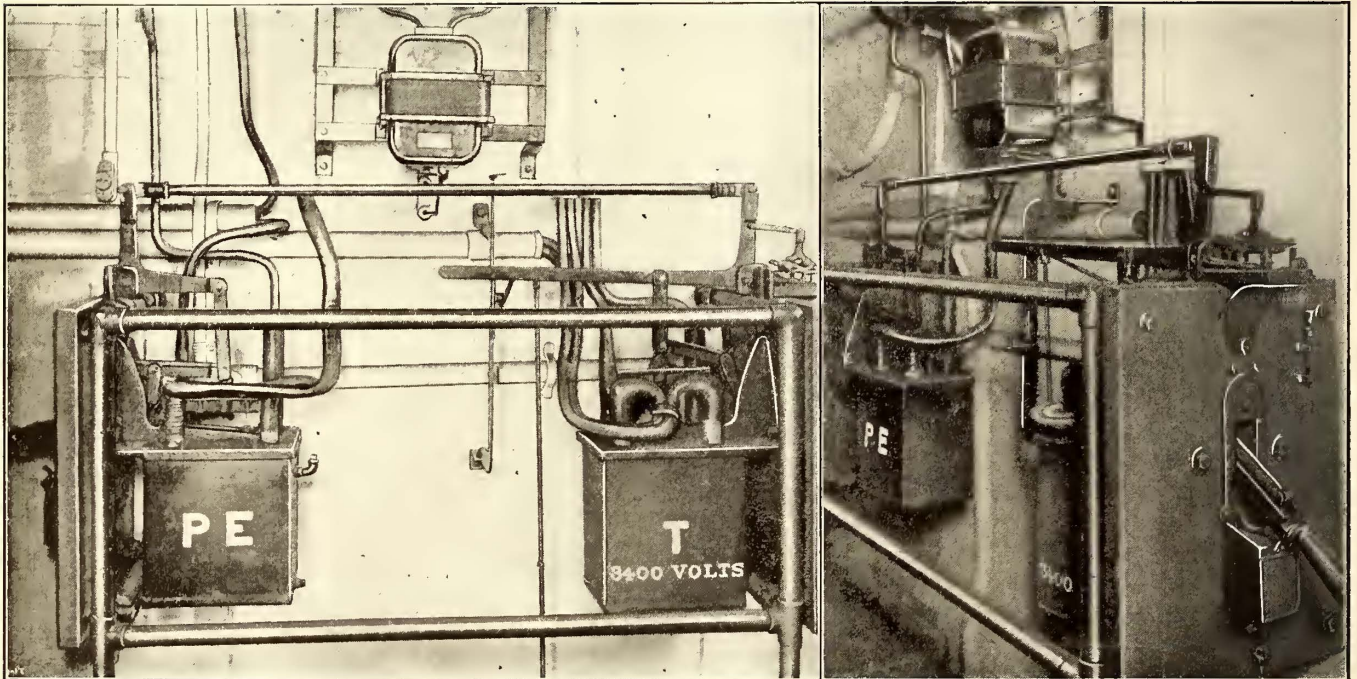
Assistant Master Mechanic, Electrical Equipment, Pennsylvania Railroad, West Philadelphia, Pa.

Modern a.c. signal relays are undoubtedly more sensitive to momentary power interruptions than any other piece of apparatus in commercial use. On trunk lines where a large percentage of the service is operated by steam locomotives, the failure of signal power, causing all signal semaphore arms to go to stop position, results in considerable delay to trains, and it is, therefore, important that means be provided to insure a continuous supply of signal power, thus avoiding one source of signal failures. On the Philadelphia-Paoli and Chestnut Hill electrifications of the Pennsylvania Railroad, the signal system uses 3400-volt, single-phase, 60-cycle cur-

in which the time required for the actual change of the sources of power does not exceed 3 cycles, since it has been found that an interruption of 5 or 6 cycles is great enough to cause the galvanometer or vane type of relay to drop.

The changeover switching device developed consists of two 75-amp., 4500-volt, double-pole oil switches mounted back to back on separate panels and mechanically interlocked by means of bell cranks and connecting links, as shown in the accompanying half-tones. Referring to the first wiring diagram switch *A* acts as a tie between the 3400-volt, 60-cycle motor-generator sets and the outgoing 3400-volt, 60-cycle signal feeder bus. This switch is normally closed. In case of failure of the normal power supply the trip coil located under the oil switch handle unlatches switch *A*, allowing the coil spring *C* to operate the mechanism. This opens switch *A* and closes switch *D*. The latter switch ties the 2300-volt, 60-cycle emergency feeder to the step-up transformer, the high side of which is connected to the 3400-volt signal feeder bus.

The trip coil on switch *A* is actuated as follows:



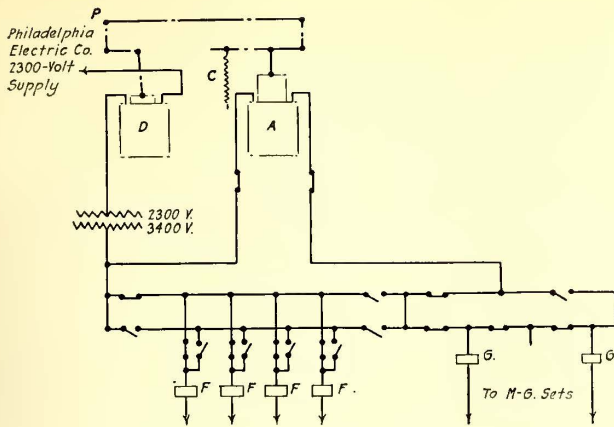
VIEWS OF CHANGEOVER SWITCHES SHOWING INTERLOCKING LEVERS

rent, the power being obtained from motor-generator sets fed from transformers connected to the 11,000-volt, three-phase, 25-cycle traction bus. An emergency source of signal power is supplied from the 2300-volt, 60-cycle lighting feeders of the Philadelphia Electric Company, and the problem was to provide a means by which the signal load could be automatically transferred from the motor-generator sets to the emergency power supply, the transfer to be made at such speed that the signal relays would not be affected.

There are on the market several electric switching devices designed to change the supply of power from one source to another in the event of interruption of either source. However, apparatus of this type is usually designed for use on low-voltage circuits and is not designed especially for high-speed operation. The present condition involved a high-voltage system and one

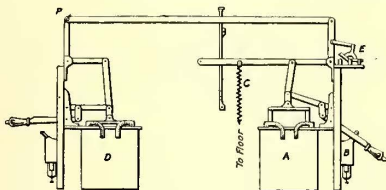
Referring to the second wiring diagram *X*, *Y* and *Z* are induction-type relays. Relay *X* operates on 60-cycle current supplied from the potential transformer on the 3400-volt bus. Its contacts close whenever the bus voltage drops to 3300. Relay *Y* operates on 25-cycle current taken from the 500-volt tap of the transformer supplying the motor-generator sets and it closes whenever the voltage on the 11,000-volt traction bus falls below 9500. When the contacts of both relays are closed the trip coil on switch *A* is actuated and the changeover switch will operate.

Such a condition is the result of a gradual falling off of the voltage on the 11,000-volt bus. The contacts of relay *Y* close first, and later, as the speed of the motor-generator sets decreases, the contacts of relay *X* close, thus operating the changeover switch. The voltage on the 11,000-volt bus may drop as low as 4000, and if



WIRING DIAGRAM OF CHANGEOVER SWITCHES AND SIGNAL FEEDERS

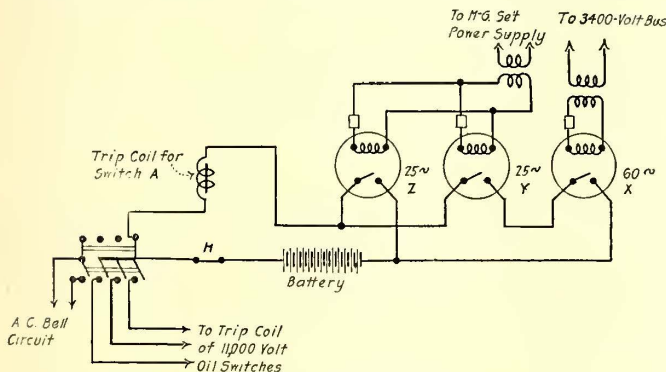
restored before the speed of the motor-generator sets changes, relay X will not operate. This condition prevents the changeover switch from operating at a time of momentary interruption on the traction feeder. Relay Z receives 25-cycle current from the same source as relay Y, but its contacts are not closed until the voltage on the 11,000-volt bus drops below 3500. The contacts on this relay, it will be noted, cause the changeover switch to operate through a different circuit from either of the other relays. Relay Z, therefore, takes care of a sudden loss of all the power on the 25-cycle traction bus. The knife switch H is used to prevent the operation



ARRANGEMENT OF SWITCHES AND INTERLOCKING LEVERS

of the changeover switch while relay adjustments are being made. It has been found by experience that the energy stored in the rotating parts of the motor-generator set is sufficient to carry the 150-kva. load during the short interval of time required for the operation of relays and the changeover switch.

To restore the system to normal after a 11,000-volt disturbance the motor-generator set is synchronized with the 60-cycle emergency feeder. This operation is accomplished by disconnecting the mechanical interlock between switches A and D by removing the pin P.



WIRING DIAGRAM OF CONTROL RELAYS FOR CHANGEOVER SWITCHES

Switch G is then opened and switch A closed, thus making the generator bus alive from the emergency source.

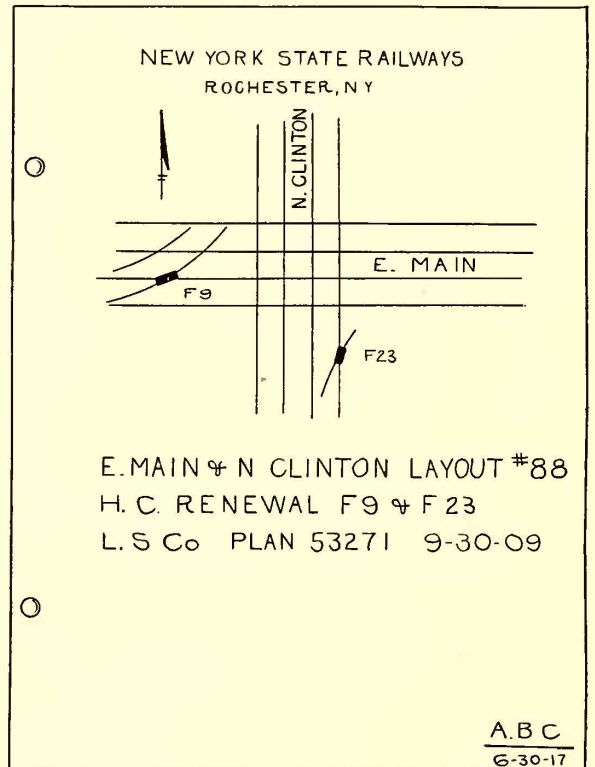
The automatic changeover switch has operated in actual service about eighty times during the last ten months, there being only one case on record where the 60-cycle feeder was out of service at the time of change-over.

Handling of Hard-Center Renewal Jobs Simplified

BY L. R. BROWN

Assistant Engineer Maintenance of Way, New York State Railways, Rochester, N. Y.

On a large electric railway the promptness of making hard-center renewals is an important factor in the special-work maintenance. The system in use in Rochester accomplishes this work with a minimum amount of red tape. When a broken or worn-out center



TYPICAL SKETCH USED IN KEEPING TRACK OF HARD-CENTER RENEWALS

is discovered by an inspector, engineer or roadmaster, it is reported to the assistant engineer, who visits the point, verifies the report and notes the exact location in the layout in his inspection book. A sketch such as the one reproduced herewith is then made, using a soft pencil and an 8-in. x 10 1/2-in. sheet of tracing paper so that it can be blueprinted readily. The time required to look up the information as to manufacturer's plan number, piece number, etc., and prepare this rough sketch is only about five minutes.

The sketch contains the following information: (A) Name of the railway company; (B) sketch of the layout, giving the exact location of the hard center being renewed; (C) layout number (each layout on the system is given a number corresponding to the file number of the special work plans); (D) a list of the frog numbers for which hard centers are wanted; (E) the

steel company's name and the number and date of its drawing, and (F) the initials of the draftsman and date of the sketch.

Two blueprints are made from this sketch. One of these furnishes the clerk with all the information necessary for making out a requisition and is then inclosed with the order to the steel company. The second print is sent to the special-work foreman and serves to notify him that a hard center has been ordered for a certain location. When the hard centers are received from the factory the foreman knows from this sketch where they are to be placed. After the hard centers have been placed the foreman marks on the blueprint the word "Placed." He also dates it and returns it to the assistant engineer.

The original sketch, after the blueprints have been made from it, is placed in a folder marked "Hard Centers and Tongues Ordered but Not Placed." This folder thus acts as a follow-up and assures the engineer that no hard centers are lost or fail to be placed promptly at the proper locations. When the blueprint, with "placed" stamped on it, is received from the foreman the date is marked on the original and the latter is removed to another folder marked "Hard Centers and Tongues Placed, 1917." This folder gives a record of the hard centers placed during the year.

To summarize the system, the little sketch, prepared in a few minutes, provides directions to the clerk for making the requisition, full information to the manufacturer, directions to the foreman for placing, a record for following up the hard centers in stock, and a record as to what hard centers have been placed. The ordering and recording of tongue renewals is made in exactly the same manner.

In manholes, enameled-letter tags are now being used to mark the pot-heads instead of stenciling or using aluminum tags. Stenciling is objectionable because the letters become covered with dirt and cannot be found. Aluminum tags are affected by gas and moisture so that they become illegible.



VIEW OF 2-TON MOTOR TRUCK EQUIPPED WITH A TRENTON TOWER

Motor Truck Practice of Georgia Railway & Power Company

Horse-Drawn Trucks Averaged 10 Miles a Day as Against an Average of 30 Miles a Day for Gasoline-Driven Cars

The Georgia Railway & Power Company, Atlanta, Ga., began the use of motor trucks for the construction and maintenance of its transmission and distribution lines about five years ago. To-day it has twenty-five motor trucks in use. Three track cars are also used for work along the right-of-way and for handling poles.

The motor trucks are divided as follows: Three $\frac{1}{2}$ -ton trucks, six $\frac{3}{4}$ -ton trucks, two 2-ton trucks with Trenton towers, one line truck, one tower truck, four trouble cars and eight Ford cars for light duty.

The mileage per gallon of gasoline consumed is fifteen for the $\frac{3}{4}$ -ton cars and ten for the heavier trucks. The motor trucks in city service average 30 miles per day as against 10 miles per day for the horse-drawn trucks formerly used. The $\frac{3}{4}$ -ton trucks used in transmission



A FLEET OF MOTOR TRUCKS OF THE GEORGIA RAILWAY & POWER COMPANY WHICH HAVE REPLACED HORSE-DRAWN TRUCKS



ONE OF THE 2-TON MOTOR TRUCKS USED FOR HANDLING AND SETTING POLES

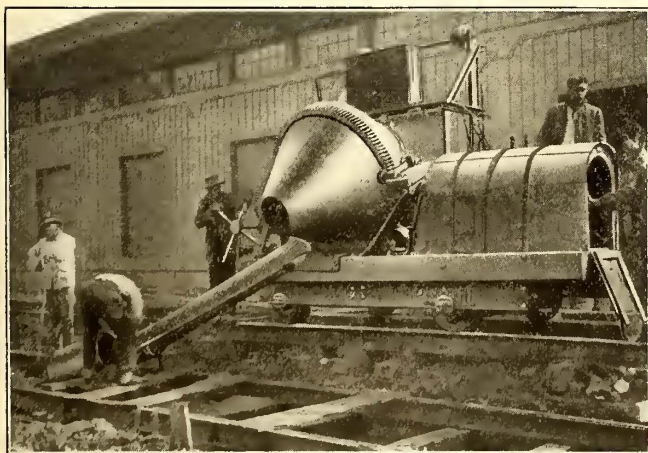
line service average 1000 miles per month. The cost of operation, including gasoline and maintenance, is 4.5 cents per mile for the Ford cars and 10 to 15 cents per mile for the heavier trucks.

New Orleans Builds Track Under Adverse Conditions

Old Ties Show Long Life—New Track Is Laid on Concrete Base—Street Is Paved with Wood Blocks Set in Wet Concrete.

The track construction standards and methods of the New Orleans Railway & Light Company are of special interest because of the sub-surface conditions. The city is practically surrounded by water held out by levees. The soil under the city is an alluvial deposit and until a new city drainage system with large pumps was installed a few years ago, many portions of the streets of New Orleans were practically at water level. Then a 16-in. excavation would always show water. Since the new drainage system has been in operation, the permanent water level is now about 6 ft. below the street grade.

Because of the high-water level in earlier years, the wood ties used in the New Orleans track construction showed an exceptionally long life. During rehabilitation work carried on this past winter untreated cypress ties that had been under the track for more than



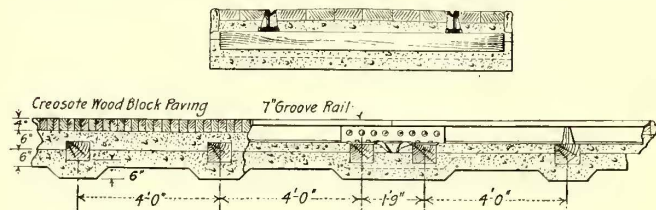
CONCRETING TRACK AT NEW ORLEANS WITH PORTABLE MIXER

twenty-five years, were found to be in such good condition that they still showed the check marks. M. V. Houlard, superintendent of track, credits this long life to the constant saturation of the ties. Although these ties are apparently in good condition they are not reused because of the indefiniteness of their life after having been dried.

THE TRACK AND FOUNDATION

The present track standards of the New Orleans property are of interest, as is the method used in prosecuting the work. After preliminary excavations the subgrade is prepared to a depth of 16 in. below finished paving grade and is rolled with a steam roller. The track, consisting of 105-lb., 7-in. grooved-girder, open-hearth rails, section Lorain No. 433 or Pennsylvania No. 295, is then laid on 6-in. x 8-in. x 7-ft. creosoted yellow-pine ties spaced 4 ft. between centers and provided with malleable brace tie plates. At the joints the ties are spaced approximately 21 in. between centers and the joint is supported by an Abbot plate. The rail joint consists of heavy channel plates provided with eight 1 1/8-in. heat-treated bolts. Electrical bonds are welded to the rail underneath the joint plates.

After the skeleton track is laid it is aligned and surfaced by means of blocks and wedges. Then recesses are excavated under the ties to allow a minimum depth



STANDARD NEW ORLEANS TRACK

of 6 in. of concrete at any part of the base. A concrete mixture consisting of one part cement, two parts sand and five parts gravel is then poured into the excavation to within 10 in. of the top of the rail. This concrete, which leaves the mixer in a rather fluid condition, is then rammed under all the ties by means of tamping bars. After allowing a period of seven days for setting, the concrete paving base is laid to within 4 in. of the top of the rail and the spaces adjacent to the web under the head and groove are plastered with cement mortar. Creosoted pine paving blocks are paved in on the fresh mixture before setting takes place and then are thoroughly rammed to grade. The block pavement is given a flush coat of hot paving pitch, and later all small interstices are filled by running a hot iron over the tarred surface. A coat of 1/4-in. fine torpedo sand is applied before the street is turned over to traffic.

The sectional three-wire system which has been in experimental use on the lines of the Springfield Street Railway on the west side of the Connecticut River for several months has proved to be satisfactory, although operating details are not yet available for publication. It is probable that the same system will be installed on the city lines when new power arrangements involving the purchase of power from the Turner's Falls Power & Electric Company are completed.

Results Obtained in Lightning Protection of Cars

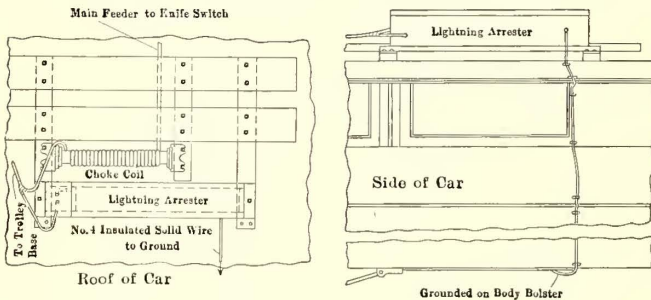
Cars Equipped with Condenser-Type Arresters Struck Forty-three Times in One Season Without Damage

BY GEORGE JACKSON

Manager North Jersey Rapid Transit Company, Hohokus, N. J.

To protect the electrical equipment on our cars from electric storms has been a serious problem and one to which we have given much time and money in experimenting with the various protective devices as they appeared on the market. The route of our railroad passes through a section of northern New Jersey in which electric storms are particularly frequent and severe. For a distance of 15 miles the storms invariably pass in the direction of the railroad, and they go from one end to the other before they have spent their fury. Thus we are reputed to have the worst lightning belt in this section of the country.

We had adopted the recommended practice of installing an arrester along the railroad every one-fifth



METHOD OF WIRING LIGHTNING ARRESTERS, HOHOKUS, N. J.

of a mile as well as at block signals and on each car, but as late as the summer of 1914 much trouble was experienced with each storm. Late in that year we purchased four Westinghouse condenser arresters, type K, which we saw advertised in the *ELECTRIC RAILWAY JOURNAL*. We also purchased two direct-current electrolytic arresters for our substation, thus having our incoming high-tension line and our outgoing feeders to cars well protected by the highly satisfactory electrolytic arresters.

At the time we installed our first condenser arresters it was late in the season and we had only two severe storms, but it happened in each storm that three of the cars were protected by the type K arresters and one was not. In each storm the cars not having the above protection were crippled, in one case by grounding the pump governor and in the other by grounding the compressor armature. The other cars, however, were not damaged at all, although two of them were struck in each storm. During the following winter the type K arresters were installed on all of our cars.

In the early part of the summer of 1915 we had many severe storms in which from one to four cars were struck during each storm, but in no case during the whole season were the cars damaged because of these storms. During that summer there were twenty-four storms and cars were struck forty-three times, but in each instance the arresters took care of the discharge.

The arresters are installed on the roof of the car near one end, where the main feed wire goes to the main switch. The arrester is connected just ahead

of a choke coil wound on a 3-in. spool and having about twenty turns. The ground wire is run down the outside of the car and connected to the body bolster. It is a No. 4 solid insulated wire and has no sharp bends.

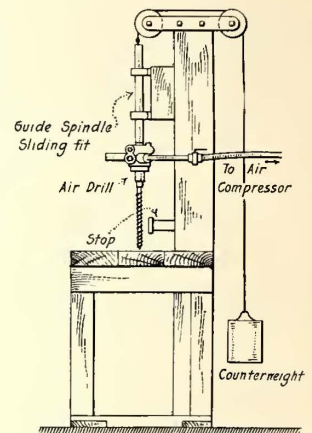
During the summer we inspected the arresters each night and changed the telltale slips of paper which indicated whether or not there were any disturbances; otherwise the arresters received no attention. Since 1916 we have stopped keeping records of lightning arrester troubles as they have practically ceased.

Wood Boring Speeded Up

BY G. B. SISSON

Mechanical Department Georgia Railway & Power Company, Atlanta, Ga.

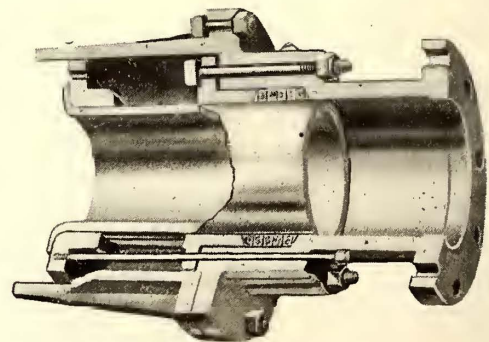
Boring holes in cross-arms and similar woodwork has been facilitated in the shops of this company by using an Independent pneumatic drill and mounting it on an improvised wood frame as shown in the sketch. Two U-shaped pieces of strap iron mounted on a wood block serve to keep the drill in a vertical position. After the drill starts on the work no hand pressure is needed, as the drill is self-feeding, and when the hole is finished the counter-weight helps to pull the heavy drill out of the work. We have found this device saves a good deal of time on jobs requiring a large amount of boring.



AIR DRILL MOUNTED FOR BORING WOOD

Crosshead-Guided Expansion Joints

A crosshead-guided expansion joint, designed by the Ross Heater & Manufacturing Company, Buffalo, N. Y., which adapts the crosshead principle used in a steam engine, has now been in use long enough to demonstrate its effectiveness. The illustration shows the relation existing between the parts of the joint and the stuffing



SECTION OF CROSSHEAD-GUIDED EXPANSION JOINT

box, guides and crosshead. These joints have a telescope of from 4 in. to 16 in., depending on the type. In applying the joints anchorage against movement under longitudinal stress is provided at points where there are elbows or tees for branch lines, and anchorages of vertical lines are made to carry the weight of pipe and fittings.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Seattle and Tacoma Strikes

No Cars Run in Seattle—Partial Service in Tacoma— Conferences Looking Toward a Settlement

On the third day of the Seattle strike, which began on July 17, Judge Boyd J. Tallman, Department No. 3, Superior Court of King County, signed an alternative writ directing the Puget Sound Traction, Light & Power Company to proceed with the operation of its cars. The writ was made returnable on July 23. Acting under direction of the City Council, and with the approval of Mayor Hiram C. Gill, Corporation Counsel Hugh M. Caldwell asked in his petition that the company be compelled to operate its cars within twenty-four hours, failing in which he asked that a receiver be appointed to operate the lines and the company punished for contempt of court. The court gave the company three days in which to resume service.

In the meantime the company is only waiting adequate protection before resuming operations. A. W. Leonard, president of the company, in speaking on this point, said:

"We have been assured of protection in a general way, but in view of the deplorable situation that has been permitted to develop with reference to the express companies' strike, we may perhaps be justified in having our doubts."

Union employees of various express companies in Seattle are on strike and numerous cases of violence have been precipitated, with but little protection being afforded by the Police Department.

In speaking further on the subject of resuming service, Mr. Leonard said:

"It is possible that we will at once take up this protection matter with the city and endeavor to have it placed on a definite rather than a general basis. Having this, we will operate our cars."

Mayor Gill said:

"The traction company can have police protection if it desires to operate its cars. However, if the company imports any Connelly gunmen from Chicago or any others of that type to break the strike, I will have them arrested as fast as they arrive."

In Tacoma, where the strike had its beginning on the night of July 15, ten cars were put in operation on July 18 on the main lines. These were the first cars to move since the beginning of the strike when more than 300 employees of the Tacoma Railway & Power Company walked out. Operation of the cars was attended by no violence. The cars were manned by employees of the company who refused to strike. Aboard each car was a special officer. Further precautions were taken by placing heavy screen and steel netting over both the front and rear platforms.

A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, in reciting the events which led up to the Seattle strike, made the following statement:

STATEMENT BY PRESIDENT LEONARD

"The strike in Tacoma was called on July 15 to force the reinstatement of seven discharged men and to secure recognition of a newly formed union.

"At that time negotiations were pending in Seattle looking to arbitration of the differences between the Puget Sound Traction, Light & Power Company and its employees on the matters of higher wages and shorter hours. When Seattle granted its traction franchise it inserted a clause providing for arbitration of such differences. on the theory that such a provision would make it impossible ever to inconvenience the public by suspension of service through a walk-out. Yet that is what happened.

"On June 21 a committee from the trainmen presented

formal demands upon the company for higher wages and shorter hours. This had been preceded by the formation of a union of the Amalgamated Association and the enrollment of company men by the new union. The demands from the men, however, contained no reference to this union or to the work of organization that had been in progress.

"The committee waited on the company two days later with a request to submit the demands made on June 21 to arbitration, with the result that an agreement was reached at that time to leave the differences to mediation as provided in the terms of the franchise, and with the promise on both sides that there would be no hasty or arbitrary action. Two arbitrators were appointed immediately, James Duncan, secretary of the Central Labor Council, for the men, and C. J. Franklin, Portland, Ore., for the company.

"On July 3 an additional list of demands from employees other than trainmen was presented, and the company thereupon issued a statement making it plain that it depended upon arbitration as provided in the franchise and as agreed to in the conference of June 23.

"On July 14 a form of agreement making still greater demands was presented by the men with a suggestion that conciliation be substituted for arbitration, but promising that if this were not satisfactory the men would proceed to arbitration. The company's reply was made in these words: 'We now again make it clear that we are willing to go ahead with arbitration.'

"On the following day came the walk-out in Tacoma, and on July 16 the committee presented an ultimatum in two letters, one demanding that President Leonard personally enter the Tacoma situation on behalf of the strikers and force the reinstatement of the discharged employees there, and the other that the company recognize the union of the Amalgamated Association, with the threat of an immediate walk-out as the alternative.

"The company's cars were left in the carhouses on Tuesday. The strike was precipitated by the men refusing to abide by the agreement to arbitrate, and walking out to force the reinstatement of men previously discharged in Tacoma."

President Leonard, further reviewing the events which preceded the Seattle strike and the differences between the company and its employees, said that wages and hours were not the issue that precipitated the strike, but the refusal of the company to enter the Tacoma strike situation and the demand for recognition of the union. Said Mr. Leonard:

"The first formal demand made on behalf of the employees was based wholly on wage increases and shorter hours of service and the reinstatement of several discharged employees. It was then agreed that these demands be submitted to arbitration, as provided for in our franchise, but instead of submitting the differences which had arisen to arbitration, new demands were made upon the company, which if acceded to would have been ruinous. It was a clear case of abandoning the original issue and the agreement to arbitrate, and of forcing the situation by demanding recognition of the Amalgamated Association with a sympathetic walk-out immediately effective as the alternative.

"This union is one the company cannot recognize and continue to furnish adequate and satisfactory service. It arbitrarily demands the right to hire, discipline, direct and fire all employees under its jurisdiction and actually does that very thing to the detriment of service. Experience with it proves that the public invariably suffers wherever that organization is permitted to control street railway operation. We cannot delegate to that union, nor to any person or persons not in our employ, the right to hire, direct or make terms for us with our men."

The city of Seattle took official cognizance of the failure of the company to supply service when A. L. Valentine. su-

perintendent of public utilities, addressed a letter to President Leonard in which he called attention to the terms of the franchise of the company fixing conditions under which service is to be rendered. In conclusion Mr. Valentine said:

"No street railway service has been given to-day, July 17, and unless I receive immediate advice that service is to be rendered as required by your franchises, I shall report to the City Council the failure of your company to operate its street railway franchises 'in accordance with their provisions or at all.'"

President Leonard, in replying to Superintendent Valentine's communication, reviewed the strike situation at length. He concluded his letter as follows:

"In short, while definite preparations were being made to arbitrate the questions of difference the trainmen, because of outside influence brought to bear upon them, broke their agreement and brought about a complete interruption of transportation, on account of something which had nothing whatever to do with the Seattle situation. We wish to advise that we are ready to resume service whenever we are guaranteed adequate protection for our property and employees. We fully realize our contractual and moral obligations, and it is our earnest desire to be placed in a position at the earliest possible moment to carry out these obligations."

Employees of the Seattle-Tacoma and Seattle-Everett interurban electric lines, operated by the Puget Sound Traction Light & Power Company, who are affiliated with the Brotherhood of Railway Trainmen, on July 18 formulated demands which were forwarded to the international officers in the East for consideration and ratification. It is believed that no trouble will occur on the interurbans, therefore, for ten days or more, unless the employees should affiliate at once with the Seattle trainmen.

A resolution adopted by the City Council of Tacoma directed the city attorney to petition the Public Service Commission to demand that action be taken directing the attorney general to apply to the court for a writ to insure the operation of the cars in Tacoma.

No cars were being operated in Seattle on July 26. Three hundred strike breakers have been imported from Chicago and New York and more are expected. It is regarded as likely that Mayor Gill may issue an order temporarily prohibiting the operation of cars on the downtown streets by strike breakers, saying it invites disorder. He insists that the outlying district also be served.

The Seattle company attempted to operate on July 20 and 21 under order of a writ by Judge Neterer in the Federal Court, who denied the injunction asked by the company to restrain the strikers from interfering with the operation of the cars. Judge Neterer declared that the situation called for executive, not judicial, action. He took under advisement the city's motion to remand to the State Court the city's case asking for a mandate to compel the operation of cars or for the appointment of a receiver. This case had been removed from the State Court on July 23.

The first conference looking toward a settlement of the strike was held on July 26 between five employees from the Tacoma Company, five from the Seattle Company and the officials of both companies. Nothing definite was agreed upon, but it was reported that progress had been made. It was believed on July 26 that the Seattle company would make no attempt to operate until a similar further conference had been held on July 27. On July 28 the strikers offered to arbitrate and return to work, providing seven discharged Tacoma men were reinstated. This was met with a counter offer from the company asking that the strikers withdraw their demand for the reinstatement of the Tacoma men. The strikers rejected this proposal.

Thirty-five cars were being operated in Tacoma on the main streets on July 26. No violence was reported there. The strikers in Tacoma are operating jitneys. No strike breakers have been used in Tacoma. Suit was brought on July 23 in the Pierce County Superior Court by the State Public Service Commission to compel the Tacoma Company to provide adequate service. The hearing was set for July 27. The Tacoma company on July 26 asked for an injunction against Messrs. Hoover and McMorrow, organizers of the Amalgamated Association. The company charged Messrs. Hoover and McMorrow with conspiracy and intimidation.

Wage Agreement in Portland, Me.

Summary of Working Conditions of Men on Portland Railroad and the Lewiston, Augusta & Waterville Street Railway

The Cumberland County Power & Light Company, Portland, Me., has completed negotiations with the Amalgamated Association of Street & Electric Railway Employees of America, of which its car men and shop men are members, and an agreement covering wages and other working conditions for the men has been signed for one year from May 1, 1917. Increases of 3 to 4 cents an hour are accorded platform men, while shop and other employees receive increases of 8 to 12 per cent. The new and former scales for car service are as follows:

	Cents per Hour	
	Former	New
First year	26	29
Second year	27	30
Third year	28	31
Fourth year and after	29	33

About 350 motormen and conductors and 200 miscellaneous employees are affected by the agreement. There is a provision for an automatic yearly renewal unless sixty days' notice is given prior to May 1. A standard day's work consists of nine hours, but on Saturdays, Sundays and holidays eight hours constitutes a day's service. The agreement is of the nine-hours-in-twelve type, with a guarantee of seven hours' minimum pay a day. Allowances of ten minutes are granted for making up accident reports and five minutes each for making up day cards and pulling out cars. Stools are to be provided for motormen. Extra allowances include 5 cents an hour for snow work and operating one-man cars (used in winter) and 2.5 cents for instruction service. A thirty days' probationary period is now required.

An agreement for one year has also been signed by the officers of the company with the trainmen and shopmen on the Lewiston, Augusta & Waterville Street Railway. The agreement with the men on the Lewiston, Augusta & Waterville Street Railway is practically identical with that of the Portland Railroad, with the exception that the wage scale is somewhat lower in practically every case. The pay of motormen and conductors on the Lewiston, Augusta & Waterville Street Railway, for example, is as follows:

	Cents per Hour	
	Former	New
First year	23	27
Second year	24	28
Third year	25	29
Fourth year and thereafter	26	31

Power house men, substation men, linemen and some of the shopmen are members of the local branch of the International Brotherhood of Electrical Workers, and a contract has been signed with them for one year from May 1, 1917. Briefly the agreement provides for a nine-hour day for linemen and shopmen, Mondays to Fridays inclusive, and eight hours Saturdays, Sundays and holidays with pay for nine hours. The power house and substation men work an eight-hour day. All men working seven days a week are allowed one week's vacation a year with pay. Time and a half is paid for overtime, but Sunday and holiday work is not considered overtime for seven-day men.

All of the agreements recently executed date from May 1, 1917, and the men will receive increased pay from that date.

Public Hearings on St. Louis Bills

Alderman Tamme on July 20 introduced two ordinances into the Council of St. Louis, Mo., embodying the terms of the two plans which have been advanced for the settlement of the differences between the United Railways and the city. The measures were sent to the public utilities committee at a special meeting on July 23 and public hearings were ordered to start on the night of July 25. One measure provides for a settlement under the plan by which the city would become a partner of the company. The other provides for a settlement without any partnership arrangement. The principal provisions of both ordinances have been reviewed briefly in previous issues of this paper.

Brooklyn Car Case Argued

Commission Seeks to Enforce Order to Require B. R. T. to Purchase 250 Surface Cars—Company Considers Order Unreasonable

On July 18 Justice Ordway of the Supreme Court held a hearing on the writs of certiorari obtained by the Brooklyn (N. Y.) Rapid Transit Company to review the commission's order that the company increase its equipment by adding to it 250 cars for use on its surface lines.

In his argument for a dismissal of the writs Judge William L. Ransom, counsel for the Public Service Commission, declared that the voluminous correspondence on the matter clearly proved that the writs were obtained in bad faith, and that no issue was raised on which any court could set aside the order of the commission. He said that the writs were obtained without notice to the commission, and that no opportunity was given to the commission's representatives to be heard. Mr. Ransom said:

"The commission has no desire to be unjust to the company or to any of its subsidiaries. Justice and fair dealing to the company, no less than to the public, is the spirit and purpose of the Public Service Commissions law. It is difficult for the commission even now to believe that these writs represent the best judgment of the officers of the companies interested as to what should be done in dealing with the commission and the public. If anything a commission orders may be indefinitely delayed by the simple filing of a writ, without even a pretence of concealment of the corporate purpose, the public will of necessity find reason for disappointment in the failure to realize in New York the benefits won by public service regulation in States which countenance no such dilatory writs. The lower courts should refuse to grant or countenance writs of this character."

In arguing in behalf of the company, D. A. Marsh said that additional cars were not needed, and that there would be still less need for them when the new rapid transit lines were in operation. He said:

"It is unreasonable to require these companies to go into the present abnormal market and purchase cars. There has probably been no time in our nation's history when prices for labor and material were so much above normal or when deliveries were so uncertain. It should be borne in mind that the credit of the Brooklyn Rapid Transit system, of which these companies are a part, is pledged to the carrying out of rapid transit enlargement jointly with the city, entailing for our system an expenditure of not less than \$60,000,000, and inasmuch as this credit must for some time be assured by the earnings of the surface lines, any unnecessary burden now imposed on those lines will be an impediment to the larger plan of transit development. The time given the companies to provide the cars is so limited that unless the dates mentioned are to be considered as subject to change, no opportunity is given to exercise a proper and reasonable discretion with respect to market conditions."

The date for filing briefs was fixed for July 24.

Mr. Wilcox Advised Norfolk

Delos F. Wilcox, New York, N. Y., met the street railway committee of the City Council of Norfolk, Va., on July 16. As a result of the recommendations which were made by Mr. Wilcox, another meeting of the committee will be called shortly and a decision as to procedure in connection with the matter of the new railway franchise to the Virginia Railway & Power Company will be determined.

It is regarded as likely that the committee will report to the Council the need of funds to adopt the suggestions of Mr. Wilcox and ask the Council to let the committee take steps to bring the negotiations for a new franchise to a conclusion or to discharge the committee.

Mr. Wilcox advised the committee not to surrender any advantage that the city may possess. He urged that jitney regulation should wait the final determination of the franchise question. He declared also that the proposed new franchise should be written by the city. Having prepared the franchise, the committee should consider any modifications that might appear fair and just to the company, and then should put the matter squarely up to the company.

Lincoln Service Inquiry Closed

The hearings before the State Railway Commission of Nebraska to inquire into the service furnished by the Lincoln Traction Company have been closed. The case grew out of the recent strike of the employees of the company. The company was gradually building up its service to normal with new men when complaint about alleged inadequate service was filed with the commission. In this way the old men hoped that the hand of the company would be forced and that the impression would get abroad that the company was unable to return to normal service without their help.

At one of the hearings the company introduced testimony by men who had returned to the company to show that in a very large measure the former employees were largely responsible for the inability of the company to meet service demands. Many specific acts of vandalism were reviewed. There were recitals of the all too frequent cases of dynamiting, rock throwing, greasing rails, tearing up track, and other acts of violence practised in strikes. Shocking tales were told of the contumely heaped upon the heads of some of the men who returned to the company.

G. W. Wattles, president of the Omaha & Council Bluffs Street Railway, was called as the Lincoln Traction Company's last witness. He reviewed the history of the union in that city. The Omaha union was organized in 1902 and continued up to 1909, when a strike was declared. The company won and now it employed no men who belonged to the union. Mr. Wattles said that in the beginning the Omaha company was assured by the men who promoted the union that it would make no demands for recognition and would not try to force out of the service men who did not join it. Friction soon developed. After some years, a national organizer appeared on the scene, a number of meetings were held, and about half the employees became affiliated with the union. Demands were then made that the company recognize the union and discharge those in its employ who did not belong. This the company refused to do. A strike followed. Mr. Wattles expressed the opinion that public service corporations should not be hampered by union regulations, which interfere with the obligations of a company to the public. As he viewed it, the existing laws insured the men fair treatment. Mr. Wattles expressed the opinion that the union tied a man's hands, killed initiative, and took away the stimulus to do one's best work.

Philadelphia Bill Signed

Governor Signs Measure Giving the City the Right of Eminent Domain

The eminent domain bill, the so-called Hecht measure, giving the city of Philadelphia, Pa., the right of eminent domain in the case of railways and franchises was signed by the Governor on July 19. Two other bills bearing on the rapid transit matters which the city desired were also passed. These bills were purely financial measures.

As noted recently in the ELECTRIC RAILWAY JOURNAL, the Salus bill, which provided for through routing between municipal railway lines and privately owned electric railways and fixed the joint rates for such lines and the terms of transferring between them, went down to defeat. Mayor Smith was much put out by the failure of the Salus bill, and charged that the combined opposition of the electric railways to the measure brought about its defeat.

One of the pieces of legislation, the Hefferman resolution, found the Mayor and A. Merritt Taylor, former director of city transit of Philadelphia, opposed over the merits of the bill. This measure was passed by the Legislature. It permits the extra 3 per cent borrowing capacity of the city now available only for transit and port development to be used for any form of permanent city improvement.

The Hecht bill authorizes any city of the first class "to acquire (existing) street railway transit facilities within such city or adjacent thereto and the franchises for operating the same by the exercise of the power of eminent domain providing for the determination by the Public Service Commission subject to appeal of the amount of compensation to be paid for the properties and franchises taken and empowering such city to operate, maintain, use, lease, license or contract for the operation so acquired."

Strike in Kansas

Joplin & Pittsburg Railway Forced to Suspend Service by Strike of Its Power Employees

The lines of the Joplin & Pittsburg Railway, Pittsburg, Kan., were tied up recently for four days by a strike of the power station and allied employees declared by the men as a means of forcing the company to yield to demands which had been made for increases in pay. Service on the lines of the company was suspended during the period of the strike.

The members of the engineers' and firemen's unions demanded a wage increase of \$5 to \$7.50 a month and a shorter working day, in fixing the new three-year working contract. The original demand of the men was for \$100 a month for the engineers and \$90 a month for the substation men. This scale the company refused to meet. Later the men cut the figure to \$95 for engineers and \$82.50 for substation men. The company offered \$90 a month for the engineers and \$75 a month for the substation operators. W. A. Satterlee, general manager of the company, was quoted as follows:

"We cannot afford to give the men more than we have offered. In fact, I do not see how we are going to meet the scale we have offered them unless we can get an increase in rates. We have been seeking such an increase for the past two years, but have been unable to obtain permission from the Kansas State Public Utilities Commission to make the increase. We would give the men more if we could afford it, but we cannot."

Later both sides made concessions. The compromise agreement gives the engineers \$95 a month, the amount they have been demanding since they made their first concession. The company had held out for \$90 a month. Substation operators who had asked for \$82.50 a month accepted the company's offer of \$75 a month. The scale of wages previous to the strike under the expired three-year contract was \$100 a month to engineers and \$75 a month to substation men, both working twelve hours a day. The firemen had previously accepted the terms of the company, but they struck after the contract was signed because the engineers did not receive their demanded increase. The eight-hour day is now made effective for all men in the two unions.

Wages Advanced in Texas

Edward T. Moore, manager of the Dallas (Tex.) Consolidated Electric Street Railway, announced an increase in wages of all motormen and conductors of 2 cents an hour, effective on July 1.

The Houston (Tex.) Electric Company, a Stone & Webster property, has announced an increase in wages to all trainmen in its employ, including conductors and motormen, of 2 cents an hour, effective from July 1. About 500 men are affected by the increase, which is the third voluntary advance to be put into effect by the company within the last eighteen months.

An increase in wages of 2 cents an hour for all motormen and conductors has been announced by A. H. Warren, general manager of the Galveston (Tex.) Electric Company, a Stone & Webster property. The increase is effective from July 1, and is the third voluntary wage advance for the company since Jan. 1, 1916. The first raise was on Jan. 1, 1916; the second on Aug. 1, 1916, and the third on July 1, 1917. The highest wage under the new scale will be 30 cents an hour, and new men will be started at 25 cents an hour. In announcing the wage increase, Mr. Warren called attention to the advancing cost of operation, but said that living cost for the men was also advancing and the company felt that it should help to lighten the burden of the employees as much as possible.

The Northern Texas Traction Company, Fort Worth, Tex., a Stone & Webster company which operates the Fort Worth street car lines, the Dallas-Fort Worth Interurban and the Oak Cliff electric railway lines in Dallas, announced, through G. H. Clifford, general manager, an increase of 10 per cent in the pay of all motormen and conductors on its lines, effective from July 1.

Engineers Retained in Rhode Island

Sloan, Huddle, Feustel & Freeman Employed in Rhode Island Investigation

Robert M. Feustel, president of the Fort Wayne & Northern Indiana Traction Company, and a member of the firm of Sloan, Huddle, Feustel & Freeman, Boston and Chicago, consulting engineers, has been employed by the special commission appointed by special act of the Legislature of Rhode Island to make an investigation of the Rhode Island Company. The latter operates 422 miles of electric railway in Rhode Island and has been collecting a straight 5-cent fare on all lines, but made application a short time ago to the Legislature for relief. This special commission appointed by the Legislature is composed of the chairman of the Public Service Commission, the chairman of the Tax Commission and the chairman of the Banking Commission.

Sloan, Huddle, Feustel & Freeman were employed to investigate whether there should be an increase of fare or whether changes in the operating methods of the company might bring about financial relief. They were also instructed to check the appraisal of the property of the Rhode Island Company made by Ford, Bacon & Davis for the company last fall and submitted this spring.

Inasmuch as the work of investigation is being done for the public and the company has placed itself entirely in the hands of the state officials, the case should serve as a model and should be of great interest to railway managers generally. The company has placed itself in the hands of the State, and the State, in turn, has passed on to the special commission and the engineers the question of what should be done. As stated previously in the *ELECTRIC RAILWAY JOURNAL*, the commission is to report to the Legislature on Feb. 18, 1918, which gives approximately eight months in which to complete the work of investigation.

Connecting Line Must Be Built

Boston Elevated Railway Ordered to Build Connecting Link Between Surface Lines and Subway Entrance

The Public Service Commission of Massachusetts has ordered the Boston Elevated Railway to build a double-track surface line in Pleasant Street, Boston, between Washington Street and the southerly entrance of the Tremont Street subway, in order to provide for faster service between the South Boston district and the retail shopping center of the city. Under an act of the 1917 Legislature the commission was required to investigate the necessity for such a line, including the extension of the proposed construction to the Park Square district. The company opposed the proposed expenditure on the ground that the opening of the Dorchester tunnel in the not remote future would enable passengers to travel from the foot of Broadway, South Boston, to Park Street in five minutes; that the cost of the tunnel, more than \$9,000,000, would be a heavy burden, and that the company should not be required to furnish unnecessary duplicate service by a slower route after this rapid transit line has been opened. The company also contended that the Tremont Street subway was congested and that under present conditions it could not successfully digest additional traffic if the new route should prove popular.

The commission finds that by the construction of 460 ft. of double track from Washington Street to the subway entrance there will be a saving in time of about 5.5 minutes per trip in comparison with the present surface route over Broadway Extension, and from two to three minutes in comparison with the normal route, at present not used on account of the tunnel construction. The estimated cost of the extension is \$38,000. The company questioned the power of the commission to require it to make this investment, but the board holds that it has authority to order the company to build the line as part of its facilities. The board does not require the company to extend the construction to the Park Square district at present, but holds that the improvement in surface line service will be useful even after the Dorchester tunnel is completed, for both regular and emergency operation.

East St. Louis Wage Terms

The differences between the officials of the East St. Louis & Suburban Railway, East St. Louis, Ill., and the employees over the question of wages have been settled by arbitration. The board returned its findings on the afternoon of July 21. The agreement which has been reached provides that motormen and conductors on the interurban lines shall receive 33 cents an hour and the men on the city lines 31 cents an hour. The shopmen and shedmen will also get increase of approximately 15 per cent over their present wages. The new wages are retroactive to May 1. Under the old contract, which expired on April 30, interurban men were paid 28 cents an hour and city men 27 cents an hour. No distinction was made between motormen and conductors in the matter of wages.

When the old contract expired demands were made on the company by a committee of the employees calling for a new wage scale considerably above what the officials of the company were disposed to pay and one much higher than the rate finally agreed upon. Officers of the international union went to East St. Louis and made an effort to come to an agreement with the company. Sessions were held daily for several weeks, but the differences could not be reconciled. Two or three weeks ago arbitration was decided upon. The officials of the company selected Charles E. Smith, a consulting engineer of St. Louis, to represent them and the employees chose Al. L. Towers, Belleville, Ill. Many meetings were held by Messrs. Smith and Towers in the hope that the matter could be adjusted by conciliation without calling a third party. In this, however, they did not succeed. Finally Frank Kesting, former city treasurer of East St. Louis and now a contractor, was selected as the third member of the board.

Arbitration in Buffalo

Efforts on the part of the union platform employees of the International Railway, Buffalo, N. Y., to repudiate a three-year agreement with the company and call a general strike on July 21 because of the discharge of a conductor for disobedience to the company's rules, were thwarted when Edward G. Connette, president of the company, suggested that W. D. Mahon, international president of the Amalgamated Association of Street & Electric Railway Employees, be appointed to pass upon the reasonableness of the grievances. This suggestion on the part of the company officials came as a complete surprise to the union. The offer was rejected. It was then suggested that a board of arbitration of three members be appointed. The International Railway appointed Bert L. Jones, vice-president and general manager of the Niagara Gorge Railway; the union selected John B. Kolb, a motorman, and these two arbitrators agreed upon Frank X. Schwab, a wholesale liquor dealer, as the third member of the board.

Several months ago the union made a demand upon the company for an increase in wages, in violation of a three-year agreement with the company. This agreement expires on April 30, 1918. The demand was rejected and since that time many union employees have resigned. The present trouble came to a climax about July 15 when Frank Reilly, a conductor and an officer of the union, was discharged for abandoning his car. The union demanded the man's immediate reinstatement. This the company refused. A strike vote was taken and the men decided to walk out on July 21. Arbitration was then agreed upon.

Chattanooga Wages Adjusted

The differences between the Chattanooga Railway & Light Company, Chattanooga, Tenn., and its employees have been settled. On Oct. 7, 1916, the company made an agreement with its employees, one clause of which provided for an increase in wages within six months from the date of the agreement, provided that the earnings of the company warranted an increase.

In keeping with the spirit and letter of the agreement, and notwithstanding the earnings of the company did not warrant it, an increase of 1 cent an hour was granted to

all of its railway employees, regardless of their union affiliations.

The clause in the agreement above referred to provided that in the event the company did not grant an increase in wages, the employees would have the right to demand arbitration. Complaint was made that the increase in wages was not sufficient and the employees demanded arbitration. The company maintained, however, that there was nothing to arbitrate, as the increase had been granted within the time specified in the agreement.

In order to show its good faith, and anticipating that future earnings would increase, the company voluntarily granted a further increase of 1 cent an hour to all employees of the company, effective on Aug. 1, 1917. This did not satisfy the employees and a representative of the Amalgamated Association was called to Chattanooga. Later Hywel Davies, a conciliator of the Department of Commerce and Labor of the United States, was called to Chattanooga. He arrived on July 2 and conferred with the men and officials of the company. Mr. Davies was quick to see the company had lived up to its agreement in every respect and so advised the men. At his solicitation, however, the company agreed to make the additional increase effective from July 1 instead of Aug. 1.

Service Resumed in Lima

On July 20 the Ohio Electric Railway was operating fifteen cars on its local line at Lima with men employed to take the place of striking motormen and conductors. No cars were run after dark. Operation was resumed on July 18 with ten cars. About the same number was used the following day. The strikers did not attempt to interfere with the service, but very few persons used the cars the first few days.

On July 19 officers of the Carpenters' Union filed a petition with City Auditor D. L. Rupert asking that the city take over the street railway property by condemnation proceedings and an effort was made to prepare petitions for a referendum vote on the municipal ownership proposition. The unions affiliated with the Lima Trades & Labor Assembly will aid in this work.

The strikers have placed a number of 5-cent jitneys in operation in competition with the railway. The autos are operated on all the streets where the company is furnishing service.

Ohio Road Wants to Abandon Unprofitable Branch.—The Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio, on July 17, filed a request with the Public Utilities Commission of Ohio for authority to abandon the Spring Valley division of its road between Spring Valley and Roslyn. It contends that the division has always lost money and that its continued operation might endanger the solvency of the company. This is the first application of the kind since the enactment of the law that stations and tracks may be abandoned only with the consent of the Public Utilities Commission.

New Wage Agreement at Providence, R. I.—A new wage agreement has been reached between the Rhode Island Company and the local branch of the Amalgamated Association at Providence, R. I. The agreement has a life of two years dating from June 1, 1917, and grants a wage increase ranging from 1 to 8 per cent. Uniformed men will receive the following rates per hour: First six months, 28 cents; second six months, 30 cents; second year, 31 cents; third year and over, 34 cents. Beginning June 1, 1918, men in service more than three years will receive 35 cents an hour. An increase of 4 cents an hour is granted to shopmen in the employ of the company.

Philadelphia Awards \$15,000,000 Contracts.—W. S. Twinning, Director of City Transit of Philadelphia, Pa., after a conference with Mayor Smith and Dr. William Draper Lewis on July 25 let six contracts, involving an expenditure of \$14,747,359 for the construction of the main lines of the high-speed transit system. Four of the contracts were awarded to the Keystone State Construction Company, one to Smith, Hauser & MacIsaac, Inc., New York, and the sixth to the Philadelphia Subway Construction Company, a newly

organized construction company. The contracts were let upon bids which were submitted by the contractors six months ago.

Philadelphia Appeals for Approval of Rapid Transit Construction.—Transit Director Twining and Assistant City Solicitor Lowengrund, representing the city of Philadelphia, appeared before Chairman Ainey of the Public Service Commission on July 18 and asked the commission's approval of the city's purpose to proceed with the construction of the section of the Frankford elevated line from Arch to Callowhill Street and of the Chestnut Street subway from Front to Thirtieth Street. At the conclusion of the hearing Mr. Ainey announced that he would lay the matter before the entire commission, in executive session on July 23.

Another New York Rapid Transit Line Opened.—The Interborough Rapid Transit Company, New York, N. Y., began the operation of its Second Avenue elevated trains over the Queensboro Bridge on July 23 to a connection with the new rapid transit lines in the Borough of Queens, extending to Astoria on the north and to Corona on the northeast. The Queens lines in the past have been operated by trains from the Queensboro Subway, running from a connection in Manhattan with the first subway at the Grand Central Station in Forty-second Street. Under the new operation subway trains will be withdrawn from the Astoria service, and the elevated trains from the Second Avenue (Manhattan) line substituted. This will give to Queens both elevated and subway service from Manhattan and the Bronx at a single fare.

Plan for Initiating Rapid Transit Ordinance.—The defeat of the underground terminal and subway ordinance by the City Council of Cleveland, Ohio, has caused the friends of the movement to rally to the Mayor and plans have now been made for initiating the ordinance by petition. The petitions will probably be laid before Council on Aug. 27, the first meeting after the summer vacation, and then, if not acted upon favorably, the question will be placed before the voters at the fall election. The ordinance calls for the appointment of a street railway commission, the construction of a subway between the underground bridge approach on Superior Avenue and the Public Square and the construction of a subway terminal at the Public Square. It is proposed to issue \$3,500,000 of bonds to provide funds to pay for the construction work.

Conductors Who Stole Arraigned Before Court.—W. G. Gilbert and Guy Brinsfield were tried at May's Landing, N. J., recently on the charge of participating in a conspiracy to mulct the Atlantic City & Shore Railroad for which they worked for a short time last summer. They were arrested in Connecticut and indicted in Atlantic County on the charge of stealing from the railroad by withholding fares. Gilbert, who is not well, was ordered by the court to return to his home and appear for sentence later. Prosecutor Charles S. Moore informed the court that the men were members of a gang that had been defrauding electric railways. They obtained jobs, it is said, by submitting fake recommendations. The apprehension of Gilbert and Brinsfield by the authorities was noted in the *ELECTRIC RAILWAY JOURNAL* of March 31, page 609. Previous to that Thomas Barlow, another conductor, was sentenced to serve six months in the county jail.

Women Operators Being Considered in Los Angeles.—Confronted with a labor shortage, the Pacific Electric Railway, Los Angeles, Cal., is considering the employment of women to operate its cars, according to a statement made by Frank Karr, chief counsel for the company, to the City Board of Public Utilities at a hearing held by the board to determine why the Pacific Electric Railway was not rendering better service. Representatives of the company admitted that a mistake had been made on July 4 when cars were taken off certain lines and some cars were not properly marked, and promised that this would not happen again. The hearing was continued to give the engineering department of the board an opportunity to make a thorough check of the service and to prepare suggestions for improving service. In response to statements made by the railroad officials that they could not secure men at the present schedule of wages, the board made it plain that it was interested only in service rendered by the company and not in wages paid.

Financial and Corporate

Annual Reports

Brooklyn Rapid Transit Company

The comparative income statement of the Brooklyn (N. Y.) Rapid Transit Company for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Transportation revenue....	\$28,992,111	98.27	\$27,557,278	98.60
Miscellaneous revenue....	511,908	1.73	391,493	1.40
Total operating revenues....	\$29,504,019	100.00	\$27,948,771	100.00
Maintenance of way and structure	\$2,505,288	8.50	\$2,485,421	8.89
Maintenance of equipment	2,496,349	8.46	2,508,369	8.98
Operation of power plant	2,041,617	6.92	1,725,307	6.18
Operation of cars—trainmen's wages.....	5,605,533	19.00	5,084,648	18.19
Operation of cars—other expenses	1,978,089	6.70	1,858,323	6.65
Damages	713,768	2.42	602,968	2.16
Legal expenses in connection with damages....	269,523	0.91	256,113	0.91
General law expenses....	57,394	0.20	66,038	0.24
Other general expenses....	768,991	2.60	797,652	2.85
Freight expenses.....	304,666	1.03	302,102	1.08
American Railway Traffic Company—expenses ...	199	0.00	6,961	0.02
Total expenses.....	\$16,741,417	56.74	\$15,693,907	56.15
Net revenue from operation	\$12,762,602	43.26	\$12,254,864	43.85
Income from other sources	427,814	1.45	438,705	1.57
Gross income.....	\$13,190,416	44.71	\$12,693,569	45.42
Taxes	\$2,351,104	7.97	\$1,837,682	6.58
Interest and rentals (net)	5,644,074	19.13	5,244,055	18.76
Total deductions.....	\$7,995,178	27.10	\$7,081,737	25.34
Net income.....	\$5,195,238	17.61	\$5,611,832	20.08

The year's surplus applicable for dividends was \$5,195,238—equivalent to 6.97 per cent on Brooklyn Rapid Transit Company stock outstanding. The gross revenue from operation at \$29,504,019 showed an increase of \$1,555,247 or 5.5 per cent. The passenger earnings increased \$1,422,626 or 5.2 per cent, \$446,638 or 2.7 per cent coming from the increase in surface division earnings and \$975,988 or 9.4 per cent from elevated division earnings.

The operating expenses were increased by the rising prices of labor and materials. These expenses at \$16,741,417 represented an increase of \$1,047,509 or 6.6 per cent. Most of this increase was caused by wages, which rose \$520,884 or 10.2 per cent. The charges to maintenance of way and structures showed an increase of \$19,866 or 0.80 per cent, while those for maintenance of equipment decreased \$12,020 or 0.48 per cent. The aggregate amount expended, however, was less than the aggregate amount charged by \$120,376, which balance was carried to the credit of reserves. The large increase of \$316,309 or 18.33 per cent in power was due primarily to two factors, namely, the higher cost of coal, and the necessity for purchasing outside power because of delay on the part of the Public Service Commission in approving arrangements for the supply of power for rapid transit lines.

The burden of taxation continued to increase, the amount charged for the year being \$513,421 or 27.94 per cent more than for the preceding year. Deductions from income were swelled by the addition of \$442,863 to interest on account of new rapid transit properties placed in operation. Other interest and rental deductions were somewhat less than for the preceding year, making the net deductions \$400,018 or 7.63 per cent greater.

The net income was \$416,593 or 7.42 per cent less than for the preceding year. In other words, out of an addition of \$1,555,247 in operating revenue, while \$507,737 was saved in net revenue, the additional charges for taxes and interest absorbed all of this and considerably more. Nevertheless, the company was able to maintain its dividend rate of 6 per cent and add a substantial amount to the system's surplus.

The operations of the company's rapid transit lines in conjunction with those provided by the city under the provisions of the contracts of March 19, 1913, resulted for the year ending June 30, 1917, in earning not only the first preferential of \$3,500,000 (which accrues under the contracts to the operator and is applicable to interest on obligations outstanding prior to the date of the contracts, and to dividends), but within \$250,371 of interest at the rate of 6 per cent on the cost of new properties placed in operation since March 19, 1913. This deficit is cumulative and becomes a charge against future earnings before the city receives interest on its investment. The total deficiency from the beginning of temporary operation on Aug. 4, 1913, to June 30, 1917, is \$1,037,276. These results have been attained before the completion of the combined system and without the addition of any new lines which contribute materially to net earnings. The showing justifies the confidence that it will only be a short time after complete operation when all of the operator's preferentials will have been earned and the city will get interest on its investment.

On account of the construction and equipment of rapid transit lines under contracts with the city, the allied New York Municipal Railway Corporation expended during the year an additional amount of \$9,146,736, making the total expenditures to June 30, 1917, as follows: On account of contribution to city-owned lines, \$11,149,308; on account of equipment of city-owned lines, \$8,373,233; on account of additions, extensions and improvements of existing railroads, \$30,458,769; total, \$49,981,311.

The other companies of the system expended during the year for additions and improvements \$1,249,326, of which \$546,824 was for track and roadway (including extensions), \$122,772 for electric line, \$256,318 for power plant, \$174,657 for cars and electrical equipment \$72,581 for buildings and fixtures, \$48,608 for real estate, and the remainder for miscellaneous purposes. As against these charges, however, credits were made for properties displaced aggregating in value \$957,200, leaving a net addition to the property accounts of other companies \$292,125. Miscellaneous operating statistics for the last two fiscal years follow:

Passenger earnings.....	\$28,485,861	\$27,063,235
Increase over preceding year (per cent) ..	5.26	6.28
Passengers carried.....	760,519,397	728,465,567
Revenue mileage.....	98,593,632	98,748,451
Increase or decrease over preceding year (per cent).....	0.16	6.28
Earnings per revenue mile (cents).....	28.8	27.4
Units per passenger (cents):		
Passenger earnings.....	3.74	
Miscellaneous earnings.....	0.19	0.18
Total earnings.....	3.93	3.90
Operating charges.....	2.20	2.16
Taxes.....	0.31	0.25
Interest and rentals.....	0.74	0.72
Total.....	3.25	3.13
Surplus.....	0.68	0.77

Augusta-Aiken Railway & Electric Corporation

The gross earnings of the Augusta-Aiken Railway & Electric Corporation and subsidiaries for the calendar year 1916 amounted to \$838,456 as compared to \$732,990 in 1915, an increase of \$105,466 or 14.4 per cent. The operating expenses, including taxes, totalled \$431,721 in 1916 and \$381,255 in 1915, an increase of \$50,466 or 13.3 per cent. The net earnings from operation, therefore, amounted to \$406,734 in 1916 and \$351,735 in 1915, a gain of \$55,000 or 15.6 per cent. After the payment of interest charges the 1916 surplus amounted to \$58,060, a large increase over the surplus of \$3,137 the year before. As in 1915, no dividends were paid on the company's preferred stock. A total of \$45,000 was paid in 1914 and \$90,000 in 1913 and 1912.

The earnings in the electric railway department increased \$42,236 or 12.5 per cent, and the expenses \$43,235 or 23.3 per cent. The earnings in the electric department increased \$52,557 or 15.3 per cent, and the expenses \$17,648 or 16.1 per cent. The earnings from the hotel and land companies increased \$10,672 or 19.9 per cent, while the expenses were less by \$12,161 or 44.3 per cent. The daily receipts from railway operation averaged more than \$1,000, and despite the steadily increasing number of private automobiles, are at present better than at any time in the history of the company. The operating expenses during the year were in-

creased by the large amount expended on deferred maintenance of track, roadway and railway equipment and overhead tower lines, the cost of materials and labor for such work having greatly increased. During 1916 \$79,425 was expended for additions, betterments and extensions.

Seattle Franchise Obligation Case

Corporation Counsel of City Seeks to Have Dismissed Railway's Appeal for Relief from Its Franchise Obligations

Hugh M. Caldwell, corporation counsel of Seattle, Wash., has petitioned the Public Service Commission to dismiss the complaint of the Puget Sound Traction, Light & Power Company, asking for relief from franchise obligations, including payment of a gross earnings tax and paving between its tracks. The petition of the company has been pending since June, 1915. In that year a motion was made by the city to dismiss the application of the company, but was lost after a hearing by the commission. Since that time no pleading has been filed nor further action taken until the completion of the valuation of the company's property heretofore begun by the commission. A decision of the Public Service Commission in the case of the city of Tacoma vs. the Tacoma Railway & Power Company, which was very similar to the Seattle case, led Mr. Caldwell to renew his motion for dismissal.

At the same time, the Public Service Commission is considering a petition of George H. Tilden, Seattle, who, with others, protests against the dismissal of the petition of the company. In his petition Mr. Tilden makes the claim that he and others are entitled to extensions to the electric railways in their vicinity and to a 5-cent fare, which the company says cannot be done if it is held to the strict terms of its franchise. He therefore requests that the commission conclude the investigation which has been started. The city of Seattle is desirous of having the matter tried in the courts. The King County Superior Court has refused to pass upon the city's suit to force the company to pave between its tracks and to pay gross earnings tax until the Public Service Commission disposes of the matter.

Lehigh Valley Deal Arrangements

Final Details Being Worked Out Under Which Lehigh Valley Transit Company, Lehigh Navigation Electric Company and Northern Central Company Will Be Combined

A syndicate of which Brown Brothers Company, New York, and Edward B. Smith & Company and Henry & West, Philadelphia, will be members is about ready to carry out an electric power project by which the Lehigh Valley Transit Company, Allentown, Pa., the Lehigh Navigation Electric Company and the Northern Central Company will be taken over by a new company to be called the Lehigh Power Securities Corporation. While the Lehigh Coal & Navigation Company sells its generating station and distributing system, it will own an important interest in the new corporation.

The financial plan provides for a present issue of \$20,000,000 of ten-year 6 per cent secured gold notes of that corporation, and looks forward to large additional investments properly to develop the business. It is not intended to extend the present system much while construction costs are abnormally high and prompt deliveries of electric machinery almost impossible to secure, but the existing power plants will be so tied together and co-ordinated as to enable them to perform much greater and more efficient service.

The Lehigh Navigation plants at Hauto and Harwood will be enlarged to develop 70,000 kw., and then tied in with the Lehigh Valley Transit plant now being expanded to 30,000 kw. Additional plants will be constructed as required. They will be located at points where water is available.

The management of the new corporation will be in charge of the Electric Bond & Share Company, of which Sydney Z. Mitchell, New York, is president. As is well known, all the common stock of the Electric Bond & Share Company is owned by the General Electric Company.

Electric Railway Statistics

Data from East Show That Section Hard Hit—Expenses Continue to Mount Faster Than Revenues

A comparison of electric railway statistics for the month of April, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses of electric railways in the United States are increasing faster than the revenues. The Eastern district is suffering most in this respect.

Data for April, representing 8765 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 2.90 per cent, in operating expenses of 8.56 per cent, and a decrease in net earnings of 6.23 per cent. Data representing approximately 75 per cent of the above mileage indicate an increase in the amount of taxes paid of 5.30 per cent and a decrease in operating income of 13.29 per cent.

The returns from the city and interurban electric railway companies, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: 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.

Of the three groups shown in the accompanying table,

action follows the general plan which was proposed to the stockholders to fund the back dividends in part by cash and in part by stock, and which was accepted. The present dividend will put the stock on a 7 per cent basis. The cumulative first preferred has been selling at 80 to 83, which will yield about 8.5 per cent at this dividend rate.

Boston (Mass.) Elevated Railway.—A petition has been filed with the Massachusetts Public Service Commission by the West End Street Railway for permission to issue \$458,000 of 6 per cent thirty-year bonds to reimburse the Boston Elevated Railway for additions to the property of the West End Street Railway.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The directors of the Chambersburg, Greencastle & Waynesboro Street Railway, which operates a line 30 miles long from Pen-Mar to Chambersburg and an electric light and power plant in Waynesboro, are reported to have received an offer of purchase of the property from interests representing the Hagerstown & Frederick Railway, Frederick, Md.

Philadelphia Company, Pittsburgh, Pa.—Under the sinking fund and redemption plan for Philadelphia Company bonds there had been deposited up to the close of business on July 18, \$5,563,000 of first mortgage and collateral trust bonds of a total issue of \$6,500,000, and \$13,630,000 of the consolidated mortgage and collateral trust bonds of a total issue of \$15,148,000.

Portsmouth, Dever & York Street Railway, Portsmouth, N. H.—The lines of the Atlantic Shore Railway, Sanford,

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS APRIL, 1917 AND 1916

Account	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line			Amount, April, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	\$19,290,850	\$2,201	\$2,139	2.90	\$14,316,755	\$2,376	\$2,316	2.59	\$1,058,773	\$1,257	\$1,226	2.52	\$3,724,868	\$2,063	\$1,986	3.87
Operating expenses	12,556,543	1,433	1,320	8.56	9,361,793	1,554	1,425	9.05	620,871	737	711	3.65	2,357,075	1,357	1,257	7.95
Net earnings	6,734,307	768	819	16.23	4,954,962	822	891	17.74	437,902	520	515	0.97	1,367,793	706	729	13.16
Operating ratio, per cent	1917, 65.11; 1916, 61.71				1917, 65.40; 1916, 61.53				1917, 58.63; 1916, 57.99				1917, 63.77; 1916, 63.29			
Average number of miles of line represented	1917, 8,765; 1916, 8,681				1917, 6,026; 1916, 5,967				1917, 842; 1916, 839				1917, 1,897; 1916, 1,875			

COMPANIES REPORTING TAXES

Operating revenues	\$14,289,937	\$2,223	\$2,200	1.05	\$9,961,843	\$2,349	\$2,349		\$479,598	\$1,252	\$1,228	1.95	\$3,667,502	\$2,133	\$2,056	3.74
Operating expenses	9,574,185	1,499	1,387	7.43	6,775,684	1,598	1,489	7.32	275,592	719	691	4.05	2,311,682	1,398	1,296	7.87
Net earnings	4,715,752	733	813	19.84	3,186,159	751	860	12.67	204,006	533	537	0.75	1,355,820	735	760	13.29
Taxes	1,021,557	159	151	5.30	697,834	165	154	7.14	42,557	111	105	5.71	273,192	156	153	1.96
Operating income	3,694,195	574	662	13.29	2,488,325	586	706	17.00	161,449	422	432	12.32	1,082,628	579	607	14.62
Operating ratio, per cent	1917, 67.03; 1916, 63.05				1917, 68.03; 1916, 63.39				1917, 57.43; 1916, 56.27				1917, 65.54; 1916, 63.03			
Average number of miles of line represented	1917, 6,427; 1916, 6,347				1917, 4,241; 1916, 4,182				1917, 383; 1916, 383				1917, 1,891; 1916, 1,783			

†Decrease.

returns for the Eastern, representing 6,086 miles of line, indicate an increase in operating revenues of 2.59 per cent, in operating expenses of 9.05 per cent, and a decrease in net earnings of 7.74 per cent. Taxes paid by companies represented by approximately 70 per cent of the above mileage increased 7.14 per cent, while the operating income of these companies decreased 17 per cent.

Returns for the Southern and Western groups indicate that both have been affected by the rising costs of operation. The operating income of the Southern groups decreased 2.32 per cent, while that of the Western decreased 4.62 per cent. Both groups show increases in taxes paid.

The operating ratio for the country as a whole has increased from 61.71 in 1916 to 65.11 in 1917. The operating ratio of the Eastern district has increased from 61.53 in 1916 to 65.40 in 1917. The operating ratios of the Southern and Western groups have also risen.

American Water Works & Electric Company, New York, N. Y.—The directors of the American Water Works & Electric Company met on July 23 and declared an initial dividend of 1¼ per cent on the cumulative first preferred stock. This

Me., west of the terminus of that company in York Beach, Me., have reverted to the Portsmouth, Dover & York Street Railway, one of the companies which was included in the properties that were consolidated originally to form the Atlantic Shore Railway. The Portsmouth, Dover & York Street Railway is being operated by W. G. Meloon as receiver and general manager, with R. W. Sturtevant as superintendent. Mr. Sturtevant was formerly superintendent of the western division of the Atlantic Shore Railway.

United Railways, St. Louis, Mo.—David R. Francis, Jr., has announced his resignation as a director of the United Railways following his appointment as a member of a committee formed to protect the interests of holders of the 4 per cent general mortgage bonds of the railway.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.—Allard, Kinnear & Company, Inc., New York, N. Y., are offering for subscription first mortgage sinking fund 5 per cent gold bonds of the Waterloo, Cedar Falls & Northern Railway of 1910, due Jan. 1, 1940. The company has outstanding \$5,775,000 of first mortgage bonds, \$410,000 of second mortgage bonds, \$1,249,750 of preferred stock and \$2,263,000 of common stock.

Electric Railway Monthly Earnings

		BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.				
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May,	'17	\$65,428	*\$39,979	\$25,449	\$18,711	\$6,738
1 "	"	63,989	*38,441	25,548	17,608	7,940
12 "	"	861,583	*487,555	374,028	220,318	153,710
12 "	"	797,490	*426,605	370,885	212,983	157,902
		CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.				
1m., May,	'17	\$117,863	*\$78,387	\$39,476	\$30,071	\$9,405
1 "	"	103,765	*65,055	38,710	30,065	8,645
12 "	"	1,282,020	*897,275	384,745	357,387	27,358
12 "	"	1,167,518	*745,509	422,009	357,721	64,288
		CITIES SERVICE COMPANY, NEW YORK, N. Y.				
1m., June,	'17	\$1,388,560	\$29,785	\$1,358,775	\$233	\$1,358,542
1 "	"	740,848	16,520	724,328	28,855	695,470
12 "	"	15,865,984	300,303	15,565,681	13,999	15,551,682
12 "	"	6,459,297	203,841	6,255,456	491,479	5,763,977
		COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.				
1m., May,	'17	\$316,274	*\$223,357	\$92,917	\$47,109	\$45,808
1 "	"	277,688	*164,737	112,951	42,875	70,076
12 "	"	3,715,866	*2,398,038	1,317,828	527,138	790,690
12 "	"	3,270,766	*1,923,814	1,346,952	498,200	848,752
		COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.				
1m., May,	'17	\$1,512,014	*\$931,921	\$580,093	\$437,257	\$142,836
1 "	"	1,328,071	*707,149	620,922	420,861	200,061
12 "	"	17,919,035	*10,366,987	7,552,048	5,103,594	2,448,454
12 "	"	15,630,910	*8,322,835	7,308,075	4,787,941	2,520,134
		CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.				
1m., May,	'17	\$236,728	*\$174,718	\$62,010	\$67,985	\$5,975
1 "	"	223,429	*136,437	86,992	66,225	20,767
12 "	"	2,973,215	*1,931,979	1,041,236	812,431	228,805
12 "	"	2,736,122	*1,610,299	1,125,823	794,154	331,669
		EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.				
1m., May,	'17	\$301,645	*\$202,805	\$98,840	\$64,870	\$33,970
1 "	"	239,328	*151,749	87,579	62,259	25,320
12 "	"	3,309,740	*2,050,501	1,259,239	765,337	493,902
12 "	"	2,651,975	*1,588,088	1,063,887	753,794	310,093
		EL PASO (TEX.) ELECTRIC COMPANY				
1m., May,	'17	\$103,174	*\$66,437	\$36,737	\$4,652	\$32,085
1 "	"	84,029	*45,025	39,004	4,671	34,333
12 "	"	1,198,303	*751,061	447,242	60,554	386,688
12 "	"	1,036,343	*534,684	501,659	59,913	448,746
		GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.				
1m., May,	'17	\$155,988	*\$107,739	\$48,249	\$37,441	\$10,808
1 "	"	154,839	*94,953	59,886	36,607	23,279
12 "	"	1,953,504	*1,272,059	681,445	441,245	240,200
12 "	"	1,910,481	*1,218,539	691,942	435,936	256,006
		GRAND RAPIDS (MICH.) RAILWAY				
1m., May,	'17	\$107,618	*\$77,355	\$30,263	\$18,174	\$12,089
1 "	"	111,126	*72,184	38,942	14,165	24,777
12 "	"	1,306,964	*865,665	441,299	205,206	236,093
12 "	"	1,239,177	*831,849	407,328	167,592	239,736
		HOUGHTON COUNTY (MICH.) TRACTION COMPANY				
1m., May,	'17	\$26,466	*\$16,291	\$10,175	\$5,117	\$5,058
1 "	"	25,962	*15,625	10,337	5,351	4,986
12 "	"	338,980	*196,938	142,042	62,387	79,655
12 "	"	302,353	*167,948	134,405	65,900	68,505
		JACKSONVILLE (FLA.) TRACTION COMPANY				
1m., May,	'17	\$56,762	*\$38,673	\$18,089	15,754	\$2,335
1 "	"	53,732	*34,859	18,882	15,442	3,440
12 "	"	650,994	*438,689	212,305	186,459	25,846
12 "	"	615,616	*422,232	193,384	178,446	14,938
		LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO				
1m., May,	'17	\$141,530	*\$97,997	\$43,533	\$34,253	\$9,280
1 "	"	130,172	*85,774	44,398	36,197	8,201
5 "	"	659,925	*65,053	194,872	171,837	23,035
5 "	"	583,317	*397,598	185,719	181,576	4,143
		LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.				
1m., May,	'17	\$71,822	*\$56,988	\$14,834	\$15,633	†\$802
1 "	"	65,703	*41,084	24,619	16,119	8,500
12 "	"	842,493	*612,659	229,834	185,102	44,732
12 "	"	759,165	*499,696	259,469	192,171	67,298
		NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.				
1m., May,	'17	\$198,301	*\$136,260	\$62,041	\$40,539	\$21,502
1 "	"	194,938	*121,292	73,646	42,570	31,076
12 "	"	2,427,202	*1,526,588	900,614	499,167	401,447
12 "	"	2,226,927	*1,373,113	853,814	514,826	338,988
		NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.				
1m., May,	'17	\$180,238	*\$109,050	\$71,188	\$29,151	\$42,037
1 "	"	150,755	*96,489	54,266	28,692	25,574
12 "	"	2,058,447	*1,212,833	845,614	348,814	496,800
12 "	"	1,816,978	*1,109,697	707,281	338,578	368,703

*Includes taxes. †Deficit.

Traffic and Transportation

Bay State Revenue Situation

Brief Review of Fare Increases Recently Granted and a Summary of Present Rates for Passenger Traffic

The recent decision of the Massachusetts Public Service Commission authorizing the Bay State Street Railway, Boston, to inaugurate a six months' trial of a 6-cent fare unit on the city lines served by the company did not terminate the company's efforts to secure increased revenue, as some operating and executive readers of the ELECTRIC RAILWAY JOURNAL appear to have understood. By the commission's decision of 1916 the company was permitted to establish the 6-cent fare unit on the country lines, the rate on the city lines remaining at 5 cents with the prominent exception of Fall River, Mass., where the sale of tickets continued at the rate of six for 25 cents. Recently the commission permitted the company, after due hearings, to eliminate these tickets. On July 3, following further hearings and conferences before the board between the company and representatives of urban communities served by the road, the board allowed the company to establish the 6-cent fare unit in the urban territory with concessions in the way of tickets good in that territory only. This put the whole system for the immediate present on a 6-cent fare basis.

NON-TRANSFERABLE FIVE-CENT TICKETS USED

This last proceeding before the commission on behalf of increased revenue led then to the establishment of a 6-cent fare unit in the cities with the sale of tickets of a decidedly restricted character. These tickets are non-transferable; they are sold in books at the rate of twenty rides for \$1, and cannot be lifted without the cover. A novel feature is the invalidity of the tickets after 1 p. m. on Saturdays, Sundays and holidays, this restriction undoubtedly being placed on the ground that the bulk of the travel at these times is at least closely associated with pleasure and hence partakes in a measure of luxury. The officials of the company estimated that at the maximum about 50 per cent of the revenue in the urban territory would be derived from ticket sales, but so far this percentage has not been reached. Again, it was estimated that not over 20 per cent of the company's whole income would be derived from ticket sales. In two or three weeks more a better idea can be obtained as to the ratio of ticket sales to total and urban revenue, but it seems likely that this feature of the commission's decision will not have as much effect upon income as has been feared, particularly in quarters sympathetic to the company's aims but outside its organization.

Both tickets and transfers are good in the urban territory, but transfers are not issued in the suburban territory (in general, towns adjoining cities) except to a very limited degree, as where a suburban town is virtually identified with the urban center. The schedule has been worked out to shorten the haul per fare unit in the suburban districts, in the interest of selling transportation at a more equitable figure in relation to its total cost.

The company believes that its interurban fare schedule is in general below the level of rates yielding a return commensurate with the cost of the service. Within the next two months a revised schedule of interurban rates is to be filed with the commission, and the company will support the proposed increase both on the ground of increased and increasing costs and in the belief that high-class interurban service will appeal to the public more at a fair price than a less satisfactory service at inadequate rates.

In sum, the present main revenue from passenger traffic comes from: (1) cash fares, 6-cent unit, in urban and suburban territory; (2) cash fares, 6-cent unit, in interurban territory, essentially rural districts; (3) sale of tickets good only in urban territory and with certain restrictions.

Jersey Road Gets Increase

Commission Authorizes 6-Cent Fare, Making Average Mileage Rate Less Than That of Steam Road Competitor

The Board of Public Utility Commissioners of New Jersey recently granted a fare increase to the North Jersey Rapid Transit Company, Hohokus, N. J., when the financial statements of the company showed beyond question that the road had been operated on too low a basis of fares. The rate charged was 5 cents for each of the five zones, and the company proposed to increase the fare in each zone to 6 cents without changing the present zone arrangement. The average mileage rate for the different zones was formerly about 1.97 cents per mile, while the rate for the longer rides was approximately 1.7 cents per mile. On the new basis the mileage rate will be about 2.05 cents. The commission granted the 1-cent increase in view of the fact that the company's rates have been less than those charged by many of the interurban roads which in the past two years have found it necessary to increase to a 2-cent basis.

The North Jersey Rapid Transit Company is an interurban line running northward from a point in Bergen County just east of the Passaic River at Broadway, Paterson, and extends about ½ mile into New York State to Suffern. The company began operation about seven years ago and it was expected that the line would be extended to connect with one of the railroads running into Jersey City. Owing to the location of the road and the fact that it is partly paralleled by the main line of the Erie Railroad, the company has been unable to pay interest on its bonded debt and has been in the hands of receivers for several years.

Analysis of the financial statement submitted by the company showed that revenue had increased, but the cost of operation had increased in a much greater proportion. The operating deficit for the year 1916 was more than \$33,000, making the total deficit at the close of the year amount to \$151,546. The funded debt is \$800,000, and it was shown at the hearing that the construction of the road was approximately that sum. No salaries have been paid to any administrative official other than the superintendent, and it was considered that the operation of the road has been conducted economically.

More Revenue Asked in Seattle

The Public Service Commission of Washington has been notified by the Puget Sound Traction, Light & Power Company, Seattle, that the tariff providing for the sale of twenty-five tickets for \$1 on the company's Seattle division would be canceled and that, beginning Aug. 12, only the straight 5-cent fare and the half rates for school children would be charged. A. W. Leonard, president of the company, stated that the increased costs of railway equipment make it necessary that the company take some step to increase its income. It is said that the elimination of ticket sales will increase the revenues about 5 per cent.

The city of Seattle will make an attempt to prevent the traction company from eliminating the sale of tickets, as evidenced by the fact that in answer to a communication from Corporation Counsel Hugh M. Caldwell the City Council has almost unanimously expressed itself as being willing to contest the company's proposed action. It is expected that the city's objection will shortly be filed with the Public Service Commission, with a request for a hearing.

Connecticut Fare Controversy

Company Is Enjoined from Discontinuing the sale of 4-Cent Tickets in Waterbury

Another fight against an increase in trolley rates has developed from the attempt on the part of the Connecticut Company to abolish the sale of twenty-five tickets for \$1. The company had announced that beginning July 25 the sale of reduced-rate tickets in the city of Waterbury would be discontinued. Corporation Counsel Francis P. Guilfoyle obtained a temporary injunction from Judge Reeves in the district court to restrain the company in its proposed ac-

tion, whereupon it was announced that the 4-cent tickets would be sold as usual unless the injunction was dissolved or the Public Service Commission decided in favor of the company. The Connecticut Company claims it loses \$150 a day through the sale of the tickets and is taking steps to have the injunction nullified.

Joseph F. Berry, counsel for the company, said he knew of no agreement with the city whereby the company is obliged to sell transportation at the reduced rate. The order did not include the cancellation of school children's tickets. The company's statement was substantially in full, as follows:

"With the great activity in all branches of industry and the resulting increase in prices, the cost of all materials used in the extension and upkeep of the Connecticut Company's property, as well as all classes of wages, have so increased the cost of service that it is no longer possible to continue transportation of passengers at reduced rates. The city of Waterbury has long been favored with the only materially reduced rate for urban transportation in Connecticut. Everyone is familiar with the great increase in the cost of all materials within the past year, especially copper and steel products. The cost of coal alone, required to produce power for the operation of cars throughout the Connecticut Company territory as a whole, has increased in the past four months \$160,000 over the costs for that period of last year.

"While the interest of any community cannot be served by a transportation agency that is not to a reasonable extent a profitable enterprise, the entire transportation agency will 'break down' if the revenues are not ample to meet current demands, and this is the situation that is rapidly overtaking the company at this time."

Washington Jitney Decision

Judge Neterer Grants Injunction Against Their Operation, but Permits Them to Operate During Present Strike

On July 11 United States District Judge Neterer granted a temporary injunction to the Puget Sound Traction, Light & Power Company, Seattle, Wash., against E. W. Arnold and 169 other jitney operators, forbidding the operation of jitneys as common carriers in Seattle. Judge Neterer held that such operation of jitneys constitutes a nuisance and no doubt exists that the company suffers a loss of revenue on account of the acts referred to in its complaint. The court held further that the operation of "free buses" is not authorized and that it is an invasion of the company's rights. The steps leading up to the application by the company for this injunction were related in the *ELECTRIC RAILWAY JOURNAL* for July 21, page 123.

While refusing to modify his order of July 11 barring the operation of jitneys on the streets over which the Puget Sound Traction, Light & Power Company holds franchises, Judge Neterer on July 18 allowed the operation of motor vehicles during the time the franchise is not being used by the company due to the present strike. He refused to enter an order modifying the temporary injunction, but stated that operation of motor vehicles would not be taken as a violation in the spirit of the injunction during the time that the electric railway cars are not operating. Judge Neterer stated that the people of Seattle, while not directly involved in the case, present the most important issue in it and one which must be given consideration.

The motion to permit the jitneys to resume operation during the electric railway strike was brought by W. R. Crawford, attorney for the jitney drivers. Attorney A. J. Falknor, for the company, presented to the court an affidavit signed by Vice-President William H. McGrath, deposing that W. R. Crawford has for more than six months made active efforts to bring about a strike of the car men. Mr. Crawford said he stood ready to deny this allegation under oath.

More than 200 jitneys are operating in the city, on practically all of the routes of the railway lines. The jitney men's association has gone on record with a resolution to expel from the organization any driver who attempts to charge extortionate prices.

Skip-Stop Successful in Buffalo

After operating on the skip-stop plan for two weeks on two of the busiest lines of the International Railway, Buffalo, N. Y., the municipal traffic commission is so favorably impressed with the results that plans are now being made for extending the skip-stop to other lines. The running time of cars operating upon the two streets where the plan is in effect has been materially reduced and the public has sent many letters of appreciation to the company officials and to the traffic commission. Patrons of other lines have asked that the skip stop be extended to practically every line in the city.

The introduction of skip-stop operation on the Main Street and Elmwood Avenue lines was reviewed on page 79 of the *ELECTRIC RAILWAY JOURNAL* for July 14. It was decided to give the new form of service a thirty-day trial on these two lines. John O. Weigel, general superintendent of traffic of the International Railway, states that the first two weeks of the trial period leaves no doubt as to the plan's success. The service will be extended to other lines as soon as practicable, according to Thomas Penney, vice-president and general counsel of the company. Mr. Penney has also recommended the establishment of additional safety zones in Main Street through the congested retail business district.

Trailers to Care for Heavy Traffic.—In response to a request by Councilman W. T. Edwards, the Jacksonville (Fla.) Traction Company has agreed to run trailers on its Phoenix Park line on Saturdays to give better service during the increased traffic to the manufacturing section of the city.

Boys Fined for Stealing Rides.—Sixty-six boys, charged with stealing rides on the cars of the Boston (Mass.) Elevated Railway, were fined \$2 each in the Juvenile Court at Boston on July 20. The boys were arrested as the result of a crusade waged by the company against miscreants who have been in the habit of stealing under the turnstiles at the South Station. Extra guards were used to assist in the round-up.

Motor Bus Auxiliary.—The Tacoma Railway & Power Company Tacoma, Wash., has instituted a motor bus service on a half-hourly schedule connecting the end of its Sixth Avenue line with its Point Defiance line. This will open up a large territory which at present is handicapped by lack of transportation facilities and is not sufficiently settled to make the operation of an electric railway a profitable undertaking as yet.

Decision Against Atlantic City Jitneys.—The Supreme Court of New Jersey has denied the writ of mandamus asked by the Atlantic City Jitney Association to compel the City Commissioners to hold a referendum election on the municipal legislation, which ruled jitneys from Atlantic Avenue. It held that there were some facts in dispute before the court and that it would be better if they were sent before a jury in the Circuit Court to establish their status.

Jitney Bonds Required in Portland.—By a decision of Commissioner of Public Utilities John M. Mann, of Portland, Ore., all jitneys and "for hire" cars operating in that city were required to file a bond of \$2,500 by July 20. The premium charged by the only bonding company willing to issue bonds is said to be prohibitive. The jitney operators are planning to resist the enforcement of the bond ordinance. A fund is being raised for the purpose of employing an attorney.

Increase in Fare Refused.—The Public Service Commission of Pennsylvania recently ordered the Shamokin & Mt. Carmel Transit Company, Mt. Carmel, Pa., to continue with the old rate of fare following an attempt by the company to withdraw the issuance of strip tickets sold at the rate of six for 25 cents and to increase its fare on certain lines. The miners and others of Shamokin and Mt. Carmel opposed the action and after a hearing before the commission the old rate was restored.

Abolition of Tickets Suspended.—The Public Utility Commission of New Jersey has issued an order prohibiting the Bridgeton & Millville Traction Company from abolishing

its six-for-a-quarter tickets and those sold at the rate of fifty for \$2 until after the hearing which is to be held at Camden on Sept. 13. The company in filing its proposed schedule desired to make it effective Aug. 6. As the figures will increase the income of the road, however, the Board ruled that no alteration may be made before Nov. 6, unless the result of the hearing previous to that date, justifies it.

New Schedule Proposed for Pacific Electric Railway.—Officials of the Pacific Electric have been ordered to appear before the Board of Public Utilities of Los Angeles, Cal., and show cause why the company should not increase its service inside the city, which, the utilities board claims, is inadequate. It was announced that the railway must provide additional cars and more frequent service and that to assist in relieving congestion the utilities board is ready to take up the questions of re-routing cars.

Massachusetts Road Will Ask Increase.—The Northern Massachusetts Street Railway, Athol, Mass., will petition the Massachusetts Public Service Commission for authority to revise its fare schedule, according to an announcement made recently by Daniel P. Abercrombie, vice-president and general manager of the company. The new schedule will call for a minimum rate of 5 cents for the first 2½ miles and a mileage rate of 2 cents for each additional mile. Mr. Abercrombie said that more revenue is necessary to maintain the present standard of service and keep up the financial standing of the company.

Higher Fares in Easton Denied.—The Board of Public Service Commissioners of New Jersey has refused to grant to the Northampton, Easton & Washington Traction Company, Easton, Pa., permission to increase its fares on the line between Phillipsburg and Port Murray, N. J. The road was constructed in 1906, and covers 17 miles. The commission bases its decision on the Supreme Court ruling that an ordinance fixing a reasonable rate of fare remains inviolable during the life of the franchise. The company operates under price-fixing ordinances in its different zones, but asked the right to increase the fare in the zones from 5 cents to 6 cents. The deficit for last year was claimed to be \$5,311 and was attributed to the cost of materials and labor.

Philadelphia & Western Gets Increase.—The Philadelphia & Western Railway, Upper Darby, Pa., has increased its fares after having had its application for permission to raise its rates advertised and filed with the Public Service Commission for thirty days. The changes in rates affect the price of one-way and ten-trip tickets, the increases being from 1 cent to 6 cents per trip. No change was made in the commutation rates. In its notices to the public the company called attention to the abnormally high operating costs as being responsible for the necessity for increasing rates. The change in fare schedules was contemplated for some time but action was postponed in the hope that conditions both local and national would improve. Before the effective date of the increases no opposition had been made. Since that time two complaints have been filed with the commission, but no action has yet been taken by that body in connection with the case.

Bonuses for St. Louis Men.—Richard McCulloch, president of the United Railways, St. Louis, Mo., has announced the establishment of a bonus system for the benefit of the transportation employees, to encourage skill and care, with an expected resultant decrease in the expense for injuries and damages and maintenance cost, greater regularity in operation, increase of average speed and increase of receipts per mile. Gains resulting from increased efficiency will be divided as follows: 40 per cent to the employees, 40 per cent to the company and 20 per cent for the necessary clerical work in connection with the bonus system. The employees' share will be divided equally among the transportation employees, except that part resulting from saving in the injuries and damages account, of which 60 per cent will go to the motormen and 40 per cent to the conductors. The participation of the trainmen will be determined by crediting each employee with 1000 points at the beginning of each month and penalizing them for preventable accidents or infractions of the rules. Only those having more than 750 points to their credit at the end of the month will share in the bonus.

Legal Notes

CONNECTICUT.—*Collision with Car Which Indicated It Was About to Stop.*

Where a team driver knew the custom of a street railway company to stop its cars on one side of the street to take on passengers, and he observed a car slowing down at such corner and a person preparing to board it, and thereupon drove upon and across the tracks and was injured by the car, which did not stop, it was a question for the jury whether he was contributorily negligent. (*Middleton v. Connecticut Company*, 100 Atlantic Rep., 1062.)

KANSAS.—*Injury to Person at Station Between Platform and Car.*

In an action against an interurban electric railway company, the plaintiff's evidence tended to show these facts: He came to the company's station about dusk with friends who were leaving. After they had boarded the car, and before it started, he went down into the space between it and the station platform to look for a coin his daughter had dropped. Passengers were received and discharged by a gangplank laid to the rear steps. As the defendant was stooping over, facing away from the car, it started without any signal being given, and he was struck by the rear step. Held: in the aspect most favorable to the plaintiff, he was but a licensee while in the place between the platform and the track, and the company owed him no duty to give him warning of the starting of the car. If such a duty had been owing to him, his own failure to use reasonable care for his safety would bar a recovery. (*Senning v. Arkansas Valley Interurban Railway*, 165 Pacific Rep., 863.)

KENTUCKY.—*Negligence Must Be Proximate Cause of Injury—Liability for Delay.*

That a traction company was negligent in using defective coal, thereby causing a car to stop, did not render it liable for injury to a passenger from falling on a trestle while walking down the track toward her destination after she had voluntarily left the car, where it did not appear that defendant's negligence was the proximate cause of her injuries. Where failure of a passenger to reach his destination on schedule time is due to the carrier's negligence, the carrier is liable only for such damages as flow directly from the delay and which the carrier might reasonably have anticipated at the time of contracting. (*Paducah Traction Company v. Weitlauf*, 195 Southwestern Rep., 99.)

MASSACHUSETTS.—*Duties to Elderly Passengers When Alighting.*

It is not a requirement of due care on the part of a conductor of an electric car to give the signal for an emergency stop simply because a passenger advanced in years rises from his seat in an open car and steps on the running board and stands there for a moment with a hold upon the post of the car. (*Bigelow v. Boston Elevated Railway*, 115 Northeastern Rep., 250.)

MASSACHUSETTS.—*Liability for Charged Pole Near Footpath.*

Where a car shifter for an electric railway was told that a trolley support was charged with electricity and he knew that people would be likely to be in the vicinity thereof and that wire had been dumped close to the post, and it was his duty to report the condition to his superior officer, and for a long time prior to the accident children and other persons without the railway's permission but with knowledge of the division superintendent and other employees had used the path, his failure to report the condition constituted reckless or wanton negligence. (*Romana v. Boston Elevated Railway*, 116 Northeastern Rep., 218.)

MICHIGAN.—*Cattle on the Highway.*

For a farmer to drive domestic animals slowly along a highway is as legitimate a use of the highway as the running of high-speed interurban cars along it. (*Bewernitz v. Detroit, Jackson & Chicago Railway*, 161 Northwestern Rep., 976.)

Personal Mention

S. H. Carr has been elected vice-president of the Tulsa (Okla.) Street Railway to succeed C. W. Eliff.

M. R. Barkwell has been appointed secretary-treasurer of the St. Thomas (Ont.) Street Railway to succeed C. T. Boughner.

W. T. Scott has been appointed comptroller and purchasing agent of the International Transit Company, Sault Ste. Marie, Ont.

J. A. Van Clostere has been elected vice-president of the Gulfport & Mississippi Coast Traction Company, succeeding W. T. Stewart.

W. McKinley, Chicago, has been elected vice-president of the Alton & Jacksonville Railway, Alton, Ill., succeeding W. C. Fordyce.

Howard Duff has been appointed superintendent of power of the Lehigh Valley Transit Company, Allentown, Pa., to succeed George T. Bromley.

Edward Early, formerly assistant to the auditor of the United Railways & Electric Company, Baltimore, Md., has been appointed assistant treasurer.

William Hayward, of the Public Service Commission for the First District of New York, has been mustered into the federal service as colonel of the Fifteenth Infantry, New York National Guard.

W. J. Lynch, treasurer and comptroller of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Que., has been appointed general manager of the company to succeed H. G. Matthews, deceased.

Henry W. Hodge, member of the Public Service Commission for the First District of New York, has resigned from the commission to accept an offer of the government to go to France as a bridge engineer.

Robert V. Massey has been appointed general superintendent of the Eastern Pennsylvania Division of the Pennsylvania Railroad, which includes the Paoli Electric Division, with headquarters at Altoona, succeeding the late George W. Creighton.

S. A. Foltz has resigned as secretary, treasurer and general manager of the Mansfield Public Utility & Service Company, Mansfield, Ohio, to devote his attention to his personal interests in Mansfield. Mr. Foltz will be succeeded by P. Barnhard.

Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, is, according to rumors which have appeared in a number of newspapers, under consideration by the directors of the Chicago, Milwaukee & St. Paul Railway for the presidency of that road.

H. A. Rhoads has recently been appointed master mechanic of the Youngstown & Ohio River Railroad, Leetonia, Ohio. Prior to his connection with that company Mr. Rhoads was employed as machinist with the Columbus Railway & Light Company, Columbus, Ohio, for more than eight years. He was also master mechanic of the Ohio & Southern Traction Company for six years.

Henry W. Anderson, general counsel for the Virginia Railway & Power Company, Richmond, Va., has been named chairman of a Red Cross Commission to Roumania. A Red Cross medical unit of twelve doctors and twelve nurses will accompany the commission, which is the third to be sent to Europe since the organization of the war council. The commission will undertake, in addition to its investigation of sanitary and health conditions, actual relief work among the Roumanian refugees.

W. L. Barker, electrical engineer of the Southern Utilities Company, which consists of electric, gas and ice properties in Florida, has resigned to accept the position of electrical engineer of the Manila Electric Railroad & Light Company, Manila, P. I. Both of these companies are under the management of The J. G. White Management Corporation, New York, N. Y. Before joining the organization of the Southern Utilities Company, Mr. Barker was connected

with the staff of the General Electric Company. He is a graduate of the Alabama Polytechnic Institute.

J. D. Nailor has been appointed superintendent of transportation of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y. Mr. Nailor was born in Glens Falls, N. Y., in 1886. He entered railway work in June, 1906, as conductor for the Hudson Valley Railroad, Glens Falls Division, and was made motorman in 1907. In the following year he resigned to accept a position as motorman on the Buffalo, Lockport & Rochester Railway and later served successively as third and second trick dispatcher. In March, 1914, Mr. Nailor was appointed chief dispatcher, the position he has held until his recent promotion.

Sir **Albert Stanley**, in his capacity of president of the Board of Trade of Great Britain, on May 17, made his first address before the House of Commons. He spoke for an hour presenting the annual estimates of the board. His speech was well received and its presentation was made the occasion of complimentary references to his work in the traction field, as director of munitions transport and finally as a member of the government. He presented to the House a plan for the establishment of the British Trade Corporation which would have for its purpose the promotion of large enterprises abroad.

George Applegate has recently been appointed master mechanic of the Salem & Penns Grove Traction Company, Salem, N. J. Mr. Applegate has been engaged in railway work for twenty-eight years. He was with the Philadelphia (Pa.) Rapid Transit Company for thirteen years. Subsequently he was master mechanic of the Trenton & New Brunswick Railroad. He next became general foreman of the Atlantic City & Shore Railroad, Atlantic City, N. J., and then went to the Washington, Baltimore & Annapolis Railroad, Baltimore, as armature winder. It was from that position he resigned to become connected with the Salem & Penns Grove Traction Company.

C. P. Westlake has been appointed general manager of the Goldsboro (N. C.) Electric Railway to succeed R. Harold Smith. Mr. Westlake has long been engaged in railroad and electric railway work. He served his apprenticeship as machinist with the Southern Railway. Shortly thereafter he entered the electric railway field with the Columbia Railway, Gas & Electric Company, Columbia, S. C. During the fifteen years that he served with that company Mr. Westlake acted as dynamo tender, armature winder, foreman of shops, master mechanic, superintendent and superintendent of maintenance. Previous to becoming connected with the Goldsboro Electric Railway he was with the Southern Car Company, High Point, N. C., in charge of the electrical and air-brake department.

W. H. McHenry has been elected vice-president of the Inter Urban Railway, Des Moines, Iowa, to succeed Edward P. Smith. Judge McHenry, who is one of the most widely known lawyers in Iowa, has been general counsel and head of the claim department of the Des Moines City Railway since Jan. 1. He is a native of Des Moines and after the successful practice of law in that city for a long period he was made judge of the district, where he served for fourteen years. Following his recent retirement from judicial duties at the age of fifty-five he took up the important legal work for the local railway system. The safety-first work of the Des Moines City Railway, referred to in the *ELECTRIC RAILWAY JOURNAL* for Nov. 25, 1916, page 1130, which was begun on Jan. 1, was directed by Judge McHenry, assisted by Dan M. Finch, claim agent of the company, in direct charge of the work.

Obituary

Henry G. Matthews, general manager of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Que., died at the Jeffery Hales Hospital. Mr. Matthews was born in Montreal in 1878 and received his education at the Montreal high school. Before becoming associated with the Quebec company in 1911 he was manager of the Marconi Wireless Telegraph Company of Canada. He was also president of the Lotbinière & Megantic Railway Company and a director of the subsidiary companies of the Quebec Railway, Light, Heat & Power Company, Ltd.

Construction News

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

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

FRANCHISES

Calistoga, Cal.—The San Francisco, Napa & Calistoga Railway has abandoned its franchise in Calistoga north of Lincoln Avenue. The company has decided that it will not extend its lines north of Calistoga and all construction work done beyond the present terminal in the town will be removed.

Valdosta, Ga.—The Valdosta Street Railway has asked the Railroad Commission of Georgia for permission to take up its tracks from Pine Park to the cotton mills and to construct a line from West Hill Avenue along Pearl, West Gordon, Johnson and Ann Streets to North Patterson Street, completing a belt line which has been in contemplation. The permission of the City Council has been received for this change.

Louisville, Ky.—The Louisville Railway has been granted a permit to build a switch into the property of the Bourbon Stockyards. This will be available for handling shipments of live stock from the country lines and making deliveries of them to the pens in which they will be sold. Heretofore the company has had to unload at its freight depot and the stock has been transported the remainder of the way in wagons.

Lincoln, Neb.—The Lincoln Traction Company has asked the Nebraska State Railway Commission for six months' extension of time on its franchise in which to construct a line to Omaha.

Dayton, Ohio.—The City Railway has asked the City Commission for a franchise to construct an extension on Kammer Avenue to Westwood Avenue, on Westwood Avenue north to Hoover Street and two blocks on Hoover Street.

Seattle, Wash.—A bill has been introduced in the City Council and referred to the franchise committee, granting a street railway franchise to A. A. Phinney, R. V. Ankeny and David P. Eastman, extending on various streets, between Carleton Park Addition and Fifteenth Avenue West at West Wheeler Street. Messrs. Phinney, Ankeny and Eastman have expended \$500,000 in the development of Carleton Park, overlooking Puget Sound in the Magnolia Bluff District. It is proposed to construct an electric railway and turn it over to the Puget Sound Traction, Light & Power Company to operate. The proposed franchise will expire on Dec. 21, 1934, the same date as the traction company's franchises expire.

TRACK AND ROADWAY

Los Angeles & San Diego Beach Railway, San Diego, Cal.—The Los Angeles & San Diego Beach Railway has filed with the Council of San Diego an ordinance permitting removal of that portion of the company's tracks in La Jolla on Prospect Street extending from Cave Street to a junction with the present track between Culver and Silverado Streets. Abandonment of its franchise for this portion of the road also is asked. The request is to be subject to approval of the State Railroad Commission.

Caldwell (Idaho) Traction Company.—Officials of the Caldwell Traction Company have given assurances that its present line to McNeil's Station will be extended to tap the Snake River Valley. Walter R. Sebree, president of the company, and Carl E. McStay, who is affiliated with Mr. Sebree in the undertaking, are planning a new town near the Nampa Ferry, where the extension will terminate. Recently officials of the company announced their intention of floating a loan of \$100,000 on the company's properties, now having no outstanding indebtedness. With the money thus obtained it is planned to make various extensive improvements to the system.

Railway Securities Corporation, Harvel, Ill.—L. J. Magill, Rock Island, has been appointed receiver for the Railway Securities Corporation, the company having filed an involuntary petition in bankruptcy. It was incorporated to build an electric line between Springfield and Hillsboro.

Peoria (Ill.) Railway.—This company is reconstructing its tracks in East Peoria to Farm Creek. The tracks are being removed from the side of the street and are being placed in the center.

Des Moines (Ia.) City Railway.—Work has been begun by the Des Moines City Railway double-tracking its Fort Des Moines line from Walnut Street across the Seventh Street bridge.

Louisville (Ky.) Railway.—All details as to the service the Louisville Railway will give to the Federal Army Cantonment, which is being constructed south of Louisville, have been settled, and the company will begin immediately the construction of the additional trackage. About 2½ miles of single track and about 1 mile of double track will be built. The company will double-track the Preston Street interurban line to Coke Station, at which point the cantonment line will be deflected and penetrate the camp grounds for a distance of 1 mile. Material for the construction is at hand and it is expected that the new line will be ready by Sept. 1. The spur into the camp will leave the line of the Preston Street track about half way out to its terminus at Okalona, and the haul from its terminus to the city will be 6 miles, with transfers good on all lines to which the Preston Street cars usually transfer. The fare will be 5 cents and the large double-truck cars used on the Preston Street line will be used in the camp service. Traffic requirements on the western end of the new line will not be increased and it is probable that a loop will be arranged for downtown.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—Interest in the project to connect Shelbyville and Frankfort with an electric railway line and thus connect the Louisville & Interurban Railway with the Kentucky Traction & Terminal Company has been revived. F. C. Dunn, secretary of the Chamber of Commerce of Frankfort, has announced that negotiations looking toward the financing of the project by Eastern concerns have been begun and that a meeting has been arranged at which the details of the project will be gone over. [Dec. 30, '16.]

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company will expend about \$350,000 on the construction of extensions to the cantonment at Admiral. Work is already under way on the grading of a tract of land on which will be laid 2 miles of double tracks from the company's main lines at Odenton to Admiral and into the cantonment itself.

Detroit (Mich.) United Railway.—Work has been started on reconstruction work on the track foundations along Woodward Avenue and paving between the tracks of the Detroit United Railway between the Detroit Terminal Railroad crossing and the Six-Mile Road, in Highland Park. The work will take about five weeks. New concrete foundations will be put in with the exception of the approaches to the Terminal Railroad crossing. At this point the foundation and tracks will be repaired and put into first-class shape, but permanent foundations will be delayed until such time as the subway is built to separate the grades. It is expected that work on the subway will be started within a year.

Michigan Railway, Kalamazoo, Mich.—It is reported that this company will construct an extension from Lansing to Grand Ledge at a cost of about \$175,000.

McComb & Magnolia Railway & Light Company, McComb, Miss.—A report from this company states that grading has been begun on this company's proposed road to connect McComb, Magnolia and Summit. Construction of a new power house at Fernwood was begun in June. Guy M. Walker, 61 Broadway, New York, president. [July 7, '17.]

Hampton & Langley Field Railway, Hampton, Va.—A communication from C. Loomis Allen, president of Allen & Peck, Inc., states that the Hampton & Langley Field Railway, which will connect Hampton with the Langley Aviation field, will be operated by the Newport News & Hampton Railroad when completed. [April 21, '17.]

SHOPS AND BUILDINGS

Petaluma & Santa Rosa Railway, Petaluma, Cal.—A new station will be built by the Petaluma & Santa Rosa Railway at Sebastapol. The building will be 40 ft. x 60 ft., and will be constructed of metal lath and plaster with a stucco finish.

Sioux City Service Company, Sioux City, Ia.—This company reports that it is constructing an addition to its carhouse.

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company will construct a new station in connection with its extension to the cantonment at Admiral.

Worcester (Mass.) Consolidated Street Railway.—This company has purchased the property at Grove Street, Sagamore Road and Park Avenue, containing 312,165 sq. ft., on which it will construct a carhouse, repair shops and administration buildings.

Interborough Rapid Transit Company, New York, N. Y.—The contract for the station finish at the Thirty-fourth Street and Times Square stations of the Broadway subway has been awarded by the Public Service Commission for the First District of New York to A. W. King & Company, Inc., New York, the lowest bidder, at \$178,722. Under the contract the work must be completed within five months.

POWER HOUSES AND SUBSTATIONS

Fort Smith Light & Traction Company, Fort Smith, Ark.—This company has completed a high-tension transmission line to Huntington to supply the Coal District Power Company with electricity. The company has also ordered material for an extension of its lines to furnish wholesale power to the Citizens' Electric Company, which supplies the electrical requirements of Alma, Mulberry and Ozark. Power to the extent of 1000 hp. will be furnished the Coal District Company and the Fort Smith Company will enlarge its generating capacity at Fort Smith to provide additional power for this and other new business which it has secured.

Des Moines (Ia.) City Railway.—This company will install a new turbine in its power house, doubling the capacity of the plant. A substation will be built south of South Park to increase the carrying capacity of the Fort Des Moines line. Another substation is being completed at East Second and Walnut Streets to handle the east side and still another is being completed at West Fourteenth Street to supply the interurban and part of the city lines. A new station will also be erected at Polk Boulevard and Chamberlain Avenue for the west lines.

Duluth (Minn.) Street Railway.—The City Council of Duluth has granted permission to the Duluth Street Railway to string two feed wires of 500,000-cm. capacity each in a double cable over the Aerial Bridge across the Duluth ship canal to connect with the circuit of the Park Point Traction Company, which was recently taken over by the Duluth Street Railway. The power plant of the Park Point Traction Company will be used only for emergency purposes after the connections are made across the ship canal.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—The Eureka Power Company, a subsidiary of the New Jersey & Pennsylvania Traction Company, has been granted permission by the Public Utility Commission to erect poles along the River Road from Ewing Township to the Hunterdon County boundary line. The lines will be extended from Washington's Crossing to Titusville and Pennington.

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—This company will erect a substation at a cost of \$10,000.

Monongahela Valley Traction Company, Fairmont, W. Va.—Surveys have been made and right-of-way secured by the Monongahela Valley Traction Company for the erection of 30 miles of electric transmission lines to furnish energy to various coal mines.

St. Albans & Swanton Street Railway, St. Albans, Vt.—This company reports that it has purchased 2650 kw. generators for the Public Electric Light Company, to be installed at its Fairfax plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
 Rolling Stock Purchases Market Quotations Business Announcements

Present Friction and Rubber Tape Situation

Uncertainties of the Future Force Short-Time Contracts—Need of Care in the Conservation of Raw Materials

BY EDGAR E. FAY

Sales Manager Boston Woven Hose & Rubber Company

Never before in this country's history has manufacturing been carried on with so many difficulties and uncertainties. From every angle handicaps are imposed which make economical manufacturing impossible, and aside from the increased costs, bring delays and disappointments which cannot be foreseen. When the first shock was over after the European war was declared there was a substantial increase in the demand for tapes from the foreign trade. As the manufacturing of England and her allies became more and more concentrated on the work of producing for the direct needs of the armies and the requisitions for munitions and other supplies were shifted over to this country, the demand for tape followed accordingly. Since the United States entered actively into the conflict, the demand has further increased, until we are now producing at the rate of 8,000,000 to 10,000,000 lb. per year.

THE RAW MATERIAL MARKET

The advances during the entire period of the war have practically been constant. This is particularly true of the materials and supplies produced in this country such as cotton fabrics of all descriptions, paper boxes, wire, etc., showing advances all the way from 25 to 300 per cent. With the advance of costs the uncertainty of supply increases. Then there is shortage and uncertainty of labor, the transportation difficulties, and all told the problems which confront every manufacturer increase in direct proportion to the number of ingredients he uses in his operations.

These difficulties make the simplification of manufacturing a vital necessity, and the greatest uniformity and best service can be given where buyers order stock goods rather than special constructions or even special brands. The reason for this is obvious, for there is a constant flow of standard goods pouring through the factory all the time. Where special goods are ordered, the manufacture is intermittent and production is consequently retarded.

ALL-INCLUSIVE HELPFULNESS TO SAFEGUARD CONSUMERS

While service has always been one of the important features of our business, the conditions which have obtained for the past two years have forced us to organize a special service department. Every possible effort is made to overcome the handicaps imposed upon us and give our customers service. If the materials for which we have contracted do not come in time, we have made it a practice to secure supplies near at hand, even at atrociously higher prices, if they are obtainable. When this country entered the war and boats shipping from the South ceased for fear of submarines, we brought ducks, sheetings and yarns on by express. When there was a coal shortage here in New England because of congestions in the transportation lines, we bought coal locally at local war prices so as to keep the factory running. As we have no distributing branches of our own but are "manufacturers for jobbers," we endeavor to support our distributors in two important features of business conduct, quality of product and service, in order that together we may build strongly a business that will result to our mutual benefit and satisfaction.

The uncertainties of the future are such that we cannot take undue risks, either for ourselves or for our customers,

and all engagements which contemplate future delivery are made for short terms only and are accepted subject to war clauses. It has been impossible to get materials in sufficient quantities for manufacturing. Not a week goes by that we do not have to close down some department for one reason or another, and now the government is requisitioning not only our plant but the sources of supply in many lines, which simply adds to the confusion and uncertainty. But we are good sports and when we think of the young men shortly going to the front, we are glad to "do our bit" as far as lies within our power.

Wire Manufacturers Co-operate with Government

Committee Formed to Accept All Orders, Make Binding Prices and Apportion Orders Out Among Manufacturers

Insulated wire and cable manufacturers have been very active in lending their support to the government since a state of war was declared. Immediately the United States entered the war practically every wire manufacturer placed his entire organization at the disposal of the national government.

Now this co-operation is taking on a more tangible form. The manufacturers were called to Washington recently to confer with navy officials and at that time three of their number, LeRoy Clark of the Safety Insulated Wire & Cable Company, Edward Sawyer of the Atlantic Insulated Wire & Cable Company and Wallace S. Clark of the General Electric Company, were appointed a committee to represent the entire insulated wire and cable industry in connection with purchases of wire by the Navy Department. It was then agreed that all navy orders for insulated wire should pass through this committee's hands. The prices would be fixed between this committee and the Navy Department and the committee would distribute all work of manufacture, the distribution to be made according to the capacity of the plant and to the ability of the manufacturer to ship promptly.

The wire manufacturers have agreed to these conditions and already they are in force and orders have been placed by the government in accordance with them. From the standpoint of the government this offers one of the best possible ways of placing orders. No favoritism is shown and orders are placed in such a way as least to disrupt the market and assure quickest deliveries. No individual manufacturer is loaded down with government business, the market is stabilized, and the effect on the trade is much smaller than it would be otherwise. Prices are based on a certain wire base, the copper for which the government agrees to furnish. By the manufacturer, of course, this is welcomed, because he does not have to sell to the government his own stock of copper at considerably less than he paid for it or could replace it for.

The first order was for 1,000,000 ft. of lead-covered submarine cable, which was wanted right away. This order, which would normally have required eighteen months to fill, was accepted and deliveries commenced in thirty days. In sixty days the order was completed. This order was followed by orders for several million feet of other kinds of cable, which were apportioned among sixteen manufacturers.

Prices on this business, it is understood, were much better than the government could have made in the market, and deliveries were much quicker than they would otherwise have been. Therefore, from the standpoint of the government, this method of handling orders has been found to be very satisfactory and very reasonable.

Coal Situation Serious

International Traction Buys Mine to Insure Winter's Supply—New England's Supply Increasing—Government to Report on Conditions Weekly

With the exception of the question of increased fares, the most important thing in the minds of leading electric railway executives is the present coal situation, which it must be admitted is a most important one. Conditions existing in the Middle West were made plain by Frank J. Petura, purchasing engineer of the H. L. Doherty Company, in the March 31 issue in these columns, and since that time a number of railways have combined forces and purchased coal mines in order to guarantee an adequate supply of coal for the coming winter. These roads include the Terre Haute, Indianapolis & Eastern Traction Company, the Indianapolis Traction & Terminal Company, the Union Traction Company of Indiana and the Fort Wayne & Northern Indiana Traction Company. Also, the W. S. Barstow & Company interests acquired coal mines for the use of its subsidiaries. The latest company to purchase a mine is the International Traction Company, a subsidiary of the United Gas & Electric Corporation. It has purchased a mine in the Pittsburgh district which is producing 150,000 tons annually, and the company will thus be able to furnish coal to its lines in Buffalo at normal prices. The railways will require only 50,000 tons, leaving the surplus available for sale. Other large properties are expected to follow suit on the theory that this is the only positive way of insuring the winter's supply.

NEW ENGLAND GETS SLIGHT RELIEF

The committee on coal production and distribution of the Advisory Commission of the Council of National Defense, of which F. S. Peabody is chairman, has been deluged with telegrams asking for assistance in obtaining coal and this committee has been doing everything in its power to get consumers in touch with producers or agents. That New England is getting relief is attested to by the fact that all previous records were broken on the New Haven Railroad during May and June in the number of cars of all-rail coal handled by this company. The total number of cars of both all-rail and tidewater coal handled by the New Haven in May was 21,850, and in June 20,707. This compares with 15,546 in May and 17,466 cars in June, 1916. Of the 21,850 cars handled in May, 17,168 cars were of all-rail coal, which is the largest number of all-rail coal cars handled in the company's history.

GOVERNMENT REPORTS ON CONDITIONS

Weekly statistics showing what the soft-coal miners of the country are doing, and why they are not doing more, are now being collected by the United States Geological Survey under the direction of Secretary of the Interior Lane. With all the information available from the already organized operators' associations, which represent about 25 per cent of the production of the country, the committee on coal production is able to concentrate its efforts where the greatest stringency lies—whether, as in most localities, the trouble is lack of cars, or whether it is labor shortage. Some of the important producing districts, particularly Alabama, West Virginia, parts of Pennsylvania, Ohio, and the territory from Texas to Iowa, figures from which are not shown in this first statement, are being rapidly organized for this purpose and have already furnished partial information.

The figures collected indicate that the bituminous mines of the country are at present working to 75 per cent of their capacity possible by utilizing the labor force at present available. The ratios of tonnage produced to full-time capacity for the three weeks ending June 23, June 30 and July 7 for twelve operators' associations are 72.9 per cent, 71.4 per cent and 76.5 per cent respectively. The increase in percentage of full-time capacity produced from 71.4 for the week ending June 30 to 76.5 per cent for the week ending July 7 is attributed to the fact that the mines were shut down on July 4, and the railroads were therefore able to supply more of the cars ordered for the remainder of the week.

Actual tonnage losses, below full-time capacity, as reported by six associations representing approximately one-fifth of the production of the country for the weeks ending June 23, June 30 and July 7, were 500,000 tons, which would indicate that the weekly output of mines of the whole country is not less than 2,000,000 tons below full-time capacity. By far the greatest factor concerned in the losses was the inadequate car supply. Thirty-one per cent of the total full-time capacity of these representative mines was lost because the supply of cars at the mine mouth was insufficient. Other important causes were labor deficiency, crippling the industry to 4.5 per cent of its full-time capacity, and mechanical breakdowns within the mines to which losses amounting to 3.2 per cent of the full-time output were attributed.

New Financing for General Electric

J. P. Morgan & Company and Lee, Higginson & Company, New York, on July 19 offered for subscription at 99¾ and interest, to yield about 6.10 per cent, \$15,000,000 of three-year 6 per cent gold notes of the General Electric Company. These notes are dated July 1, 1917, and are available in coupon form in \$1,000, \$5,000 and \$10,000 denominations, registerable as to principal. The issue was oversubscribed more than 100 per cent.

Apart from these notes the only debt of the company is represented by \$12,047,500 of debentures. The net income available for interest in 1916 amounted to more than thirty-three times the interest requirements. The \$15,000,000 of new money, it is reported, will bring working capital, in connection with surplus accumulated during the last six months, above the \$100,000,000 mark.

The United States Steel Corporation's orders on hand on June 30 amounted to 11,383,287 tons, which is a decrease of 504,304 tons as compared with the orders on May 31. This showing is regarded as favorable because of the refusal of this corporation's subsidiaries to sell additional capacity pending the settlement of the price question by the government.

NEW YORK METAL MARKET PRICES

	July 19	July 26
Prime Lake, cents per lb.....	26½	26
Electrolytic, cents per lb.....	26½	26
Copper wire base, cents per lb.....	36	36
Lead, cents per lb.....	10½	10¼
Nickel, cents per lb.....	50	50
Spelter, cents per lb.....	8¾	8¾
Tin, Straits, cents per lb.....	62½	62½
Aluminum, 98 to 99 per cent, cents per lb.....	55	57

OLD METAL PRICES

	July 19	July 26
Heavy copper, cents per lb.....	26½	24
Light copper, cents per lb.....	23½	21
Red brass, cents per lb.....	19½	19
Yellow brass, cents per lb.....	17½	16
Lead, heavy, cents per lb.....	9	8½
Zinc, cents per lb.....	6¼	6
Steel car axles, Chicago, per net ton.....	\$46.50	\$45.50
Old car wheels, Chicago, per gross ton.....	\$36.00	\$32.50
Steel rails (scrap), Chicago, per gross ton.....	\$43.00	\$43.00
Steel rails (relaying), Chicago, per gross ton....	\$59.50	\$59.50
Machine shop turnings, Chicago, per net ton....	\$19.00	\$17.50

CURRENT PRICES FOR MATERIALS

	July 19	July 26
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable (stranded), New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh.....	\$38.00	\$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton....	\$40.00	\$40.00
Wire nails, Pittsburgh, per 100 lb.....	\$4.00	\$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb..	\$5.00	\$5.00
Steel bars, Pittsburgh, per 100 lb.....	\$4.50	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$8.35	\$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.85	\$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$4.65	\$4.65
Cement (carload lots), New York, per bbl.....	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.....	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.....	\$2.60	\$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.13	\$1.12
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.14	\$1.13
White lead (110 lb. keg), New York, cents per lb.	12¾	12¾
Turpentine (bbl. lots), New York, cents per gal..	40	42

ROLLING STOCK

Union Light & Power Company, Kansas City, Mo., has recently purchased five trailers which will be placed in service on the line to the Fort Riley cantonment.

Tuscaloosa (Ala.) Railway & Utilities Company is constructing an electric locomotive for which Brill trucks and Westinghouse electrical equipment have been ordered. The company will build the body.

Columbia (S. C.) Railway, Gas & Electric Company is reported to be in the market for four semi-convertible cars to be used in service to the cantonment near this property. The company is building four semi-convertible cars and expects to lay about five miles of double track.

Northwestern Pennsylvania Railway, Meadville, Pa., has ordered six Birney one-man, double-end safety cars from the American Car Company, St. Louis, Mo. The following details have been specified:

Number	6	Heaters,	
Date of order	June 1, 1917	Peter Smith Trus Plank	
Date of delivery .....	.60 to 90 days	Headlights	Golden Glow SM95
Builder	American Car Co.	Journal boxes	Brill
Type	Birney	Lightning arresters,	
Seating capacity	30	General Electric	
Weight (total)	14,000 lb.	Motors	Two G.E.—258
Over bumpers	27 ft. 9 1/2 in.	Inside hung	
Over vestibule	26 ft. 9 1/2 in.	Paint	Paint
Width over all	8 ft. 0 in.	Registers	None
Rail to trolley base	12 ft. 6 in.	Sanders	Brill
Body	Semi-steel	Sash fixtures	Brill
Interior	Birch stained mahogany	Seats	American Car special
Headlining	Agasote	reversible light-weight cross	
Roof	Arched	seat	
Air brakes	Westinghouse	Seating material	Steel, birch
Axles	Brill	veneer stained mahogany	
Car trimmings	Bronze	Springs	Brill
Conduits	American Car	Step treads	Feralum
Control	G. E.	Trolley catchers	Keystone
Couplers	Brill	Trolley base	General Electric
Curtain fixtures	Curtain Supply	Trolley wheels	General Electric
Curtain material	Pantasote	Trucks	Brill Special 78-M-1
Dest. signs	Hunter Illuminated	Ventilators	Brill Exhaust
Door mechanism,	Safety Car Devices	Wheels	26-in. cast wheels
Fenders	H. B. Lifeguard	Special devices, etc.	100 per
Gears and pinions,	General Electric	cent dead man control	
Hand brakes,	Brill—Pittsburgh Drop Handle	Automatic braking and sand-	
ing devices		Made by Safety	
Car Devices Company			

Michigan Railway, Jackson, Mich., has specified the following details for four all-steel, three-compartment motor cars and for two all-steel, double-end trailers which are being built by the St. Louis Car Company.

	All-Steel Motor	All-Steel Trailer
Number	4	2
Name of road	Michigan Railway	Michigan Railway
Builder	St. Louis Car	St. Louis Car
Seating capacity	56	52
Weight (total)	100,000	67,900
Bolster centers, length	36 ft. 0 in.	30 ft. 2 in.
Length over bumpers	31 ft. 0 in.	53 ft. 1 in.
Length over vestibule	59 ft. 0 in.	51 ft. 1 in.
Width over belt rail	3 ft. 11 in.	8 ft. 11 in.
Height, rail to roof	12 ft. 10 1/2 in.	13 ft. 0 in.
Lower sill to roc		9 ft. 5 in.
Body	Steel	Steel
Interior trim	Steel—imitation mahogany	Mahogany
Headlining	1/4 in. agasote	3/16 in. agasote
Roof	Main arch	Arch.
Air brakes	Westinghouse	Westinghouse
Axles	Open hearth, heat treated	
Cables	St. Louis Car	St. Louis Car
Bumpers	Rico anti-climber	Rico anti-climber
Car trimmings	Bronze—St. Louis Car	Bronze—St. Louis Car
Conduits	St. Louis Car	St. Louis Car
Control	Multiple unit	
Couplers	Tomlinson MCB	Tomlinson
Curtain fixtures	Forsyth No. 88	Forsyth No. 88
Curtain material	Pantasote No. 77	Pantasote
Designation signs	Illuminated	
Trap door and steps	O. M. Edwards	
Fenders	Railway co.'s design	
Gongs	14 in. air operated	
Hand brakes	Ackley	Ackley
Headlights	G E Luminous arc	
Heaters	Peter Smith O-C	Peter Smith O-C
Journal boxes	Syrnington	
Paint	Murphy ABC	Murphy ABC
Sandbox	With Reliance Trap	
Sash fixtures	O. M. Edwards	O. M. Edwards
Seats	Hale & Kilburn	23 Hale & Kilburn
Seating material	Plush and leather	Plush and leather
Step treads	Mason	Mason
Trucks, type	Baldwin	Baldwin—trailer
Ventilators	Automatic	Automatic
Wheels	FSC, 36 in. diam.	36 in. diam., steel
Special devices, etc.	Light Fixtures, Safety Car Heating Co.; Bolsters, fitted with Baltimore ball bearings and Perry roller side bearings.	West. signals.

TRADE NOTES

Standard Underground Cable Company, Perth Amboy, N. J. is building a new extension to its plant.

Frederic de P. Hone & Company, New York, N. Y., engineers, announce the removal of their New York office to 13-21 Park Row.

B. L. Yepson has been elected second vice-president and general manager of sales of the National Fireproofing Company, Pittsburgh, Pa.

J. H. McKelway has been appointed sales manager of the Laclede Christy Clay Products Company, St. Louis, Mo., succeeding H. K. Lackland, resigned.

R. M. Klein has been appointed sales manager of the International Oxygen Company and will be located at the company's main office, 115 Broadway, New York.

Duquesne Electric & Manufacturing Company, Pittsburgh, Pa., has been incorporated with a capital stock of \$50,000 to manufacture electrical machinery, etc. E. A. Casey is treasurer.

A. C. Cornell, formerly house goods specialist in the St. Louis branch of the Western Electric Company, has been appointed sales manager of the Denver (Col.) branch house of that company.

Alonzo B. Reed, formerly with Charles T. Main, consulting engineer, Boston, Mass., is now associated with the power transmission sales office of the James Hunter Machine Company, Boston, Mass.

General Electric Company, Schenectady, N. Y., has received bids for the construction of a reinforced concrete addition 135 ft. x 250 ft. at its Edison Lamp Works, Harrison, N. J., to cost about \$200,000.

L. S. Washington, formerly a member of the transformer sales division of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, has recently been transferred to the St. Louis office of that company as supply salesman.

T. A. Gillespie Company, Gillespie, N. J., has been incorporated by Thomas H. Gillespie, H. S. Morrow and R. A. Johnson of New York City. The company is capitalized at \$500,000 and proposes to do a general contracting and electrical engineering business.

Sangamo Electric Company, Springfield, Ill., has established a service station on the Pacific Coast for recalibration and repairs of meters for the territory west of Salt Lake City. The service station is located at the factory of the Western Electro-Mechanical Company, Oakland, Cal.

James A. Parker, who has been associated with the United States Steel Products Company of New York for a number of years, has been appointed as steel expert by Secretary Redfield for the newly created Division of Export Licenses of the Bureau of Foreign and Domestic Commerce.

National Carbon Company, Cleveland, Ohio, has purchased the works and business of the American Carbon & Battery Company, St. Louis, Mo. With the exception of Henry Wrape, the president of the St. Louis company, who is retiring, the management and organization remains unchanged.

World Harvester Corporation, New York, N. Y., has been chartered with a capital stock of \$1,500,000 by D. Halley Barber, Herbert E. Monahan and Ruth Frackman, all of New York, N. Y. The company proposes to manufacture apparatus and mechanical devices operated by electricity and other power.

J. D. Collier, director of L. J. Healing & Company, Ltd., Tokyo, Japan, general engineers and contractors, is visiting America on a short business trip and expects to arrive in New York the first week in August. His headquarters while in New York will be care of W. J. Sparks, Inc., 17 Battery Place, New York.

Bound Brook Oil-less Bearing Company, Bound Brook, N. J., announces that its new foundry being erected at plant No. 2, Lincoln, N. J., two miles east of the Bound Brook plant, will be ready for occupancy on Aug. 3. This building is of steel and brick construction, 60 ft. x 180 ft., and will materially increase the production of this company's output.

Leeds & Northrup Company, Philadelphia, Pa., announces that its factory was closed from July 6 to July 18, during which time almost the entire force of the company took its vacation and all production work was stopped. The new factory addition, which will double the floor space, is nearly completed and the company proposed moving into it during the vacation period.

Atlantic Welding Company (formerly the Atlantic Welding Corporation), 30 Church Street, New York City, announces two important changes, one technical and the other commercial. First, the Gailor welded joints formerly installed under contract by this company will hereafter be offered to railways with a remarkably compact unit type motor-generator set and simplified apparatus for the Atlantic welding method, thereby permitting the installation of these electric arc-welded joints at minimum cost and maximum convenience. Second, the joints hereafter can be installed directly by the electric railway purchaser on a license basis, making use of the special motor-generator and other equipment, instead of having the work done by contract with the Atlantic Welding Company's forces.

Calebaugh Self-Lubricating Carbon Company, Philadelphia, Pa., announces that it has been compelled to seek larger quarters for the manufacture of its "No-Spark" carbon brushes for use on motors and generators, and that after Aug. 1 its plant will be located at 1508 to 1518 Columbia Avenue. The offices, however, will remain at 1503 Columbia Avenue. Its sales representatives are: F. Steetler and B. C. Hilliard, Philadelphia, Pa.; F. A. Best, Atlantic City, N. J.; Frank Van Anden, New York; Charles A. Fine, Western Pennsylvania; Fred H. Dorner, Milwaukee, Wis.; R. C. Stage, Rochester, N. Y.; Moore-Handley Hardware Company, Birmingham, Ala.; Baltimore Electrical Supply Company, Southern territory; Quality Electric Works, Los Angeles, Cal.; Advance Machinery & Supply Company, Denver, Col.; Antiga & Co., Havana, Cuba, and the Electrical Equipment Company, Montreal, Canada.

Holden & White, Inc., Chicago, Ill., announce that they have received orders for the following specialties: Anderson slack adjusters, purchased by the United Railways of St. Louis for 100 cars, and by the Omaha & Council Bluffs Street Railway for 40 cars; Garland ventilators, by the New York State Railways, Rochester Lines (Cincinnati Car Co.) for 25 cars, by the Pacific Gas & Electric Railway (American Car Co.) for new cars, and by the Fort Wayne & Northern Indiana Traction Company for cars being rebuilt in company shops; Wasson air-retrieving trolley bases ordered by the East St. Louis & Suburban Railway for the new all-steel cars to be used on its line to Alton; Columbia car equipment specialties, for the Chicago, South Bend & Northern Indiana Railway; Fort Dodge, Des Moines & Southern Railroad, Wisconsin Public Service Company and Chicago Surface Lines; Miller trolley shoe equipments for the International Railway, Chicago, North Shore & Milwaukee Railroad, Gary & Interurban Railroad, Fort Wayne & Northwestern Railway, Union Traction Company of Indiana, East St. Louis & Suburban Railway, Des Moines City Railway and Michigan Railway, and Perry-Hartman roller side and centering center bearings for the Interborough Rapid Transit Company, Chicago, Aurora & Dekalb Railroad, Fort Wayne & Northern Indiana Traction Company, Waterloo, Cedar Falls & Northern Railway, Oklahoma Union Traction Company (J. G. Brill Company), Winnipeg Electric Railway, Central Illinois Traction Company, Joliet & Eastern Traction Company and Evansville Railways.

NEW ADVERTISING LITERATURE

Wagner Filing Methods Company, New York, N. Y.: A 16-page catalog on indexing subjects, firms, individuals and records.

General Electric Company, Schenectady, N. Y.: A leaflet on special outfits for recharging ignition and lighting batteries.

American Steel Export Company, New York, N. Y.: A booklet, "Export Engineering and Contracting," which deals with the export organization of this company.

International Money Machine Company, Reading, Pa.: A pamphlet of payroll machinery giving brief descriptions of

machines for adding, listing, recording, scheduling and paying out money.

Ford, Bacon & Davis, Engineers, New York, N. Y.: A bulletin, "Recent Construction Work," giving descriptions and illustrations of a double-deck wharf on Pier 41 at Galveston, Tex., showing construction features, plans, specifications, etc.

Gardner Machine Company, Beloit, Wis.: A complete 120-page catalog on grinding machines, abrasive materials and accessories. Contains a section on tables, specifications, prices and other useful information.

Colonial Steel Company, Pittsburgh, Pa.: Catalog No. 16 gives specifications for tool, alloy and special steels with lists of extras and methods of treatment. Articles made from various steels are shown and processes of manufacture illustrated.

Lidgerwood Manufacturing Company, New York, N. Y.: Bulletin No. 20, giving a complete line of electric hoists designed especially for contracting work, special hoisting duty, etc. General descriptions, illustrations and tables of sizes and capacities of the different hoists are given.

New Publication

Properties of the Calcium Silicates and Calcium Aluminate Occurring in Normal Portland Cement. This is the title of a report recently issued as Technologic Paper No. 78 by the Bureau of Standards. Copies can be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., for 25 cents each.

Electric Central Station Distribution Systems. Revised and enlarged edition. By H. B. Gear and P. F. Williams. D. Van Nostrand Company, New York. 457 pages, 187 illustrations. Cloth, \$3.50 net.

While, as the title indicates, this book is addressed particularly to distribution engineers of central stations, there are many features of interest to electric railway engineers, especially those connected with companies engaged in the sale of industrial power. The authors occupy responsible positions with the Commonwealth Edison Company of Chicago, and the text reflects their extensive experience, particularly in cable installation and overhead-line construction. The book is practical rather than theoretical, but fundamental principles are cited when necessary. In a treatise on a subject like this little of novelty is to be expected, its principal value lying in the fact that the reader secures much first-hand information as to the merits of certain schemes and practices. It also forms a convenient handbook in its particular field.

Abstract of the Census of Manufacturers. United States Bureau of the Census. Government Printing Office, Washington, D. C. 722 pages bound in cloth, 65 cents per copy.

Statistics of 340 separate manufacturing industries are presented in the abstract of the census of these branches of production that has been issued by the United States Bureau of the Census. Among the details given are those relating to number, size and character of ownership of establishments, and States in which located; proprietors, officials, salaried employees, and wage-earners, classified according to sex and, in the case of wage-earners, according to whether over or under sixteen years of age; salaries and wages paid; power used; fuel consumed; cost of materials; value of products; quantities of principal products, and various other items. Statistics somewhat similar in scope but in less detail are given, with reference to all industries combined, for each State and geographic division and for each of the leading 130 cities. This inquiry, which related to the calendar year 1914, was made in 1915, and the primary or fundamental data derived from it, together with some details as to kinds and quantities of the various classes of products, were issued some time ago in the form of several series of press summaries. The abstract presents, in convenient form, with an alphabetical index, all the information that will be needed by the great majority of persons who have use for the manufacturers' statistics.