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### Semi-Annual Index

This number contains the index of articles contained in Volume XXXV of the ELECTRIC RAILWAY JOURNAL, or that concluded with this week's issue. A short statement will be given of the principles followed in compiling this index, for the benefit of those who are not familiar with it through past use. The index is both a geographical and a subject index. In the geographical entries each road is indexed under the name of the city in which its principal office is located. In the subject entries the effort has been made to include not only all articles but portions of longer articles which treat of different topics to any considerable extent. The compiler of the index has made an earnest effort to anticipate the wants of every user of the index, and cross references have been introduced freely, but as it is probably not possible to do this completely, suggestions for the future improvement of the index will be welcome.

### Sick and Death Benefit Societies

The increasing number of sick and death benefit societies even among the smaller companies, shows that American electric railways are beginning to appreciate the value of such organizations for attracting and retaining good men. In the United States such protection of the employees is still in the infant stage when compared with the results attained in northern Europe through the co-operation of the employer, employee and the State. For all that, it is to be hoped that equally beneficial results can be secured in this country without the aid of or compulsion by the Government. Most American railway sick and death benefit corporations are supported by dues from the employees and occasional contributions from the companies to make up deficits or to insure a good reserve fund. In a self-sustaining body the dues average 50 cents a month to cover medical attention and supplies, in addition to a daily sick benefit payment of \$1, which usually begins the fourth or fifth day after illness. In some cases the medical provision includes the member's dependents, with or without extra dues. The death benefit payment, which varies from \$50 to \$100, is covered by the dues or by special assessments. While these societies are simple in character and scope, most of them have succeeded in gaining the general adherence of the men. This has resulted from the wise policy followed by the companies of permitting the employees to control these bodies, while they advise in the investment of the funds, furnish a meeting room or clubhouse, etc. It is very easy for organizations of this kind to grow into trade unions unless the management constantly shows that it is vitally concerned in the welfare of its men. In general, however, the sick and death benefit society typifies an excellent idea which could well be supplemented by paying more attention to other features of electric railway employment than is now generally the case.

### Printed Explanations of Forms

There has been considerable discussion in this paper in regard to the proper use of blank forms and emphasis has been laid upon the possibility of economizing both in the charge for printing and stationery and also in the time of those who use the blanks, by periodical revisions of the forms in use. There is no doubt that the actual waste caused by improper forms amounts on many systems to an appreciable sum in the course of a year. The suggestion has been made that a brief memorandum giving instructions as to the use of each form should be printed on the blank itself. A modification of this plan is now under consideration by the Massachusetts Electric Companies, the extent of whose system makes the subject of the standardization and proper use of forms very important. This plan consists of the publication of a printed folder of explanation upon the proper uses of the forms and the plan should tend toward economy of time and high-priced clerical labor. Without some standard instructions of this kind there is danger that incomplete entries will be made at different local points where the blanks are used with resulting confusion and waste of time at the headquarters of the mechanical and accounting departments. The larger the number of forms, the more necessary that the entries should be accurate. Although questions can be asked and answered quickly by the aid of the telephone, delays are inevitable if requisitions and other forms are not properly filled out. It is just as desirable to minimize the amount of correcting conversation which passes over a company's telephone system as it is to cut down the inter-department correspondence to the limits consistent with intelligent administration of a railway property.

### Diplomacy In Car Signs

It is well to know the difference between brusqueness and brevity when the text for car signs is being prepared. Nothing is gained by the use of terms which will be resented by the passenger because they seem like a command when the same requests can be stated politely. For example, such expressions as "absolutely prohibited," "penalty of the law," "must under no circumstances" are more apt to rouse the reader's ire than to soothe him into compliance with a reasonable regulation. Injunctions of this kind recall the traveler's perennial joke that in Germany the principal word seen in public is "verboten," or forbidden. There should be no difficulty in so wording most announcements that they will offend no reasonable person. A good instance of what the spirit of car signs ought to be is offered by the practice of the United Railways & Electric Company of Baltimore. The route of a line is never changed arbitrarily. It is done only after the company finds that the change suits the needs of the majority of the users of that line. Hence the expression: "In response to the wishes of our patrons" is perfectly proper and is correctly employed. The devotee of the weed is not told that he must not smoke in open cars except at the rear, but is cordially informed that "Smoking is permitted on the three rear seats," whereby the granting of a privilege is implied. Even the spitting ordinance is easily disposed of by a sign reading only "Spitting is unlawful" with no hint of dire penalties. This company now operates one pay-as-you-enter line, but the passengers on the other routes have already been educated to leave by the front way. They are told that "Good service depends somewhat on you. Kindly move forward and leave by the front door. Travel will be pleasanter and quicker."

As the car notices which a railway issues from time to time offer the only insight which the public gets as to the personality of the management, too much cannot be done to create the most favorable impression possible in this inexpensive manner.

### ANALYZING FEEDER CONDITIONS

If the ease with which the operating conditions on railway feeders can be investigated were more generally appreciated it is certain that studies of distribution economy would take a new lease of life on systems where the traffic is undergoing constantly shifting changes of large magnitude. It is an interesting thing to look into the load factor of the feeder, if the term may be applied in a somewhat general sense. On roads of small or medium size, where there is but a single power plant in service, the usual practice of installing an ammeter in each feeder line at the main switchboard establishes conditions favorable to a perpetual test, and while the practice of keeping feeder records is not perhaps necessary in routine operation, it is well worth while to attempt to compare the average and maximum loads carried with the capacity of the outgoing lines, particularly in relation to the voltage available under various conditions at the motors.

Where several power stations feed a given district with more or less cross-connecting on the positive side of the system through tie lines the situation is susceptible usually of some pretty extensive analysis before it is safe to assume that the delivery of energy is being effected on the most economical basis feasible. It is doubtless some trouble to make instrumental connections on outside lines, but the rewards of a thorough study of current distribution and voltage conditions beyond the reach of the ordinary switchboard measuring apparatus are sometimes considerable. It does not do to assume that because a feeder was loaded close to its capacity in the heavy hours of last month that the same conditions will prevail three or four months hence. Every time that the operating department establishes a new schedule or alters an old one the feeder system feels a definite although invisible effect, and after half a dozen or so such changes have been set in motion it is easily within the possibilities that the distribution of copper on the system may not be the one best calculated to deliver the requisite voltage conditions with the minimum loss consistent with the investment.

There is, of course, a decided difference between the average and the maximum demands of a given schedule upon a feeder system, and in practical railway operation the requirements of the morning and evening peaks have the right of way. The current must be supplied at a voltage which will permit the maintenance of the schedule without overheating the motors. As the number of distributing points increases, however, the relations of tie lines become more and more flexible, even where there are certain arbitrary boundaries enforced in the overhead network to prevent the overloading of any particular power plant or substation. By making a careful study of the loading and voltage results at different points simultaneously, or even at about the same time, on days when the loads and schedule situation are roughly similar to those obtaining on the preceding day, much can be learned about the effectiveness of the overhead lines in handling the traffic. The redistribution of two or three miles of 500,000 circ. mil feeder will go a long way toward paying for a year's analyses of the kind above outlined, including the instruments and the relocation of the conductors.

### WEAR OF WHEELS BY BRAKE SHOES

The relation between wheel wear and brake shoe wear has been up to the present time one of the unknown factors in the brake problem. Brake shoes are comparatively cheap and easily renewed when worn out and from the standpoint of cost the best brake shoe is the one which will wear the wheel the least and at the same time show the smallest loss of weight itself per 100,000,000 ft. lb. of work done in stopping a car. The coefficient of friction is technically important because it affects the braking power and smoothness of stop. The Master Car Builders' Association previous to 1907 confined its investigations of brake shoes to a study of their frictional qualities only, but in 1908 its committee on brake shoe tests extended its work to include an investigation of brake shoe wear. No conclusions were reached during the first year's study of this phase of the subject owing to the lack of experimental data showing the reciprocal wear of the wheels on which the brake shoes were tested. This year, after considerable experimenting, a scale was designed and built which is strong enough to weigh a 700-lb. wheel and delicate enough to show differences in weight of less than 0.001 lb. The data obtained by the use of this scale were reported by the committee last week at the Atlantic City convention of the association. An abstract of the report of this committee is printed elsewhere in this issue.

Contrary to expectations the report shows that of 14 shoes tested, all of which were taken from cars in service, none produced appreciable wear on a cast-iron wheel and only two produced slight wear on a steel-tired wheel. The committee says in its report that from the results of these tests it has concluded "that no serious wear of wheels is to be expected from the action of any shoes now in ordinary service . . . and the reassurance which proceeds from this conclusion is ample return for the effort and expense entailed by the investigation." As a result of this somewhat surprising discovery the committee recommends the adoption of a limit of brake shoe wear which can be met under test by the existing types of brake shoes and therefore will not encourage the development of other types of shoes which might show less wear at the expense of the wheels. For shoes used on cast-iron wheels the committee recommends a limit of wear of 0.8 lb. per 100,000,000 ft. lb. of work done and per steel-tired wheels a limit of 4 lb. per 100,000,000 ft. lb. of work done. The higher limit of wear for shoes used on steel-tired wheels is due to the much higher braking pressure employed in the tests outlined approximating that used in passenger service when making stops from an initial speed of 65 m.p.h.

In general, the conclusions of the committee can be applied equally well to the formulation of specifications for electric car brake shoes. Rail conditions in city streets are much worse at times than on steam railroad tracks, but so far as the action of the shoe on the wheel is concerned there is little difference. Under moderately heavy braking pressures most of the dirt and grit picked up by the wheel is rubbed off at the heel of the shoe during the first few revolutions. In high-speed interurban service the conditions are almost exactly the same as in steam railroad passenger service. Standardization of brake shoe patterns has made good progress among electric railways and standardization of brake shoe efficiency should logically follow. The results already accomplished by the Master Car Builders' Association afford an excellent basis for a standard specification.

### MAKING THE MOST OF THE TIME CLOCK

In repair shops and car houses where time clocks are being installed for the purpose of securing more systematic and punctual work it is of considerable importance to recognize the conditions which must be met in order to secure good operating results. While much depends upon the design of the clock system in relation to the convenience of its service, it is desirable to familiarize all employees with the rules and handling of the equipment for some time before the pay-roll begins to be based on the new installation. A free discussion of any proposed sets of rules by heads of departments before the regulations are put into effect will accomplish a great deal in the direction of avoiding friction and the natural hostility which accompanies the introduction of a mechanical time recorder.

Before any thoroughly modern system can be applied it is necessary for all heads of departments to understand how to handle the registration of regular, overtime, holiday, Sunday, night and outside work under all the conditions which may be foreseen in operation. On a large system where some of the employees of the mechanical department are constantly being called upon to work outside their normal quarters, either on emergency jobs, helping on tasks in different car houses, power plants or in claim department affairs, the number of exceptions to the usual routine registrations of in and out at morning, noon and night is surprisingly large. The forms and cards used must be either numerous enough or of sufficient individual scope to cover the entire range of service—otherwise the auditing department immediately falls into a morass of slipshod records which soon leads to demoralization. Even the apparently simple process of stamping the cards in the clock cannot safely be left to chance, for double registration, mistakes in ringing in or out, the selection of cards of the wrong color or form, careless impressions and sometimes bent or dented mechanism occur when a set of inexperienced "clock punchers" attempt to inaugurate a system of this kind without definite supervision in the early stages of the game.

The provision of card racks with clearly numbered and readily accessible spaces for each employee is important, with the plain establishment of locking and unlocking times. If cards of differing colors are used too much care cannot be taken in seeing that the right selections are made for the different classes of work. The location of the time clock is important, the best for an ordinary car house being the pit room, and care should be taken to see that the card rack covers open away from the clock to avoid interference with its service. In some cases the stock room must be utilized for the clock location, but this is objectionable when night work is carried on with the room closed for a portion of the period. Placing the responsibility for clock winding, adjustment and oiling upon a single employee works well. The main causes of complexity, however, are the unusual or irregular conditions to be handled, like overtime work in the morning hours by a night shift, traveling time or outside work, returning of men to other points than headquarters upon completion of outside jobs, changes during the day from a day-work to a piecemeal job, and the like. Some of these conditions may require the notation by the department foreman over his initials of exceptional circumstances, but with thorough planning of the system and frank discussions and criticisms invited in advance and during operation the intricate details of electric railway maintenance can be systematically classified and recorded.

### THE TRANSPORTATION DEPARTMENT OF THE METROPOLITAN STREET RAILWAY, NEW YORK

A series of recent articles\* in this paper has described the present methods of construction and operation employed in the Engineering Departments of the Metropolitan Street Railway of New York and the improvements and economies introduced under the management of Adrian H. Joline and Douglas Robinson, receivers. The same policy of systematic study of cause and effect which has proved so fruitful of beneficial results in the various activities of the engineering departments has also been brought to bear by General Manager Root in the transportation department, a branch of the service which is often considered as less susceptible to such treatment. Nevertheless, the experience of the past two and a half years has shown that the fundamental principles of the operation of cars are equally capable of scientific analysis as those of any other branch of the service. An account of the work which has been done in improving the transportation methods of the company will conclude the series of articles which have appeared in this paper on the Metropolitan Company.

#### ORGANIZATION OF THE TRANSPORTATION DEPARTMENT

In the organization of the Metropolitan Street Railway system, the responsibility of determining the requirements of the service and of regulating the movement of cars in accordance therewith rests upon the superintendent of transportation. His duties, broadly speaking, call for a constant and thorough analysis of traffic requirements, the regulation of time tables to meet the changing conditions and the supervision of the many details, which influence the ends sought. The accompanying chart illustrates the organization of the department.

At the time when the company passed into the hands of receivers, the appointment department and the transportation department were independent of each other, but within a few months, an improvement in the organization was effected in that the appointment department was placed under the jurisdiction of the superintendent of transportation. The result has been a marked increase in efficiency due to a closer co-operation than had previously been practicable.

The time table bureau of the transportation department was created at about the same time. This bureau is in close touch with the statistical bureau of the company and the men charged with the arranging of the schedules are able to perform their work more intelligently because of their close association with the employees who secure and arrange the data upon which the time tables must necessarily be based.

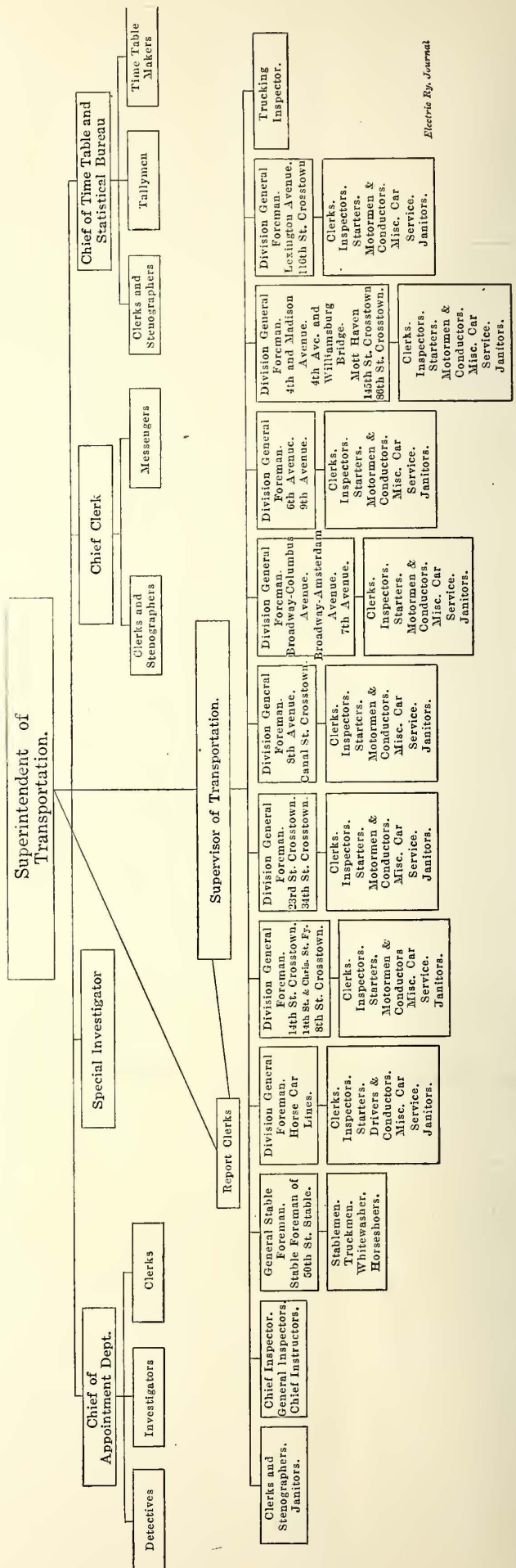
#### SUPERVISOR OF TRANSPORTATION

The supervisor of transportation is immediately in charge of the operation of the cars, and, because of the character of his duties, must necessarily be out on the lines during the greater portion of his time. It is his duty to see that the service is regulated in accordance with the general theory which has been laid down, or to be in a position by reason of his experience and knowledge of the situation, to recommend such changes in the time tables as are required. In this work he is of course aided to a material extent by his immediate subordinates, the division general foremen, who report directly to him and by the general inspectors, line inspectors and starters. Upon him personally also rests the responsibility for the discipline of the employees engaged in the running of the cars.

#### REPORT CLERK

The duties of the report clerk are performed by three men, each of whom works for an eight hour shift so that the office will be open continuously. All matters relating to any interference with the operation of the cars are promptly telephoned to the report clerk, through whom, in cases of emergency by night or by day, the activities and direction of the entire transportation department are handled and co-ordinated with those of the other departments. Certain phases of the duties of the

\*See ELECTRIC RAILWAY JOURNAL, March 26, April 2, April 9, April 16, April 23, May 7, May 14, May 21 and May 28, 1910.



Metropolitan Street Railway—Organization Chart of the Transportation Department

report clerk were mentioned in the article on Snow Organization of the Metropolitan in the issue of April 23, 1910, and on page 730 of that issue a chart was printed indicating the relationship of the report clerk to the various officials and subordinates of the entire system.

Manhattan Island that 70 per cent of the track over which the Metropolitan's cars are operated can be reached by a wagon within five minutes; 20 per cent can be reached from within five to 10 minutes, and the remaining 10 per cent in from 10 to 20 minutes from the time the report clerk receives word that

Form 167 10-10-1000

ADRIAN H. JOLINE, DOUGLAS ROBINSON, RECEIVERS  
METROPOLITAN STREET RAILWAY COMPANY  
REPORT CLERKS' RECORD OF EMERGENCY WAGON CALLS

Date \_\_\_\_\_ Sheet No. \_\_\_\_\_

LOCATION	Report Number	REASON FOR CALL	CALL MADE BY	Rec'd by	DELAY			Time Call was Rec'd	Wagon Sent	Sent by	Time Sent	Time Notified High Tension	Time Wagon Returned	Time of Receiving Notice	Signed by
					Direction	From	To								

Metropolitan Street Railway—Reports of Emergency Wagon Calls

Form 366 5-10-1000

ADRIAN H. JOLINE, DOUGLAS ROBINSON, RECEIVERS,  
METROPOLITAN STREET RAILWAY COMPANY.  
DELAYS—ACCIDENTS.

Date \_\_\_\_\_ Time \_\_\_\_\_ Number \_\_\_\_\_

Location \_\_\_\_\_ Div. \_\_\_\_\_

Run \_\_\_\_\_ Car \_\_\_\_\_ Style \_\_\_\_\_ Direction \_\_\_\_\_

Length of delay \_\_\_\_\_

REPORT.

Reported at \_\_\_\_\_ M., by \_\_\_\_\_

Reported by	Notified at	M.	Person Notified	by
Gen. Mgr.				
Sup't. Trans.				
Claim Dept.				
Engr. M. of Way				
Gen. Line Fore'n				
Sup't. R. S. & S.				
Sup'r. Trans.				
Chief Inspector				
Gen'l. Foreman				
Starter				
High Tension				
Ind. Insp. Bureau				

Emergency wagon sent \_\_\_\_\_ M. Returned \_\_\_\_\_ M.

trouble has occurred. The wagon calls are entered by the report clerk on form No. 167, shown on this page. The time consumed by the report clerk from the moment he receives the message until he communicates its import to the proper emergency wagon station is usually less than 30 seconds, the message being sent over the Metropolitan's private telephone system. The report clerk also has a direct wire to the high tension switchboard in the Ninety-sixth Street power station and to the track department in the office of the engineer of maintenance of way. Reports of accidents or delays are made by telephone by conductors, motormen, inspectors and starters through the public telephone service or over the company's private telephone system, and the substance of the report is typewritten by the report clerk on form No. 369, herewith.

The report clerk is immediately made aware of the occurrence of a fire by means of a gong and ticker in his office, by which alarms are recorded simultaneously with the sounding of the alarms at the headquarters of the city fire department. In this way, while the engines are on the way to the scene the report clerk is sending a message to the general foreman and

Metropolitan Street Railway—Reports of Accidents or Delays

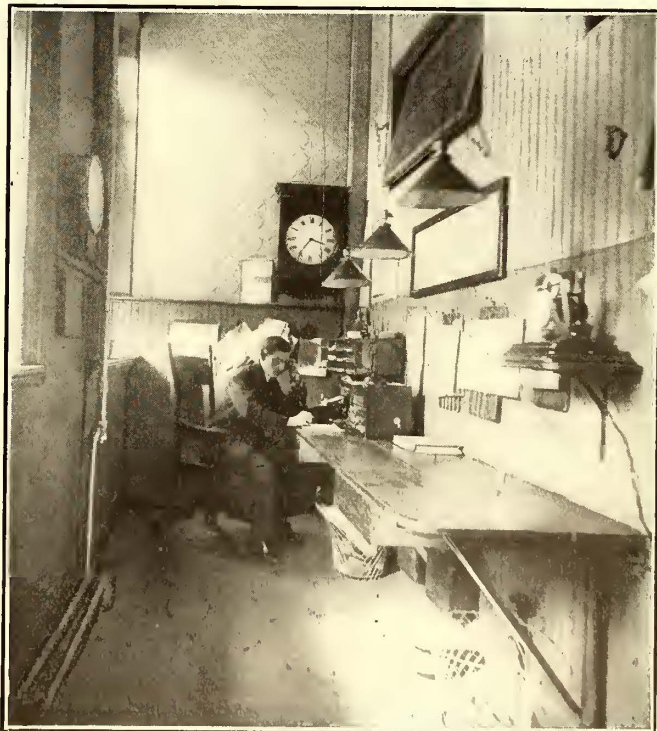
Any occurrences which require the assistance of the emergency wrecking wagons are telephoned to the report clerk over a special wire (1000 Columbus), used solely for this purpose. This number, and "2800 Columbus," the call used for other



Metropolitan Street Railway—146th Street Emergency Wagon

telephone reports not made over the private system, are printed on the day cards, and known to every motorman, conductor, inspector, starter and other employee of the transportation department.

The emergency wagons, seven in number, are so located on



Metropolitan Street Railway—Office of Report Clerk

starters of the division or divisions affected, or to the supervisor of transportation and superintendent of transportation, if the case is such as to demand it, stating where the fire is and how many alarms have been sounded. The emergency wagon is promptly sent out with tripods and tackles for supporting the fire hose so that the cars may pass, as soon as the fire has been

placed under control to such an extent as to warrant the procedure in the judgment of the fire department. Overhead hose supports are necessary because if the ordinary hose bridges were used they would be fouled by the conduit plows.

When an accident occurs, the claim department is briefly and promptly advised of the facts over the telephone by the report clerk, and in many instances before the injured person has left the scene of the accident a representative of the claim department arrives and is in a position to obtain the facts while the circumstance is still fresh in the minds of the witnesses.

A view of the interior of the office of the report clerk is shown in one of the engravings on page 1089. On the left between the windows is seen the automatic thermometer which records instantaneously any changes in temperature. Directly in front of the report clerk is his typewriter, his telephone switchboard and his three telephone receivers. Above the desk on the right is the map of Manhattan Island which is subdivided to show the territory covered by each emergency wagon, while at the right-hand side is the fire alarm ticker,

ice or run off the line. The plan was finally adopted of using a clock with a mechanical stamping device to indicate on the day cards the hour when the men took the cars and the time when they left them. The advantages of this plan have been found to be as follows:

The establishment of a closer check on the platform men around the depot.

A more accurate record of the actual time spent on the cars is obtained, with corresponding greater accuracy in the payment of the men.

There is a closer check on the efficiency of the starters in their handling of the men around the depot and the length of the swings allowed.

A marked improvement in the efficiency of the starters is secured because there is more time at their disposal for the performance of their other duties.

Greater accuracy and rapidity in the performance of work by the pay-roll clerks is also secured.

Notwithstanding the fact that the time stamping system has



Metropolitan Street Railway—One of the Shower Baths at the Ninth Avenue and Fifty-fourth Street Car House

which records the sounding of alarms simultaneously with their receipt at the city fire headquarters. The various files of delay and accident reports, emergency wagon calls, etc., are also shown.

#### HEATER REGULATION

Another of the duties of the report clerk is to send out instructions by telephone in the winter in regard to the position of the heater switch controlling the heat supplied in the cars. To assist him in intelligently regulating this matter a recording thermometer is installed in his office, indicating the variations of the outside temperature as soon as they occur.

#### TIME CLOCK FOR STARTERS

Formerly it was the custom for the depot starters in charge of dispatching the crews to sign the day cards of the men when the latter were commencing or finishing their work. This was an undesirable arrangement because it distracted the starter's attention from the handling of the service. It also afforded opportunity for inaccuracies, because of the haste with which it was incumbent upon the starter to certify to the day cards, particularly when a number of cars was being placed in serv-

ice involved the employment of additional clerks at the starter's office, the additional expenditure has been more than offset by the results secured and the yearly net saving as compared with the former plan is estimated to be over \$50,000.

The men who stamp the day cards also keep a record of the cars passing the depot, and thus a check is obtained on the service, which is being operated.

#### FILE OF TRANSPORTATION RECORDS

Improvements in the system of filing and keeping the records of the transportation department in the various division offices have also been effected. In particular a very desirable arrangement has been made in the establishment of a central record room, to which are sent all of the records, not only of the transportation department, but of every other department of the system. This record room is located in a fire-proof building and contains all records which are not needed for actual daily operation, but whose preservation for future reference is necessary or desirable. The plan has not only effected a reduction of the fire hazard, but it also secures the orderly arrangement of important papers which are easily accessible at

any time to persons who present the proper authority and sign a receipt for the documents in question.

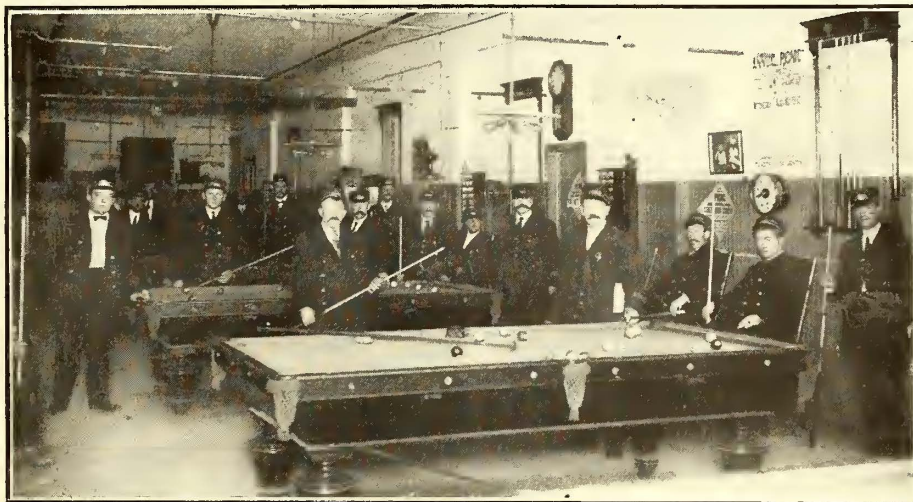
TRAINING OF EMPLOYEES

A systematic plan of education of employees has been inaugurated and is now being observed with the specific purpose of developing latent ability among the minor officials, especially in connection with the handling of the service and the discipline of their subordinates. Vacancies in the positions of starter or inspector are filled by means of oral examinations held by a board of three officials of the department, and the men are required to attain a certain grade in the examination and to pass through a period of probation before being eligible for final appointment. Every effort is also made to impress upon the inspectors and starters the fact that the management looks to them to carry out its policy of fair and just treatment to the employees and of uniform courtesy toward the public.

Twice a year all of the motormen and conductors on each division of the system are addressed by the division foreman, in regard to the general conditions existing on the line to which they are assigned, and particular stress is laid upon subjects which the experience of the foreman indicates should be emphasized in order that the service may be bettered. Of course all platform men, as well as the starters and inspectors are also provided with printed copies of the regulations applicable to their respective duties. But as the management believes that no compilation can cover every possible contingency which may arise, the company has adopted a policy of supplementing the printed rules by oral instructions to the men, from time to time.

Experienced instructors have also been assigned to the task of systematizing the duties of the various division office clerks and pointing out to them the methods by which economy of

motormen and conductors who are to act as instructors of new men and a special series of talks is given them from time to time upon the necessity for earnest and sincere effort on their part in breaking in new men, so that the latter may become efficient employees as well as be a credit to the men who instruct them. All instructors are paid at the rate of 25 cents per day while so employed, in addition to the wages which they would otherwise receive. By these means, the management has been very successful in enlisting the co-operation of these employee-instructors for their important duty.



Metropolitan Street Railway—Association Pool Room at Fiftieth Street and Seventh Avenue

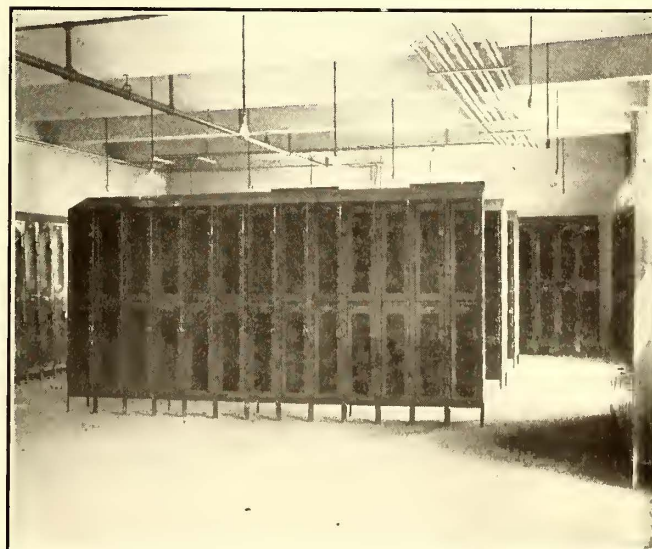
All motormen and conductors are carefully trained before they are permitted to begin work on their own account. Their final instructions before being put in charge of a car are given by the division general foremen, but they are called in subsequently to receive supplementary instructions from these same officials at meetings which they are required to attend once a month during the first three months of their employment.

COURSE OF INSTRUCTION

The motormen, of course, are put through a course of in-



Metropolitan Street Railway—Lunch Room at 146th Street and Lenox Avenue Car House



One of the Locker Rooms at 146th Street and Lenox Avenue

time and labor may be secured and the clerks themselves have become more efficient in the performance of their work.

INSTRUCTION OF NEW EMPLOYEES

The company believes that the time to impress an employee with a realization of what is expected of him is when he enters the service. Care is exercised in the selection of those

struction with regard to the electrical equipment of a car, and this instruction is supplemented by actual operation of cars on the road, under the tutelage of a competent instructor. As an illustration of the thoroughness of the course which all platform men have to take, the fact may be cited that prospective employees are drilled in the proper use and handling of a

telephone. Another important feature of the practical instruction of motormen consists in showing them how to stop a run-away car on a hill. This information is imparted by the chief instructor under conditions which are precisely analogous



Metropolitan Street Railway—Barber Shop in the Car House at Ninety-ninth Street and Lexington Avenue

to those which would exist were the occurrence the result of an accident instead of a feature of the instruction.

Still another point upon which motormen are given practical experience in their schooling is in regard to the rate of speed of their cars and the respective distances in which cars may be stopped when moving at various rates of speed. These are points about which their knowledge is often very hazy. To give them the facts they are placed on a car equipped with a speed indicator and under the direction of the chief instructor or one of his assistants are required to operate the car at different speeds and read the indicator. Then they are obliged to estimate the speed without looking at the indicator. Finally they are instructed to make emergency stops at different speeds and to measure for themselves the distances traversed by the car between the application of the brakes and the point at which the car comes to rest. It has also been found desirable to instruct the men as to the length of cars, the widths of different streets, the length of a city block, distance between elevated railway pillars, etc. The significance of these precautionary measures in connection with the accident situation is too apparent to require comment, since it is a well known fact that a motorman who has no accurate idea of distances is likely when subjected to skilful cross-examination in a damage suit to become so hopelessly confused that all of his testimony is apt to be discredited.

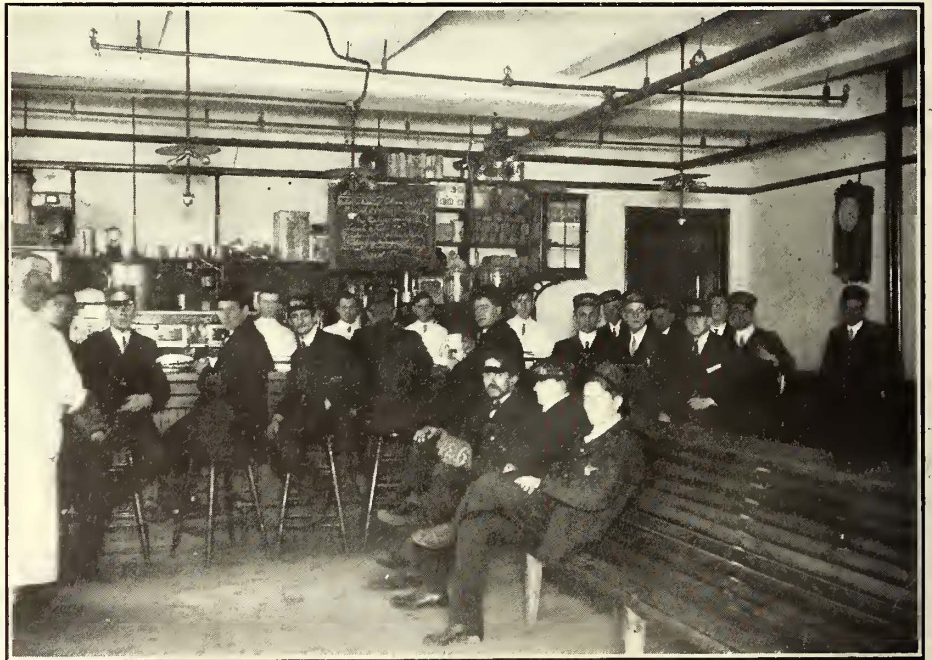
#### INSTRUCTION ON ACCIDENTS

One of the most important steps along the line of education has been that made possible by the active and effective co-operation of the legal department and the transportation department in regard to accidents.

From time to time the motormen and conductors of various divisions are assembled in groups of 75 or 100, and are addressed by representatives of the legal department of the company. Those attorneys are selected as speakers whose familiarity with accident litigation has rendered them peculiarly fitted to explain to the platform men, in simple language, the necessity for the exercise of care—first, in preventing accidents, and second, in handling accidents after they have occurred. The men are encouraged to ask questions, and the meetings are attended by the officials of both the legal and transportation departments. The aim has been to impress the men (1) that all reasonable care should be exercised to prevent accidents; (2) a systematic procedure is to be followed in caring for the injured person and raising the resulting blockade; (3) the salient facts in regard to the accident must be secured; and (4) a prompt and accurate report must be rendered. Emphasis is laid on the observance of courtesy toward the public and the avoidance of altercations and disputes. The motormen and conductors are paid at the regular platform rates for the time spent by them in listening to these addresses, which are not too long to confuse or tire them. The policy was adopted only a relatively short time ago and thus far has met with most gratifying results. The men give evidence of a far better appreciation than before of the serious consequences of carelessness or heedlessness on their part. Accidents of a serious character appear to be of less frequent occurrence and there has been a marked increase in the number of witnesses secured per accident. On one division the average number of witnesses per accident in January of this year was five, while in April of this year, on the same division, the average was 11 witnesses per accident.

#### INSPECTION AND DISCIPLINE

In addition to the educational methods described for increasing the efficiency of the service the company has a well organ-



Metropolitan Street Railway—Lunchroom at Ninety-ninth Street and Lexington Avenue

ized inspection department, which has recently been conducting a campaign against dishonest conductors. General knowledge of this fact has apparently resulted in an improvement in the character of men making application for employment, be-



cause men who are inclined to steal fares are as a rule, not seeking to incur the risk of imprisonment.

During the first eight months of this campaign 27 arrests were made for stealing, and 19 convictions secured. Of the 19, eight conductors were paroled in the custody of probation officers, and 11 sent to jail for periods ranging from seven days to three months. Fines were imposed in addition, in a few instances. The leniency of the punishment imposed by the courts has constituted a serious handicap to the effect which the prosecution would otherwise have produced, but the results obtained have at least been positive in their character and the policy will be vigorously continued.

Special steps are taken to educate the men, particularly new employees, regarding the serious consequence of this offense and a plan is being worked out in detail so that the men may appreciate how prompt and certain will be their detection and punishment if they fail to register their fares.

Another campaign has been directed against applicants who have made false statements in submitting their applications for employment, and several men have been prosecuted under the law which is now on the statute books of the State, penalizing the making of such statements and the result has undoubtedly been to deter undesirable men from endeavoring to enter the service under false pretenses.

The system of general inspection of men has also been put on a more systematic basis recently so that a greater thoroughness and frequency of inspection has been secured.

#### LUNCH ROOMS, BARBER SHOPS AND RECREATION ROOMS

The welfare of employees has not been overlooked. Lunch counters have been opened at a number of the important depots and placed in charge of men long in the service who have become incapacitated for active work on the cars, either because of injuries received in the performance of their duties or from other causes. These men pay a nominal sum for rent. The water, heat and light are furnished free by the company, as are also most of the fixtures. As a result, wholesome food may be obtained by the railway employees at these lunch counters more cheaply than it can be procured elsewhere. These lunch counters are well patronized and are doing an excellent business. The railway management exercises supervision over them and regulates the prices charged.

Two barber shops have recently been opened and, as in the case of the lunch counters, the terms for rent are made merely nominal to the lessees so that the employees of the company may obtain the benefit in the form of the reasonable prices of 10 cents for a shave or three for 25 cents and 15 cents for a hair cut or two for 25 cents.

The question of providing suitable and adequate accommodations for the men at all of the depots, in the way of lounging rooms, etc., has been the subject of careful study. Improved toilet facilities have been provided, shower baths installed and new and improved metal lockers substituted for the less desirable wooden closets. All have added to the comfort of employees.

These improved facilities are but a part of the general plan which the Metropolitan management has in mind, and which is more extensive in its scope than is indicated by what has already been accomplished, but under the conditions incident to the receivership it has not been practicable to develop the plan in its entirety as there are certain phases involved relating to general policy which can only be decided by the purchasers of the Metropolitan property. For that reason further extension of the welfare plan which the Metropolitan management now has under consideration must necessarily be deferred until after the sale of the property has taken place.

#### METROPOLITAN STREET RAILWAY ASSOCIATION

While membership in the Metropolitan Street Railway Association is not limited to employees of the transportation department, the benefits of that association are derived to a greater extent by the transportation employees than by those of any other department for the reason that about 80 per cent of the members of the association are transportation employees.

The association was organized in February, 1897, for the

mutual benefit of its members, who pay an initiation fee of \$1.00 and monthly dues of 50 cents, in return for which the members receive; free medical attendance when ill; medicine at cost; a cash benefit of \$1.00 a day when incapacitated for work; a life insurance policy of \$300; the use of the library and pool tables of the association; free monthly entertainments from May to November, inclusive.

The affairs of the association are managed by the employees with the assistance of the officials of the company, and the association is supported financially by the members of the association and by donations which are made by the company and other friends from time to time.

Members of the association, furthermore, are eligible to a pension when, because of physical infirmities due to advancing age the men are obliged to cease from working. For the purpose of taking care of such men the pension system was founded to supplement and continue the work of the association, that is, when a man becomes too old to work the company steps in, through the pension system, and contributes towards his support during the remainder of his life; in other words, the association has for its object the mutual benefit of employees while they are in the active service of the railway company and the pension system cares for the interest and welfare of the men from the time they cease working for the company until they die. At the present time there are 20 men on the pension roll, drawing monthly pensions varying in amount from \$15.00 to \$28.17 each.

In the next issue the regulation of service on the Metropolitan system will be considered.

### ADDITION OF MECHANICAL REVERSER THROW

The Inter-Urban Railway Company, Des Moines, Iowa, is equipping its cars with a mechanical connection between the master controllers and the electrically operated reversers of the type M control. J. E. Welsh, master mechanic of the Des Moines city and Inter-Urban Railway companies, relates the following as a reason for the added mechanical connection:

A short time ago the trolley pole on an interurban car broke while the car was running at good speed. The motorman then applied the air and the main-brake rod also broke. At this time the car was on the down grade and it was not stopped until it had run 8 miles, because the reversers could not be thrown. Fortunately, the motorman on an opposing car saw the runaway car approaching when it was a long distance away but coming toward him at a fairly high speed. He immediately reversed his car, running it backward just as fast as he thought safe with the trolley in the reverse position. The runaway car finally overtook the car that was backing up and bumped into it, but little damage was done to either car. Both were alike and had heavy M. C. B. couplers.

The possibility of the occurrence of such an accident brought about the addition of the mechanical reverser to the cars equipped with type M control. All of the cars are built for single-end operation and the reverser is placed under the right-hand side of the body. A crank made of fiber  $\frac{1}{2}$  in. x 2 in. in section and long enough to afford ample clearance, is fixed to the spindle of the reverser. From the end of this crank a flat bar of iron  $\frac{3}{8}$  in. x 1 in. in section extends to a bell crank under the front end of the car at the right-hand corner. Another rod connects this bell crank with a similar one under the left-hand front end of the car and this crank in turn is connected with a  $\frac{7}{8}$ -in. rod which extends up into the motorman's cab, as far as the left of the controller. To the upper end of this rod a lever is attached parallel with the reverse handle and these two are connected by a link made of  $1\frac{1}{4}$  in. x  $\frac{3}{8}$  in. iron, the length of which depends on the distance apart of the lever at the top of the  $\frac{7}{8}$ -in. vertical rod and the reverse handle.

By this train of parts the reverser is thrown both mechanically as well as electrically. Mr. Welsh states that there is no difficulty in operating the reverser thus coupled with the reverse handle and believes it is an important safety feature.

**TRAFFIC AND PHYSICAL DEVELOPMENT OF AN IOWA RAILROAD**

The Ft. Dodge, Des Moines & Southern Railroad Company operates a combination steam and electric railroad with terminals at Des Moines, Newton, Ames, Boone, Ogden, Ft. Dodge and Rockwell City, Ia. A map of the system is shown. The electrified section of this road extends northward from Des Moines to Des Moines Junction, 25.5 miles; thence north-

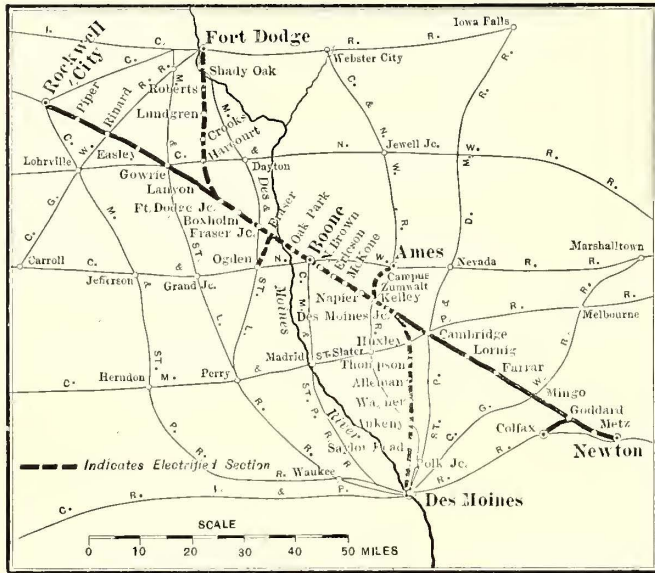
is as follows: Reporting to the general manager are a superintendent of transportation, general freight and passenger agent; superintendent of maintenance of way, auditor and claim agent. The work of the transportation department, in charge of the superintendent, is subdivided among a trainmaster, to whom the chief dispatcher, trainmen and station agents report; a master mechanic in charge of the electric and steam rolling stock equipment, an engineer in charge of the power station and substations and an overhead line foreman. Reporting to the general freight and passenger agent are the traveling freight and passenger, commercial and general agents. The organization under the superintendent of maintenance of way includes an assistant superintendent, an engineer and track and bridge foremen. Thus it is seen that the operating organization of this road is established along the general lines found acceptable by steam railroads.

**TRACK AND ROADWAY**

The track and roadway and rolling-stock equipment has been designed and built to handle heavy freight traffic as well as to do fast passenger service. For its electric service the company owns a private right of way 86 miles long from the north limits of Des Moines to Ft. Dodge. The steam service is operated on a single-track road of modern construction. The cars on the electric division use the tracks of the local company in entering the city of Des Moines. Except for the terminals in the business districts of Des Moines and in Ft. Dodge the tracks are wholly on private right of way. At these terminals only the passenger service is operated in the street, as freight yards are provided on company property.

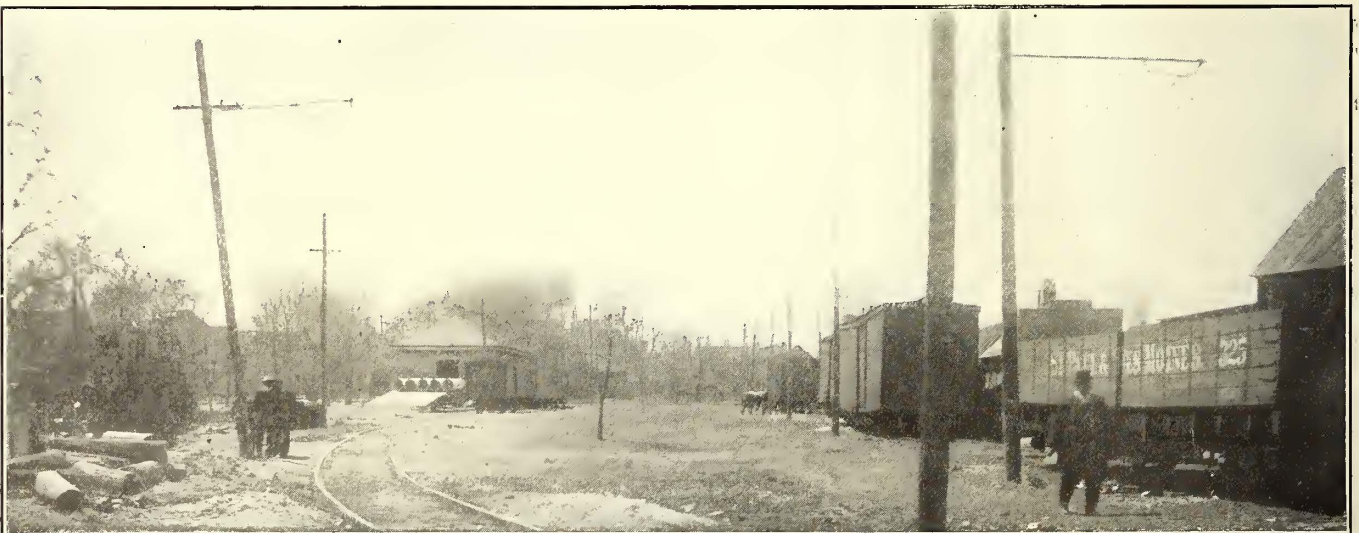
The track is laid with 70-lb. rail well ballasted and drained. Interlocking plants are provided at all crossings. There are six interlockers on the electric route and four on the steam divisions. The track rails were bonded in 1907 with soldered bonds, part of which were placed on the head of the rail and part on the base. The bonds soldered to the base of the rail had a large contact area and have proven satisfactory. The bonds soldered to the head of the rail are being replaced with American Steel & Wire twin-terminal bonds.

Current is distributed to the cars through No. 0000 trolley wire, which is hung 21 ft. 6 in. above the rails to provide clearance for steam trains. Six substations connected by a 23,000-volt transmission line feed the trolley wire at 650 volts. Dur-



Fort Dodge, Des Moines & Southern—Map

west to Ft. Dodge Junction, 38 miles; thence north to Ft. Dodge, 23 miles. That section of the road between Des Moines Junction and Ft. Dodge Junction is used jointly by steam and electric trains. The steam run is from Newton, 37 miles northwest, to Des Moines Junction; thence over the combination steam and electric line from Des Moines Junction to Ft. Dodge Junction, 38 miles; thence northwest to Rockwell City, 27 miles. In addition to 150.3 miles of main line track the company has two branch lines operated electrically; one



Fort Dodge, Des Moines & Southern—Freight Yard at Local Station

from Keiley to Ames, 8 miles, and one from a point near Fraser at the center of the road to Ogden, 6 miles.

This road was built and is operated by steam railway men and therefore a description of some of its traffic and transportation methods may be of particular interest from the electric railway viewpoint, in addition to the article published in the STREET RAILWAY JOURNAL of Nov. 30, 1907, and the ELECTRIC RAILWAY REVIEW of May 25, 1907. The operating organization

ing the past year 25 miles of aluminum feeder of 350,000 circ. mil and 500,000 circ. mil equivalent cross-section have been installed to supplement the original trolley feeders. Nine miles of additional feeder wire are being erected. The country through which the electrified portion of the line operates is subject to severe lightning discharges and to protect the transmission line a No. 6 galvanized iron ground wire has been installed on iron bracket arms extending above the transmission

wire on the tops of the poles. This wire is grounded at intervals of 10-pole lengths. The transmission system is fed from a turbo-generating station located at Fraser on the Des Moines River and at about the midpoint of the line.

TRAIN SERVICE

Passenger-train service is operated only on the electrified division. On the steam divisions passengers are accommodated on mixed passenger and freight trains. The two principal lines of electric passenger service are between Ft. Dodge and Des Moines, 85 miles, and between Ames and Des Moines, 36 miles. Eight trains are operated daily in each direction over both of these runs. In the Ft. Dodge-Des Moines service are two southbound limited trains, one leaving Ft. Dodge at 6:00 and one at 11:30 a. m., and one northbound limited train leaving Des Moines at 5:20 p. m. The limited trains make the trip of 86 miles in 3 hours. Local trains make the trip in 3 hours and 45 minutes. The limited trains make only the station stops. Daily mail trains are operated between Ft. Dodge and Des Moines, one leaving Ft. Dodge at 5:00 p. m. and one leaving Des Moines at 5:50 p. m.

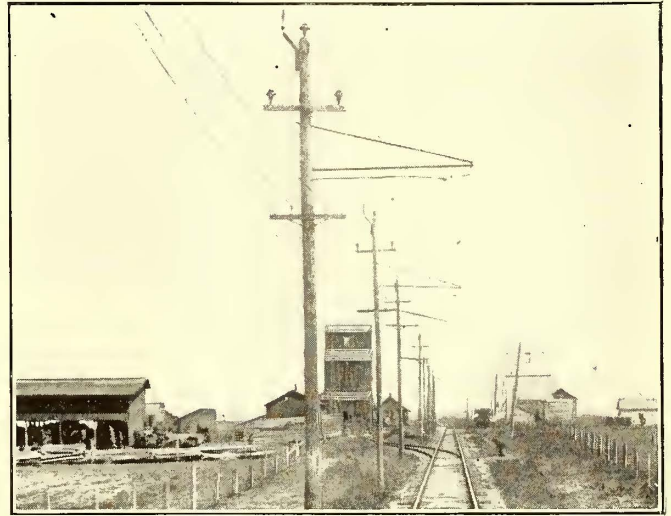
The trains between Ames and Des Moines are spaced between the Ft. Dodge-Des Moines trains and thus an hourly service is given on the south half of the road between Des Moines Junction and Des Moines, and a two-hour service on the north end. Trains which carry U. S. mail and the American Express Company's matter are provided with compartment cars and messengers.

Steam railroad operating rules and practice are used. It is the belief of the management that it is better to adhere strictly to the steam railway operating rules than to make any innovations on account of difference in motive power. At junction points between the steam and electric divisions the trainmen on the steam trains get clearance from the dispatcher, thus saving the time of the electric passenger trains. Such orders read, "All trains due at Ft. Dodge Junction have cleared," or "All trains due at Ft. Dodge Junction except No. 9 have cleared."

FREIGHT TRAFFIC DEVELOPMENT

The Ft. Dodge, Des Moines & Southern Railroad receives 60 per cent of its revenue from freight traffic. The fact that this road formerly was a steam railroad places it in an enviable position with regard to the interchange traffic with intersecting steam trunk lines and connections and interchange arrangements exist with every steam railroad crossed. Among the roads intersected are the Chicago-Omaha divisions of the following: Illinois Central, Chicago & Northwestern, Chicago, Milwaukee & St. Paul, Chicago Great Western, Chicago, Rock

The Ft. Dodge, Des Moines & Southern Railroad has a freight and passenger department which is wide awake in developing new industries along the route. The bulk of the freight traffic is made up of coal, gypsum products, grain, clay and livestock. The coal traffic originates at several different points along the electric and steam routes. At one point a subsidiary company owns three mines with a combined output of 1000 tons a day. Another mine at Colfax has a daily output of 2500 tons; still

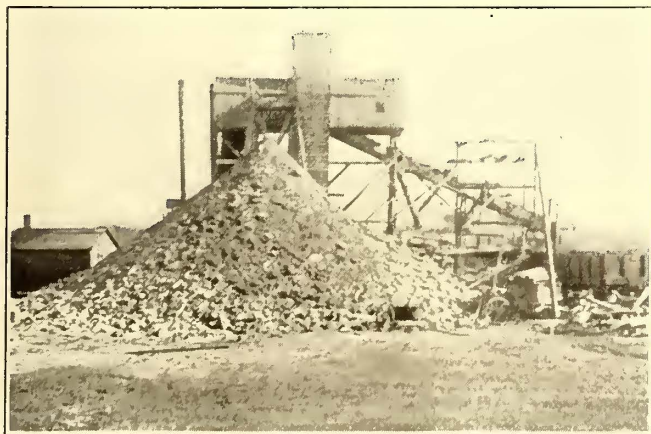


Fort Dodge, Des Moines & Southern—Two Grain Elevators on the Route

other mines at Boone, which is the geographical center of the road, are located on spur tracks and the electric railroad obtains a switching charge for the coal delivered to the steam roads as well as the regular charges for handling it over the Ft. Dodge, Des Moines & Southern. Current is furnished some of the mines for driving the coal-mining and handling machinery, the power being delivered at trolley voltage. During the past winter the 6-mile branch to Ogden was completed and thus connections are afforded with another coal mining center. There are five large gypsum plants near Ft. Dodge; all are served by the railway company and an electric switching engine is kept in use all the time inside the yard limits of Ft. Dodge.

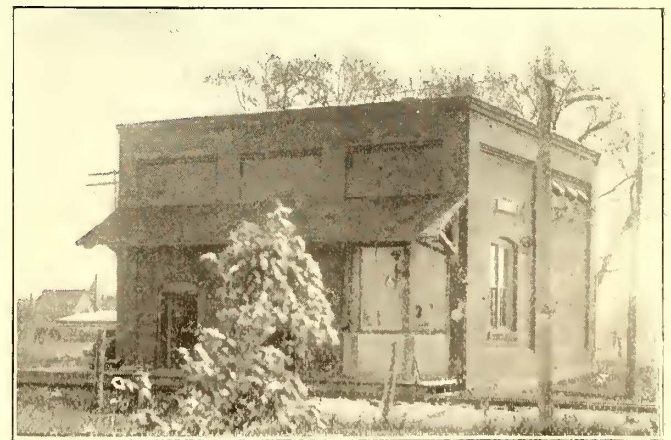
GRAIN ELEVATORS

The territory served by the Ft. Dodge, Des Moines & South-



Fort Dodge, Des Moines & Southern—One of Six Coal Mines Near the Line

Island & Pacific. In addition to these east and west trunk lines the Ft. Dodge, Des Moines & Southern intersects seven steam lines which extend across the State in a north and south direction. The electric railroad stations are included in the tariffs and through routes of all intersecting steam roads. About 500 cars of freight are delivered or received monthly from connecting steam roads.

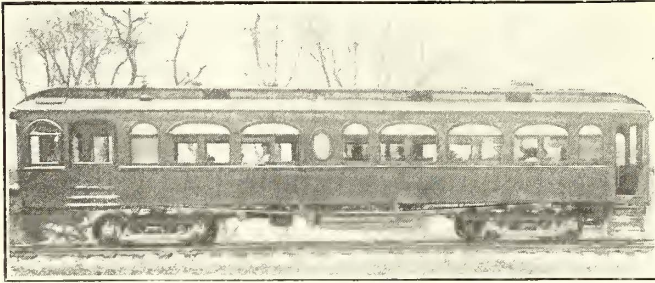


Fort Dodge, Des Moines & Southern—Sub-Station Near Des Moines

ern Railroad is for the most part a rich agricultural district producing great quantities of grain and live stock. The electric railway has found it profitable to install frequent sidings and stands ready at all times to assist the farmers in handling their grain and stock. Fifteen grain elevators have been built on the electrified division of the road and a like number on the steam-operated section. These grain elevators are man-

aged by farmers' co-operative associations. Practically all of the grain stored has no other transportation outlet than by this railway. On an average the elevators built at the smaller towns ship from 80,000 to 100,000 bu. of grain per year. The grain associations also undertake to handle farm implements, tile, fuel, etc., and thus each elevator means about 150 carloads of freight per year. Double-end sidings from 800 ft. to 1000 ft. long are built at all elevators.

The new town of Alleman furnishes an example of the growth of a community when assisted by the railway. Three years ago at the present location of this town there was only a highway crossing flag stop with a steam railway line about 5 miles distant in either direction on the intersecting highway.



Fort Dodge, Des Moines & Southern—Standard Motor Car

The electric railway traffic department urged the erection of a grain elevator at this point, which was built by an association of farmers. Since that time a small town with a bank, two elevators, general store, lumber yard and stockyards has sprung up here and a substantial traffic is obtained in and out of this station.

The railroad company has built stockyards at each of the towns along its route. These stockyards are not makeshift pens, but are designed to give stock buyers a good place in which to keep animals while they are collecting them for shipment. The little additional money required to build good accommodations for the cattle is found to be an excellent investment because it encourages the development of the stock-handling business. Another source of considerable traffic is the excellent quality of shale and clay found in the valley of the Des Moines River at Fraser. This clay is delivered direct to gondola cars by industrial railways extending from the electric railway tracks back to the face of the cliffs. The shale and clay are handled about 50 miles to a tile-making plant from which the finished product is again shipped.

#### PASSENGER RATES

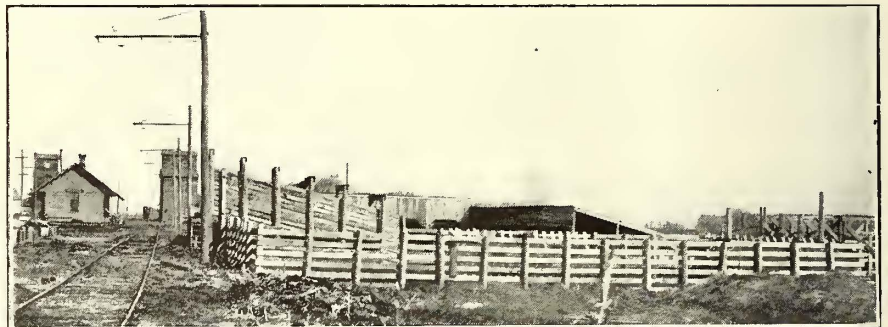
The agents of the Ft. Dodge, Des Moines & Southern sell through tickets in connection with the Chicago Great Western, Minneapolis & St. Louis, Wabash and Illinois Central Railroads. The local fares on the electric line are based on a rate of 2 cents per mile for one-way tickets, 1¾ cents per mile for round-trip tickets and 1½ cents per mile for mileage books. An additional charge of 10 cents is collected when the fare is paid on the train, except at stations where tickets are not available. Baggage not to exceed 150 lb. is carried on each full-fare ticket, and no piece weighing more than 250 lb. will be received, but must be sent by express or as freight. The regular steam railroad storage charges are made for undelivered baggage. The company maintains baggage and freight stations in the business district of Des Moines.

The operating headquarters of the Ft. Dodge, Des Moines & Southern Railroad are at Boone, Ia., where the company has a large brick station building. The first floor of this structure is occupied by passenger, freight and baggage rooms and a rotary converter substation. The second floor is furnished for the various operating departments.

#### POWER STATION IMPROVEMENTS

The generating station which supplies electrical energy for the operation of the Ft. Dodge, Des Moines & Southern Railroad cars is located at Fraser, a mining town of about 2000 inhabitants near that point where the combined steam and electric line crosses the Des Moines River. The principal units of this plant are two Westinghouse-Parsons 1250-kw. 3-phase, 2300-volt, 25-cycle turbo-generators which are operated condensing. The original condenser equipment had a cooling surface of 2000 sq. ft., and now two Alberger condensers each with 4800 sq. ft. of cooling surface and new circulating pumps are being installed. Cooling water is taken from the Des Moines River and the supply for the original condenser installation was drawn through a 20-in. cast-iron pipe. Now, to provide a generous supply of water for the new condensers a 36-in. conduit and discharge pipe of like size are being placed. The conduits are 300 ft. long and connect a well 25 ft. from the building with an oak crib built in the bank of the river and sunk to a level 2 ft. below the low water mark. The well near the power house will be fed by gravity and water normally will stand at a level 24 ft. below the boiler-room floor. The new intake and discharge conduits are of particular interest because they are being constructed of corrugated pipe made of American ingot iron, which is said to be proof against destruction by rust for at least 35 years. The two conduits, each 36 in. in diameter, will be buried side by side and have a protecting covering of concrete 2 in. thick.

Two of the 400-hp Aultman-Taylor boilers originally were equipped with Green grates. The other pair of boilers is now being supplied with similar grates and with water backs. The coal-handling equipment includes a traveling crane outside of the boiler house. One rail of the crane runway is supported on the boiler-house pilasters and the other on a steel support. The crane runway spans two tracks on which coal is delivered. This power plant operates 20 hours per day and has an average daily output of 15,000 kw-hours. The power station improvements are being made under the direction of Sargent & Lundy, consulting engineers, Chicago, who designed the plant.



Fort Dodge, Des Moines & Southern—Typical Live Stock Yards and Freight Siding

#### ROLLING STOCK

The rolling stock equipment includes 10 interurban passenger motor cars, two motor express cars, three Baldwin-Westinghouse electric locomotives, 150 miscellaneous freight cars and 150 new gondola cars. On the city lines which the company operates in Ft. Dodge and Ames are seven local cars, two of which are designed for fare collection in Ft. Dodge under the license of the Pay-as-You-Enter Car Corporation. The freight service on the steam-operated section of the line is performed by eight Schenectady locomotives. The passenger motor cars are 53 ft. 4 in. long and 9 ft. 4 in. wide, representing a high type of construction built by the Niles Car & Manufacturing Company. The car bodies are mounted on Baldwin trucks with 36-in. steel wheels carrying four Westinghouse No. 112 motors. End doors provide passage between cars coupled in trains. Each motor car weighs 40 tons without passengers. In ordinary service a motor car makes about 350 miles a day and

consumes on an average 2.50 kw-hours per car-mile. The average for the entire mileage, freight and passenger, is 4.25 kw-hours. The total daily motor-car mileage for the electrified section is 2000 miles. The three Baldwin-Westinghouse electric locomotives are equipped each with four 150-hp Westinghouse motors provided with low gears. Each locomotive has a capacity for handling a 1000-ton train at 15 m.p.h. The company now has under consideration the purchase of additional electrical freight locomotives.

Acknowledgment is made to J. L. Blake, general manager, and Frank Arnold, superintendent, for courtesies extended in the preparation of this article.

### IMPROVEMENTS ON THE AURORA, ELGIN & CHICAGO RAILWAY SYSTEM

The continued growth of traffic on the Aurora, Elgin & Chicago Railway, which operates a third-rail system connecting Aurora, Batavia, Geneva and Elgin—the four western terminals—with Wheaton and Chicago, has warranted the erection of new passenger stations and has required additional power and substation equipment.

In addition to other improvements the company shortly will erect an attractive station and general office building at Wheaton, Ill. This building will be two stories and a half high and 40 ft. x 130 ft. in ground dimensions. The first floor will be subdivided into waiting rooms and a ticket office, and the second floor will be equipped for the operating and executive officials of the railway company. The design of this station follows the Elizabethan style of architecture, using texture brick to cover the foundations and rough stuff or plaster for covering the exterior of the structure. The roof will be of red tile or slate; the side walls will be gray and other trimmings will be green, thus combining colors and style of architecture which will be in keeping with the high-class suburban residences of Wheaton.

New waiting stations are planned and partly under construction at Ardmore, Villa Park, Spring Road, High Lake, Chicago Golf Club and Elmhurst. The stations are being built of dark red and buff texture brick laid with various types of bonds to present unique and pleasing exteriors and afford weatherproof shelter for intending passengers. The railway company has employed a Chicago firm of landscape gardeners to beautify the grounds around all stations. A comprehensive plan of gardening has been laid out and part of the planting was done this spring.

Additions at the power generating station at Batavia include a 3000-kw Curtis turbo-generator which will be delivered shortly, a Worthington condenser and additional Edgemoor boilers with Green traveling link grates. An addition to the boiler house, 47 ft. x 66 ft. in ground dimensions, is being erected. The Curtis turbine will be of the exhaust type and will be located in the center of the present engine-room, and at the middle point of a row of four 1500-kw revolving-field a.c. generators driven by cross-compound Corliss engines. The piping from the exhaust ports of these engines will be arranged so that the turbine may be operated in connection with either two of the engine units.

Current from this power station is fed at 24,600 volts to six rotary-converter stations over an aluminum-wire transmission circuit, which has the form of a large triangle with one substation at each apex and the power station on one side. The transmission lines extend from each of the three corners to three other substations which feed the third-rail system and thence to other interurban roads which purchase power from this company. The increased train service of the Aurora, Elgin & Chicago has necessitated the installation of a third 500-kw rotary converter in three of the substations. The other three substations have each two 500-kw rotaries.

The shop facilities at Wheaton are being enlarged by the addition of a 36 ft. x 60 ft. two-track section, which is being built adjacent to the present paint shop.

### THE MASTER CAR BUILDERS' ASSOCIATION IN ATLANTIC CITY

The forty-fourth annual convention of the Master Car Builders' Association was held in Atlantic City, New Jersey, June 15 to 17. The attendance of railway officers was large and much interest was shown by those present in the attractive display of railway apparatus and equipment which was exhibited on the Million Dollar Pier. Included among the committee reports presented at the convention were the following subjects of interest to electric railways.

#### CLASSIFICATION OF CARS

A committee appointed in 1908 to prepare a broad classification of railway cars in order to facilitate the work of car distribution presented an outline classification which included the following types of electric railway cars under the general classification letter E.

"EA"—Electric Street Railway Service Car, direct current, for transportation of passengers; without automatic couplings.

"EP"—Electric Passenger Car, for long hauls or suburban service, multiple unit and fitted with automatic couplings and air brakes. Third rail, trolley or pantagraph contact.

"EB"—Electric Baggage Car, for long hauls or suburban service, multiple unit with automatic couplings and air brakes and suitable for the transportation of baggage. Third rail, trolley or pantagraph contact.

"EM"—Electric Mail Car, for use in United States Mail Service, fitted with side doors, with or without mail hook, and suitable apparatus for the sorting and classifying of mail en route. With or without end doors or windows.

"EC"—Electric Combined. A car for long hauls or suburban service, multiple unit with automatic couplings and air brakes. This car is made up of two compartments, separated by bulkhead, one suitable for the transportation of baggage and the other fitted with seats or chairs for the use of passengers. Third rail, trolley or pantagraph contact.

"EG"—Gasoline Motor Propelled Car, for inspection or private use, or use in suburban service, hauling one or more trailers.

"ED"—Gasoline Motor Car. Gasoline engine or engine serving to run dynamo to furnish electricity for axle motors. Car to be used for inspection, private use, or as motive power to haul trailer or trailers; fitted with storage cells and with or without booster.

This report was approved and the proposed classifications were referred to letter ballot for adoption as recommended.

#### STANDARDS AND RECOMMENDED PRACTICE

The committee on standards submitted only a few recommendations for changes in the standards and recommended practice of the association. Under standard axles the committee suggested some changes in the radii of fillets, the present and proposed standards being as follows:

	Axle.	Journal Fillet.	Dust-guard Fillet.	Wheel-seat Fillet.
A.	(40,000 lb.)			
	Present.....	¼ inch	¼ inch	¾ inch
	Proposed.....	¼ inch	¼ inch	¾ inch
B.	(60,000 lb.)			
	Present.....	⅝ inch	¼ inch	¾ inch
	Proposed.....	⅝ inch	⅝ inch	⅝ inch
C.	(80,000 lb.)			
	Present.....	¾ inch	¼ inch	¾ inch
	Proposed.....	¾ inch	¾ inch	¾ inch
D.	(100,000 lb.)			
	Present.....	¾ inch	¼ inch	¾ inch
	Proposed.....	¾ inch	¾ inch	¾ inch

Under brake beams the committee suggested advancing to standard the following present recommended practice "That brake beam hanger brackets shall be attached to some rigid portion of the truck."

The third important suggestion was that the present recommended practice regarding the use of a knuckle-throwing device in automatic couplers which will throw the knuckle completely open and operate under all conditions of wear be advanced to standard.

All of these recommendations will be referred to letter ballot for adoption.

## MOUNTING WHEELS

The following report on mounting pressures for various sizes of axles and kinds of wheels was presented:

To specify certain mounting pressures for wheels and not specify the workmanship in boring the wheels and turning the wheel seats of the axles would be only incomplete information. A very careful study has been made in one of the larger railroad shops, covering the entire operation of machining and mounting wheels and axles, with the idea of improving the work, and, if possible, reducing the cost. It developed that proper mounting of wheels depends on the grade of workmanship in turning the wheel seats and boring the wheels. It has been demonstrated further that the work can be done properly without any additional cost over a lower grade of workmanship and with the same grade of men as ordinarily employed. The men employed on this class of work usually become experts and can, if properly instructed, turn out work of the best character.

Good work cannot be performed without good tools. Proper shop practice will not permit lathes and boring mills to get in bad repair. Lathe centers out of line or the V's worn may allow an axle to be turned tapered, while lathes in proper repair will insure wheel seats being turned straight. A tapered wheel seat with the wheel bored straight cannot be expected to make a proper fit at any mounting pressure. A very satisfactory test for lathes is to take two or three light cuts from an axle wheel seat, say 7 in. long, and measure the diameters with micrometer calipers. Good practice indicates that there should not be a variation in diameter exceeding 0.002 in. The same attention given to lathes should be extended also to boring mills to see that they are in proper condition to turn out good work.

The general tendency has been to finish axles with too rough a wheel seat, which results from too coarse a feed. This makes only partial contact between the wheel seat and axle. While axles may hold satisfactorily under these conditions, there is always an element of uncertainty, which can be eliminated by better practice. The axle roughly turned in this way cannot be accurately calipered, and this is essential for good fitting and security. Furthermore, in mounting the wheel, the high ridges obtained with a roughly turned wheel seat are pushed off, principally at the outer end of the axle, reducing its diameter and making the turning of the wheel seat necessary when preparing the axle for mounting wheels at a later time. There is, also, a bad moral effect on men, who, if permitted to carry out this practice, will extend it to journals as well.

It has been demonstrated that with fairly rigid lathes axles can be turned at a speed of 40 r.p.m. to 50 r.p.m., the limit of speed being the chattering of the tool rather than the cutting speed. With this high speed and with a fine feed, an axle can be turned in about the same time as by slow speeds and coarser feed. The higher speed results in better work without increased cost.

Having secured straight and true wheel seats and wheel bores, the next necessity is for the proper diameters necessary in secure mounting. Micrometer calipers are necessary for several reasons. The axles and wheels can be calipered more quickly and more accurately than by machinist's calipers or snap gages. The "draw" or difference in diameter of wheel seat and bore which has been determined for a proper fit can be secured without difficulty. The difference between diameters of wheel seat and bore of wheel expressed in thousandths of an inch can be measured accurately, whereas with ordinary calipers it is a question of skill of the workman and with snap gages the same is true to a lesser degree.

For shop inspection, certain limits can be set between which the axle or wheel may vary and be good enough for all requirements. The inspector having set limits is not permitted to use judgment, which is always liable to error; if the work is within the limits he must pass it. If not, it must go back to the man who did the work, and he, knowing his work must meet certain definite requirements determined by the proper measuring instrument, naturally endeavors to turn out good work rather than take the chance of doing it over without pay.

To successfully use, for wheels and axles, the ordinary trade

micrometer caliper takes time and a certain amount of skill. To reduce this time and skill to the minimum, micrometer calipers have been designed and used successfully. Such a caliper for wheel seats consists of an iron yoke on which are mounted an ordinary micrometer head that can be bought in the open market, an anvil, a fixed stop set square with a line through the micrometer head and the anvil and an adjustable stop on the top of the yoke arranged so that the distance between the face of the stop and the diameter connecting the anvil and the micrometer head can be made approximately equal to the radius of the wheel seat. In using this caliper it is placed over the axle with the adjustable stop resting on top of the wheel fit. The fixed stop and the anvil are then brought up firmly against the side of the wheel seat. The micrometer is screwed up by a ratchet stop until the ratchet clicks. The caliper is then removed and read. On a trial, eight axles were measured in five minutes and 12 wheels were measured in the same space of time. Each wheel seat was measured at three points, the average taken and size chalked on the axle. The wheel seats had not been previously measured and but few were of the same size. This is much more rapid than calipering by other means, especially for axles varying in diameter.

A similar caliper for the wheel bore consists of a T-forging on which are mounted a micrometer head graduated for internal measurements, an anvil diametrically opposite, a fixed stop set at right angles to the diameter connecting the head and the anvil and an adjustable cross stop or guide consisting of right- and left-hand threaded nuts turning together on a common shaft. In calipering a wheel the adjustable stop screws are roughly adjusted somewhat smaller than the bore of the wheel. The anvil and fixed stop are brought against the bore and the micrometer screwed out until the ratchet clicks. On a trial five wheels were calipered and size chalked on wheel in five minutes. The measuring was done by an apprentice, who was able to do it in an entirely satisfactory manner after about one hour's instruction. This method of calipering and marking each wheel seat with the points and the further calipering of the bored wheels with the sizes marked upon them permits the proper selection of wheels at wheel seats for mounting, in order to secure the pressures necessary. As to mounting pressures, the committee recommends the following, in conjunction with the character of workmanship already referred to, as being essential.

M. C. B. Axle.	Size of journal.	Wheels—			
		Cast Iron, tons.		Steel, tons.	
		Maximum.	Minimum.	Maximum.	Minimum.
A	3¾ in. x 7 in.	44	36	66	54
B	4¼ in. x 8 in.	44	36	66	54
C	5 in. x 9 in.	55	45	83	68
D	5½ in. x 10 in.	55	45	83	68

The following general specifications, which have been quite thoroughly tested, are submitted for consideration:

**Axle Wheel Pit.**—Must be turned as smooth as possible with lathe tool having flat cutting edge. Finishing cut must not be taken with lathe feed coarser than 16 pitch. Taper on axle wheel seat for entering wheel must not exceed ½ in. in length and must be turned with broad, straight-faced tool, making regular taper without ridges or rings. Wheel fits to be calipered at three points, namely: One in. from each end and middle and other points if indications point to excessive variations in diameter.

Axles shall not be considered as suitable for mounting where there is a difference in diameter between any two measurements exceeding 0.003 in. This, however, shall not be construed to mean that wheel seats on each end of axle are to be of one size. Each tenth axle from each lathe shall be measured for soundness. No axle varying over 0.001 in. when measured at two points 90 deg. apart on circumference at equal distance from end shall be considered as suitable for mounting.

**Wheels.**—To be bored smooth. Finishing cut shall be made with tool or tools having a cutting face at least 3/16 in. wide. Feed not to exceed 8 pitch. To be bored with a rough and finishing cut. The finishing cutter when taking the finishing cut must not be cutting when roughing tool is also rough boring, unless the finishing tool is supported independent of roughing

tool, the latter to prevent spring of roughing tool being transmitted to finish tool, causing an irregular bore.

Wheels to be calipered with micrometer caliper. A wheel varying over 0.002 in. in any two diameters will not be considered satisfactory for mounting.

Mounting presses to be provided with recording pressure gages. All wheels not mounted within limits given, or wheels that are forced against shoulder, to be withdrawn.

One other point should receive attention. It would be very desirable if all shops were to adopt one angle for lathe centers. Generally, lathe centers used for ordinary work are 60 deg., including angle. If this were adopted for all axle work, it would result in the axles running true on centers, reducing the amount of material necessary to turn away when truing up axles that have been previously turned.

The report was accepted and ordered to be printed in the Proceedings, but the recommendations will not be submitted to letter ballot for adoption as standard or recommended practice.

#### BRAKE SHOES

The standing committee on brake shoe tests presented an elaborate report recommending among other things revised specifications for brake shoes covering coefficient of friction and shoe wear. During the year the committee made use of a new scale designed to weigh car wheels before and after braking tests in order to determine the wear on the wheel caused by the brake shoe.

Fourteen shoes submitted to the laboratory at Purdue University were tested to determine the wear under repeated applications to both cast-iron and steel-tired wheels. The shoe wear and wheel wear tests were run under the following conditions:

A. On the cast-iron wheel.—At a constant speed of 20 m.p.h. and at a shoe pressure of 2,808 lb.

B. On the steel wheel.—At a constant speed of 20 m.p.h. and at a shoe pressure of 2,808 lb.

C. On the steel wheel.—In effecting stops from an initial speed of 65 m.p.h. and at a shoe pressure of 12,000 lb.

During the tests at the lower pressure most of the shoes were applied 300 times to the wheel, while the wheel was kept running at a constant speed of 20 m.p.h. These applications of the shoe to the wheel were made by means of an automatic device on the testing machine which operates to keep the shoe in contact with the wheel for about one minute, while the interval between contacts is about three minutes. At the end of each 100 applications, both the shoe and the wheel were weighed to determine the metal lost by abrasion.

The tests on the steel wheel at the higher pressure (condition C) were made by a process similar to that employed in determining the coefficient of friction. In most cases, nine stops were made from an initial speed of 65 m.p.h., after which both the shoe and the wheel were weighed to determine their loss.

At a shoe pressure of 2,808 lb., the only shoe which produced an appreciable wear on the cast-iron wheel was a Congdon shoe. It is somewhat significant that this shoe showed the least shoe wear. During the tests on the steel wheel, at a pressure of 2,808 lb., only two shoes caused any considerable wear of the wheel. These were both Congdon shoes. One shoe, which was given 300 applications to the wheel, cut four V-shaped grooves about 1/32 in. deep and several smaller ones around its entire circumference. The other shoe scored the wheel in a similar manner with five grooves after 100 applications. During the tests on the steel wheel at a pressure of 12,000 lb., only two shoes produced any wear whatever on the wheel, and this was quite inconsiderable in amount. These were both Pittsburgh composition shoes. They did not score the wheel, however.

The results seem to warrant the conclusion that none of the ordinary shoes in service are likely to cause any appreciable wear on the cast-iron wheel. The wear on the steel wheel, while greater than on the cast-iron wheel, is likewise almost inconsiderable, except in the case of the two insert shoes above cited. The committee regards the scoring of the wheel in these two cases as more or less accidental, and experience with insert shoes in service seems to warrant this opinion. After consideration of all the facts here presented, the committee has concluded

that no serious wear of the wheel is to be expected from the action of any of the shoes now in ordinary service, and it, therefore, considers any recommendation concerning wheel wear to be unnecessary.

The committee regards the reassurance which proceeds from such conclusions as ample return for the effort and expense which have been entailed by its research concerning the effect of brake shoes upon the wheel.

The committee recommends concerning shoe wear that on the cast-iron wheel the shoe wear be determined by making 100 applications of the shoe to the wheel, under a pressure of 2,808 lb., and at a constant wheel speed of 20 m.p.h.; at each application the shoe to be in contact with the wheel during 190 revolutions and out of contact during the succeeding 610 revolutions.

That, under these conditions, the shoe shall lose in weight not more than 0.8 lb. for each 100,000,000 foot-pounds of work done.

That, on the steel-tired wheel, the shoe wear be determined by making 10 stops from an initial speed of 65 m.p.h., and under a shoe pressure of 12,000 lb. That, under these conditions, the shoe shall lose in weight not more than 4 lb. for each 100,000,000 foot-pounds of work done.

The committee believes that inserts should be made as thick as the processes of manufacture will permit, and it recommends that in no case should the thickness of the insert in a new shoe be less than one-half of the total depth of the shoe.

The committee presented the following summary of its suggestion concerning brake shoe tests, and recommended that they be adopted as standards of the association:

1. That the present specifications for brake shoes be replaced by the following:

a. Shoes shall be tested for coefficient of friction and for wear upon the Master Car Builders' Association testing machine, or upon a machine with equivalent characteristics.

b. Shoes shall develop upon the cast-iron wheel, in effecting stops from an initial speed of 40 m.p.h., a mean coefficient of friction of not less than 22 per cent when the brake-shoe pressure is 2,808 lb., 16 per cent when the brake-shoe pressure is 6,840 lb.

c. Shoes shall develop upon the steel-tired wheel, in effecting stops from an initial speed of 65 m.p.h., a mean coefficient of friction of not less than 12½ per cent when the brake-shoe pressure is 6,840 lb., 11 per cent when the brake-shoe pressure is 12,000 lb.

d. No limitation is placed upon the rise in coefficient of friction at the end of the stop.

The recommendations were referred to letter ballot for adoption as standard.

### MANUFACTURERS' ASSOCIATION ATLANTIC CITY EXHIBIT ARRANGEMENTS

The American Street & Interurban Railway Manufacturers' Association has issued a convention circular calling upon manufacturing companies planning to exhibit at Atlantic City to make prompt application for space. The general arrangement of the space on Young's Million Dollar Pier for the exhibit will be the same as in October, 1908. At that time about 200 exhibitors used over 60,000 sq. ft. of space. The circular states that applications should be in by July 15. Those received on or before that date will be considered as having been received on that date and all such will have equal preference as to location. Applications received after that date will be given space as received in order of time. The rate this year is fixed at 30 cents per foot. The exhibit committee will hold a meeting in New York on Friday, July 22, when space will be assigned for all applications received. Applications should be mailed either to K. D. Hequembourg, vice-president, Dunkirk, N. Y., or George Keegan, secretary, 165 Broadway, N. Y. Those who are not members of the association, however, should apply to Charles C. Castle, chairman of the membership committee, or George Keegan, secretary, 165 Broadway. The circular of the

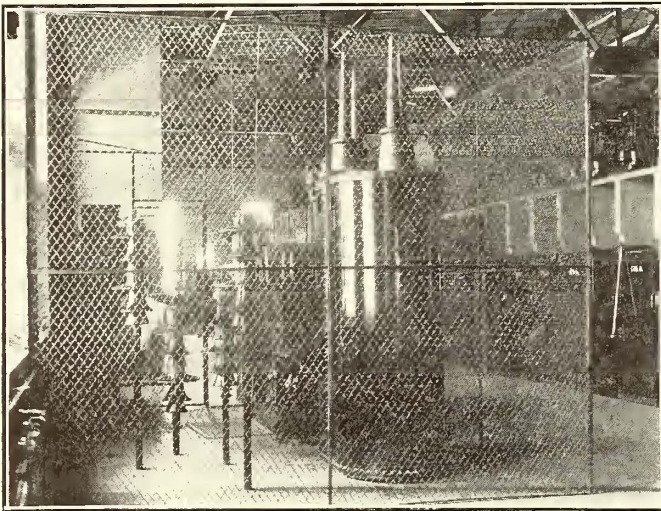
association is accompanied by a plan of the pier with the sizes of the booths indicated and by information relating to shipping, trucking and installation of exhibits.

At a meeting of the executive committee of the Manufacturers' Association, held in Atlantic City, June 18, the Marlborough-Blenheim was selected as the official headquarters of the association during the convention. The following gentlemen were appointed to constitute a transportation committee, to cooperate with the corresponding committee of the American Street & Interurban Railway Association: William H. Heulings, Jr., assistant secretary, J. G. Brill Company, Philadelphia, Pa.; Arthur S. Partridge, president, Arthur S. Partridge & Company, St. Louis, Mo.; J. W. Porter, first vice-president, Electric Service Supplies Company, Chicago, Ill.; C. S. Hawley, vice-president and general manager, Consolidated Car Heating Company, New York; Charles C. Peirce, manager railway department, General Electric Company, Boston office, Boston, Mass.

Charles C. Castle, formerly of the Hildreth Varnish Company, has been re-elected a member of the executive committee and vice-president in charge of entertainments, as the representative of the United States Metal & Manufacturing Company, with which he is now connected.

### OIL-DRYING PLANT

The Winnipeg Electric Railway Company has established in its main receiving substation an oil-drying and testing plant. Fifteen days' time would be required for getting samples of transformer oil tested by the eastern manufacturers, and even a longer time, of course, would be needed for obtaining a new supply of dry oil. The large transformers in the receiving station and the similar equipment at the generating station contain much oil which, in connection with the supply needed for smaller transformers in the lighting and power service, has made the oil-drying installation and testing plant a valuable addition to the electrical equipment. A system of large tanks located in the basement of the receiving station and provided with heating coils serves to dry the oil. Periodical tests are made of the oil in use and all oil is tested before it is put into a transformer case. If the oil does not meet the requirements it is put through the drying tanks, in which it is first



High-Voltage Testing Outfit

allowed to settle so that the excess water may be drained from the bottom, and then it is heated to complete the process.

An illustration of the oil-testing plant within its screened enclosure is presented. This plant includes a 100,000-volt transformer of 25-kw capacity. Current for testing is furnished through a potential regulator supplied from the 110-volt circuit. The regulator varies the potential of the current fed to the large step-up transformer through the range from 110 to 1000 volts. The circuit is connected with a two-scale voltmeter in-

dicating from zero to 60,000 volts, and from zero to 120,000 volts, and an ammeter indicating from zero to 80 amp. From the secondary side of the step-up transformer the high-voltage wires are carried on line insulators arranged in pairs one above the other, to provide double insulation for the 100,000-volt circuit. This circuit leads to terminals for the oil-testing cylinder. It is the practice to withdraw oil for testing from the bottom of the transformer case or drying tank and to test it with a fixed gap of 0.2 in. As a precautionary measure the gate leading into the high-voltage testing case is interlocked with the line switch of the testing set in such a way that the current is cut off from the testing apparatus whenever the gate is opened.

### THE OMAHA DECISION

The full decision of the United States Circuit Court for the District of Nebraska enjoining the Interstate Commerce Commission from exercising jurisdiction over the Omaha & Council Bluffs Street Railway Company, and the Omaha & Council Bluffs Railway & Bridge Company, is available. This decision was mentioned on page 1078 of last week's issue of this paper. The decision, which was rendered by Judges Sanborn, Hook and Adams was as follows:

"Whereas, the complainants are street railway companies engaged in operating street cars for the transportation of passengers on the streets of Omaha and Council Bluffs and are not commercial railroad companies engaged in the general transportation of freight and passengers, and the Interstate Commerce Commission by its order dated Nov. 27, 1909, required them to cease demanding or receiving their fares of 15 cents per passenger for the transportation of passengers from Council Bluffs, not including Courtland Beach, Ia., to points on complainants' lines in Omaha, Neb., or from points on defendants' lines in Omaha, Neb., to Council Bluffs, Ia., not including Courtland Beach, Ia., and also required them to establish and to maintain for two years a less rate.

"And, whereas, the judges are of the opinion that the Congress never intended that the act to regulate commerce of Feb. 4, 1887, 24 Stat. Chap. 104, page 379, 3 U. S. Comp. Stat., page 3154, or its amendments, 34 Stat. Chap. 3591, page 584, should apply to, and they are of the opinion that they do not apply to, such street railway companies, that no power has been delegated thereby to the Interstate Commerce Commission to regulate or affect the rates of transportation of such companies and that the order of the Interstate Commerce Commission was beyond its powers and ought not to be enforced during the pendency of this suit. *Louisville & Portland Ry. Co. v. Louisville City Ry. Co.*, 2 Duv. (63 Ky.) 175, 178; *Funk v. St. Paul Ry. Co.*, 61 Minn. 435, 437, 441; *State v. Duluth Gas & Water Co.*, 76 Minn. 96, 108; *Manhattan Trust Company v. Sioux City Cable Ry. Co.*, 68 Fed. 82, 86; *Congressional Record*, Vol. 17, Part IV, page 3274; *Railroad Commissioners v. Market Street R. R. Co.*, 132 Cal. 677, 678-9, 682, 683, 64 Pac. 1065; *Gyger v. West Philadelphia Ry. Co.*, 136 Pa. St. 96, 108; *State of Kansas v. Grant Cain*, 69 Kan. 186, 189, 190; *Railroad Company v. Railroad Commissioners*, 73 Kan. 168, 169, 173; *Sams v. St. Louis (etc.) Ry. Co.*, 174 Mo. 53, 64, 69, 74-77, 81; *Thompson-Houston (etc.) Co. v. Simon*, 20 Ore. 60, 75, 25 Pac. 147, 149; *Front Street Cable Ry. Co. v. Johnson*, 2 Wash. 112, 25 Pac. 1084, 1085; *Riley v. Galveston City R. R. Co.*, 35 S. W. 826, 827.

"It is hereby ordered that the aforesaid order of the Interstate Commerce Commission of date Nov. 27, 1909, be, and the same is hereby, suspended and the commission, its attorneys, agents and employees are hereby restrained and enjoined from enforcing it until the final decision of this suit or the further order of the court.

"This order shall take effect upon the filing with the clerk of this court of a bond in the sum of ten thousand dollars (\$10,000) approved by one of the judges of this court and conditioned that the complainants will pay any and all damages which result from the making of this order in case the order shall not be sustained."



**PROGRESS OF NEW WORK ON ILLINOIS TRACTION SYSTEM**

The large program of development work for the Illinois Traction System property, which was outlined in the issue of Jan. 22, 1910, is being carried forward at a satisfactory rate. The work of chief interest is located in and near St. Louis, Mo. As earlier stated the Traction company is making preparations for handling local and heavy fast freight and passenger service into the heart of the business and hotel district of St. Louis over new double tracks and a new bridge over the Mississippi River. The track work of the main line from Granite City to the St. Louis terminal site, is now ready for operation awaiting the completion of the McKinley bridge. Owing to the wrecking of falsework for the middle span due to high water and the continued high stage of the river since January, it has not been possible to complete the two remaining river spans on schedule time. It is expected, however, that these can be made ready for service early in the fall.

When completed this bridge will comprise three river and five shore spans with a total length of 2500 ft. and structural steel approaches 3200 ft. long. Thus, the total steel structure is more than a mile in length. It will have a normal carrying capacity of 10,000 lb. per lineal foot for each of its two tracks and 3000 lb. per lineal foot for each of its two 16-ft. driveways. The bottom chords of the three 520-ft. river spans are 75 ft. above low-water level. At the western end the approach structure terminates at Broadway and Salisbury streets, where the tracks lead onto the private right of way of the Illinois Traction Company. At this point a 2-story brick station is well along toward completion. The station is 65 ft. wide by 150 ft. long, built of concrete and red paving brick. The lower floor, which is at the street level, contains the offices, waiting rooms, express rooms and general facilities. Elevators and stairways will give access to loading platforms which are located directly over the waiting rooms.

The downtown terminus of the new double-track line extending into St. Louis is 2.5 miles from the Broadway station and is located at Twelfth and Lucas streets, near the Jefferson Hotel. Plans are under way for the erection of a 12-story passenger station and office building on this terminal property, and contracts have just been let for an express station 263 ft. long by 88 ft. wide, two stories in height. This building will be constructed wholly of fireproof materials, will be ornamented with cut stone, and will have a tile roof. The construction and equipment of the express terminal only, call for the expenditure of about \$100,000. The detail plans of the passenger station and office building have not yet been announced, but it is stated that this structure will resemble a high-class city office building which will cost approximately \$500,000.

The terminal property of the Illinois Traction System includes 24 acres of river frontage property at the Missouri end of the McKinley bridge. An incline from the elevated bridge structure to the terminal freight yard below is now being built. A brick and concrete freight warehouse and loading station is nearly completed on this property. This building is located under the Missouri approach to the McKinley bridge and is about 40 ft. x 200 ft. in ground dimensions. Plans are now being made for laying teaming and warehouse tracks on the freight terminal property.

On the east side of the river the new power station, which is to have an ultimate capacity of 28,000 hp, one-half of which will now be developed, is being erected at a satisfactory rate. The structural framework of the building is about finished and the boilers and stacks are being installed.

A new car shop, 250 ft. x 60 ft. in ground dimensions and with a height of 34 ft. below roof trusses, has been built in Granite City, Ill., about a mile east of the new power plant. It will serve as headquarters for the 30 bridge-service cars which were described in this paper May 28, 1910. These cars will operate between St. Louis and the densely populated manufacturing center north of East St. Louis on the Illinois side of the river. The new shop also will care for the interurban cars operating

in and out of St. Louis over the Illinois Traction lines. Three new substations, which will include office and passenger waiting rooms, are now under construction. These structures conform to the standard type of the Illinois Traction System illustrated on page 143 of the issue of Jan. 22.

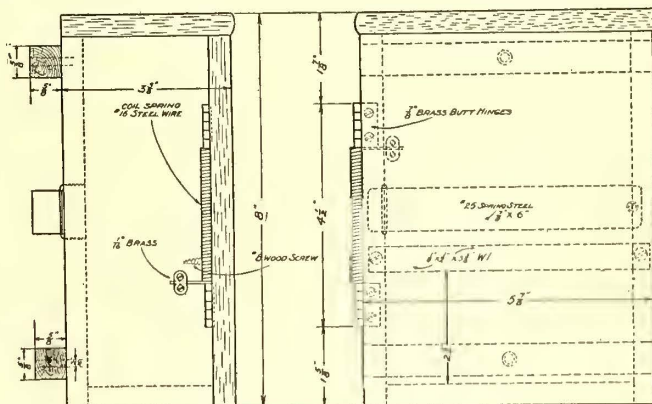
To handle the greatly increased freight business expected from the opening of the McKinley bridge across the Mississippi River, trucks and motors have been received for equipping six large electric locomotives, which will be employed in the freight service, and practically all the sidings on the entire 600-mile interurban system are being lengthened so that they will accommodate 15-car trains.

The new locomotives will each have a drawbar pull of 25,000 lb. The motors for the equipment are the G. E. 69-C type mounted on American Locomotive Company trucks. The bodies will be 36 ft. long, built of steel and designed to accommodate the control and air-compressor apparatus. Each locomotive will weigh 50 tons and will be equipped with the Bosenbury type of M. C. B. coupler, which is standard on the Illinois Traction System, with M. C. B. steel wheels and with 7-in. axles with 5½ x 10-in. journals and a special type of locomotive motor control furnished by the General Electric Company. The four motors under each locomotive are rated at 200 hp each and are geared for slow-speed work. A special type of contactor control is provided, having 39 contactors and 18 points on the controllers with running positions at points Nos. 7, 13 and 18. In the first position the four motors will be connected in series; in the second position the four motors will be connected in series-parallel, and in the third position all four motors will be in parallel. In this way it is planned to accelerate heavy freight trains without drawing a greater current from the line than now is taken by one of the quadruple G. E. 73 or G. E. 205 limited passenger-car motor equipments.

The new woodworking shop earlier announced as being under construction close to the main repair shop of the interurban system located at Decatur, Ill., has been completed. This building, which includes excellent facilities for carpentry, mill and overhauling work, will be described in a later issue. Acknowledgement for the foregoing interesting information is made to H. E. Chubbuck, executive vice-president, Illinois Traction System.

**CONDUCTOR'S TRANSFER BOX USED BY THE VIRGINIA RAILWAY & POWER COMPANY**

The average conductor finds the carrying of three or four transfer pads in his pockets a rather irksome task and is likely to deposit the extra pads and other papers in some place like the sand box. To avoid this, the Virginia Railway & Power Com-



Conductor's Transfer Box

pany, Richmond, Va., has installed a transfer box in every one of its cars. As shown in the accompanying drawing, the box is 8 in. x 5 7/8 in. x 3 3/8 in. in size. It is made of 7/16-in. wood to match the inside finish of the car. The door is made self-closing through the medium of a coil spring of No. 16 steel wire.

## POWER PLANT IMPROVEMENTS OF THE CAIRO (ILL.) RAILWAY & LIGHTING SYSTEM

The Cairo Railway & Light System, one of the McKinley Syndicate properties in Illinois, has recently equipped a new power plant located at Thirty-eighth and Sycamore streets in Cairo, Ill. The old plant on Ninth Street has been dismantled. The boiler-house equipment of the new power plant includes three 400-hp Stirling boilers, two of which are fired with Green stokers fed by coal conveyors. The engine-room equipment includes one 500-kw, 2300-volt, Curtis steam turbine, one 500-hp upright Lake Erie engine connected to a 500-kw Siemens & Halske railway generator on one side and a 500-kw, 2300-volt, 60-cycle, Bullock generator on the other side. The switchboard is of Westinghouse manufacture, and serves the generating equipment and also a 300-kw Westinghouse motor-generator set and two 50-light, mercury-vapor, arc-lamp converter sets.

## ENGINEERS IN PENNSYLVANIA HOLD EXHIBIT IN HARRISBURG CAR HOUSE

A very successful exhibit was held in the large new concrete car house of the Central Pennsylvania Traction Company, at Cameron and Forster streets, Harrisburg, Pa., on June 1, 2, 3 and 4, 1910, in connection with the annual meeting of the Engineers' Society of Pennsylvania. The entire program for the meeting, as outlined in the *ELECTRIC RAILWAY JOURNAL* of May 21, 1910, page 917, was followed, with the exception of the trip to the McCall Ferry plant of the Pennsylvania Water & Power Company on June 4, which was not made on account of rain. The interior of the car house, converted into an exhibit hall, was decorated in gold and white. More than 300 tungsten lights of 100 cp each were used to light the building. The largest spaces at the exhibit were taken by the Pennsylvania Steel Company, the Westinghouse Machine Company, the Westinghouse Electric & Manufacturing Company, the Dauphin Electric Supplies Company and the Western Electric Company. On a temporary siding outside of the exhibit hall the Pressed Steel Car Company and the American Car & Foundry Company exhibited cars built by them, and a short distance from the car house, the Pennsylvania Railroad exhibited one of the electric locomotives intended for service on the New York division. On June 2 a party of railroad officials and engineers witnessed a test of the locomotive made under the direction of Leroy J. Kirby, of the Westinghouse Electric & Manufacturing Company, of Pittsburgh, with power supplied by the Central Pennsylvania Traction Company.

The exhibit was formally opened on the morning of June 1 with an address by Mayor Meals of Harrisburg. None of the exhibits attracted more attention perhaps than that of the Call Automatic Switch Company, Denver, Col. Ira A. Call, inventor of the switch, and C. C. White, general manager, demonstrated the advantages of the device. The company proposes to erect a plant in the East. Other exhibits which attracted particular attention were those of James Boyd & Brother, Philadelphia, electric hose and rubber rotating turbine valves, etc.; Harrisburg Pipe & Pipe Bending Company, Harrisburg, pipe coils, gas cylinders and feed water heaters; Hunter & Dickson Philadelphia, valves and fittings; Henry, Millard & Henry Company, York, Pa., engines; Keystone Chemical Company, Philadelphia, pressure filters and water purifying systems; J. H. Jolly & Company, Philadelphia, magnolia metal; York Engineering Company, York, Pa., steam supplies, pumps, etc.; Standard Scale & Supply Company, Philadelphia; scales, concrete mixers, etc.; Ford & Kendig, Philadelphia, valves, etc., including the Lunkenheimer specialties; H. C. Roberts Electric Company, Philadelphia, arc lamps, etc.; Dauphin Electrical Supplies Company, Harrisburg; Sloan, Havell & Company, Philadelphia, railroad, mill, mine and contractors' supplies; Geo. Oldham & Son Company, Philadelphia, pneumatic tools; Strong Machinery & Supply Company, New York, packing; The Nachod Signal Company, Philadelphia, automatic signals

for electric railways. The exhibit of the working of the prepayment car likewise attracted much attention.

John Price Jackson, dean of the Engineering School of the Pennsylvania State College and chairman of the convention, announced that the college intended to inaugurate a campaign of instruction in fuel economy to cover Pennsylvania. The school of engineering had an exhibit, and demonstrations of the system of smoke prevention and fuel economy were made at the hall by Prof. A. H. Gill, who will instruct engineers, firemen and men employed in allied capacities upon both stationary and locomotive engines. The exhibit will be taken directly into industrial plants and the proper and improper ways of firing will be explained to those interested.

## MEETING OF COMMITTEE ON CONSTRUCTION OF SCHEDULES AND TIME TABLES

A meeting of the committee on construction of schedules and time-tables of the American Street & Interurban Railway Transportation & Traffic Association was held at the New York headquarters of the American Street & Interurban Railway Association on Thursday, June 16. The committee members present were N. W. Bolen, chairman, superintendent of transportation, Public Service Railway, Newark, N. J.; William Siebert, superintendent of surface lines, Brooklyn Rapid Transit Company, Brooklyn, N. Y.; and J. J. Doyle, general superintendent, Washington, Baltimore & Annapolis Electric Railway. A. Jackson, superintendent of time-tables, Public Service Railway; L. H. Palmer, superintendent of transportation, Metropolitan Street Railway, New York, and J. L. Downs, private secretary to Mr. Bolen, were also present to assist the committee. P. N. Jones, general superintendent of the Pittsburgh Railways Company, Pittsburgh, Pa., member of this committee, was not present at the Thursday session, but spent the preceding day at the association headquarters to prepare his suggestions concerning the committee's queries.

The first order of business was on suggested changes in questions for the city data sheet to be sent out by this committee. Timothy Connell, time-table clerk, Boston Elevated Railway, Boston, Mass., and James Bricker, superintendent of transportation, Philadelphia Rapid Transit Company, Philadelphia, Pa., contributed several suggestions as committee members. Secretary H. C. Donecker was present at the meeting and assisted in the discussion.

Among the subjects taken up were determination of running time, changes in running time at different periods of the day, definitions of straight and swing runs, passenger counts, timetable construction, stormy weather schedules, lay-over practice, short-line cars, use of "patches" on time-tables for alterations in service, and average speeds with and without lay-overs. There were also presented for discussion several additional questions relating to schedule departments and schedule advertising, working night crews, use of train numbers, observation of character and amount of vehicular traffic, seating efficiency of cars and summaries of daily traffic.

Following the talk on city traffic matters, Mr. Doyle presented for discussion a series of questions on interurban schedule practice and cognate matters. The interurban queries will be sent out as a separate section. Mr. Doyle's list included single and double track mileage, schedule mileage operated daily, number of trains operated daily, maximum number of cars required for schedule, distance between sidings on single track and between cross-overs on double track, average speeds, time allowance for connections at junctions, branch line or shuttle service, train numbering, scheduling of freight trains, lay-over practice, passenger transferring versus through train operation, payment on time, trip or mileage basis, headways, proportion of straight runs, detention reports, passenger records, signal system and transfer table color changes.

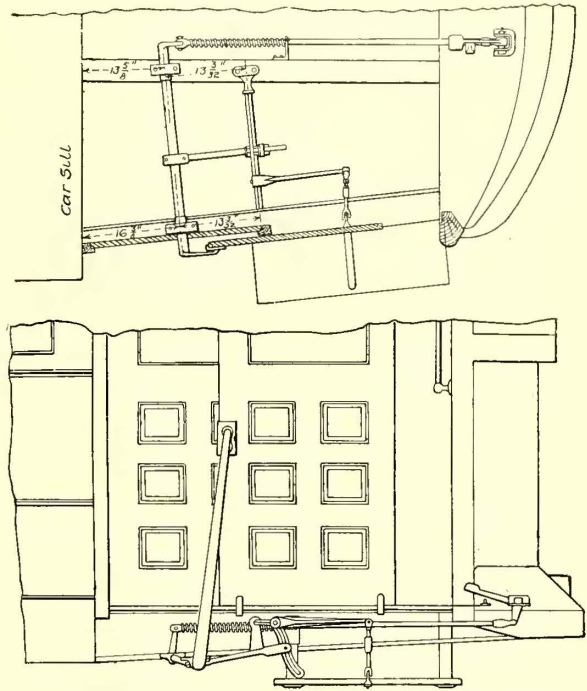
The municipality of Poltava, Russia, is said to be considering the advisability of constructing an electric railway in that city.

**RECONSTRUCTING CARS FOR NEW YORK SUBURBS**

The Third Avenue Railroad Company, New York, has rebuilt in its shops 344 cars for operation on its allied roads, the Union Railway Company and the Westchester Electric Railroad. The cars were turned out at the average rate of four a day. The most interesting feature of this rolling stock is that the cars have been converted so that they can be operated to use a combination of vestibule doors and folding steps without making any alterations whatever in the body proper. Practically all of the changes have been confined to the platforms which have been lengthened from 4 ft. to 6 ft. and completely enclosed with a combination of rebuilt Sjoberg and Brill vestibules; a single sliding door with a 24-in. opening, which is normally closed when not operated by the motorman for exit purposes, and a two-leaf sliding door normally open with the step down when used for entrance and exit at the conductor's platform, but closed with the step up when running. The old hood, platform and vestibule material was re-used to such advantage that the cost for converting each car was much less than it would have been otherwise.

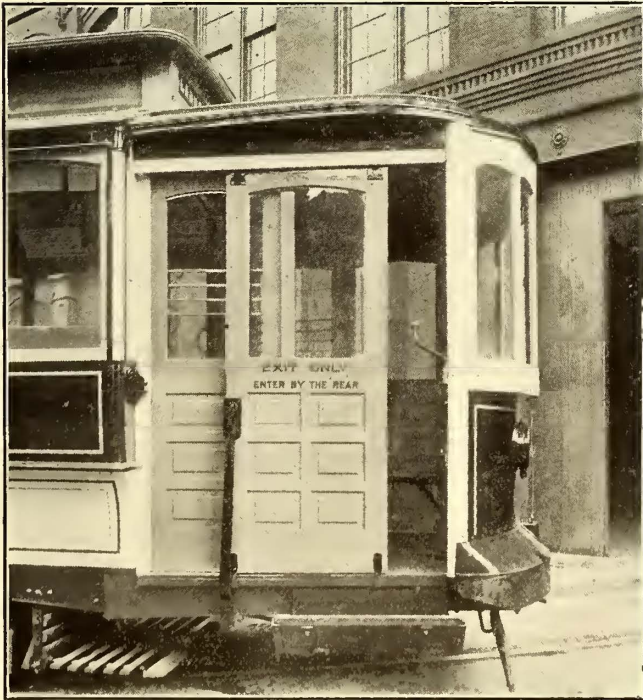
The original platforms had no vestibule doors, but were furnished with a pantograph gate on the inner side of the platform. The principal fittings on the rebuilt platforms comprise a vertical dividing rail for entrance and exit at the rear, mechanisms for the door and step combinations and a curved platform rail which separates the incoming and outgoing passengers besides affording the usual space for the conductor. This curved rail alone is expected to separate the exit and entrance streams as the old 32-in. opening double sliding doors at each end of the 28-ft. body have been retained. It will be understood that this door arrangement has not only made it possible to leave the longitudinal seating unchanged, but, furthermore, the total seating capacity has been increased by a

McWhirter, the company's superintendent of equipment, has two features which are very important from the standpoint of

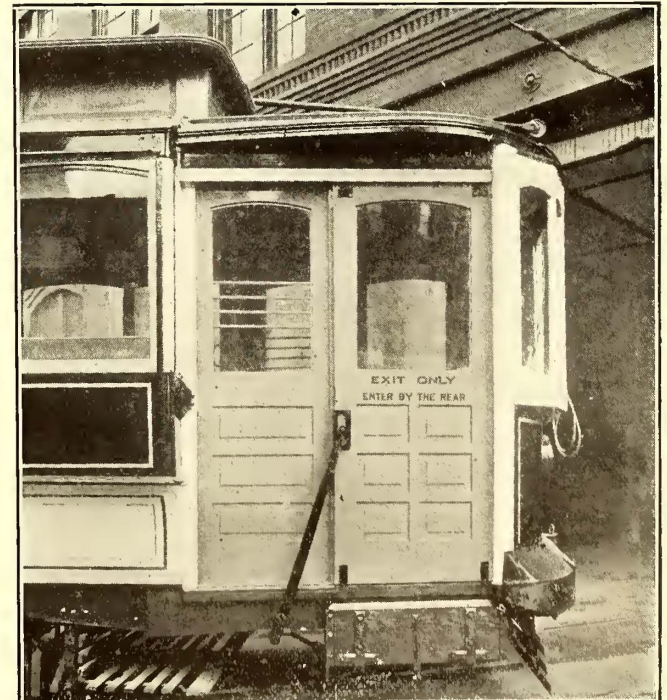


Plan and Side View of Door and Step Mechanism

accident prevention. The sliding exit door is closed by the motorman who depresses a heavy pedal which is otherwise at an angle of about 45 deg. to the platform. When the door is closed, the pedal is locked in a catch on the platform floor



View Showing the Point Where the Step Starts to Go Up



Vestibule Door Closed with Step Up

three-passenger bench which is let down on the inner side of the front platform.

The lengthening of the platforms involved the reinforcement of the end body sills with an angle iron to enable them to carry the heavier platforms, the ship-splicing and reinforcement of the platform sills and the lengthening of the hood and the installation of new dashers. All of this work as well as the railing construction was carried out in the company's shops.

The door and step mechanism, which was invented by J. S.

so that, unlike other door-opening devices, the passenger cannot possibly open the exit door himself. The step mechanism provides also a delay action to the step so that the latter does not fold up until the exit door is more than half closed. This latter feature prevents injury to passengers who may leave the car while the door is closing. The mechanism is arranged so that the door is closed against a compression spring, and, when, the locking mechanism is unlocked, the door is automatically opened by the release of the spring.

Following the plan used in most of its shop work, the company established a number of piece-work contracts covering the dismantling of the platforms, the reconstruction of the vestibules, touching up, etc. The prices established on some of these contracts were as follows:

Contract.	Per car.
Stripping sign lights, bonnets, vestibules and inside trim.....	\$2.00
Stripping cars, pulling off platform bumpers, dashers, nigger-head castings, etc., including bumper shields.....	3.50
Stripping cars, pulling off platform bumpers, dashers, nigger-head castings, etc., without bumper shields.....	3.00
Getting out complete set of 12 posts in the mill room, including finishing, cutting, boring, etc.....	3.50
Getting out eight pieces or one complete set of spliced knee beams in the mill room.....	1.40
Splicing knee beams, including putting on reinforcing irons.....	4.00
Installing and bolting up knee beams, complete.....	4.50
Installing platform posts, including vestibule and bonnets.....	17.00
Hanging all doors, putting in combination door and step devices and other hardware.....	15.00
Plugging all old holes for knee beams and boring new ones.....	2.50 & 2.00
Making two conduit dividing railings.....	1.20
Installing bumper shield blocks.....	1.00
Installing dashers, including the installation of headlight bolts.....	1.00
Installing bumpers and nigger-head castings, complete.....	2.50
Installing wooden bumper blocks.....	1.50
Installation of iron moldings and bumper shield irons.....	3.00
Lengthening and splicing bonnets.....	3.00
Making new bonnet, complete.....	4.50
Shortening and repairing two vestibules.....	4.50
Installing the step-raising device.....	3.50
Trimming and setting back old moldings, replacing broken glass, putting on all hardware, replacing seat backs, etc.....	6.00
Installing steps and step shields.....	1.50
Lengthening power cables.....	2.25
Putting up circuit-breakers.....	.40
Putting up controllers.....	.95
Connecting up and installing overhead trolley.....	1.25
Connecting kicking coils.....	2.50
Installing controllers and controller blocks.....	.60
Connecting lightning arresters.....	2.40
Bringing out headlights and connecting up.....	1.65
Ringling out and changing lights from four-light clusters to two-light clusters in center of car wired so that two lights per platform would be obtained.....	1.25
Blackening off, partly lettering and striping and applying "Rebuilt" sign inside car.....	2.20
Varnishing, first coat on cars to be repainted all over.....	1.65
Completely striping and lettering.....	5.25
Painting trucks.....	.70
Painting roof.....	.75
Lettering one set of six box signs, complete, with two coats.....	3.30
Varnishing outside of car, complete, including inside of vestibule and all doors.....	2.75
Varnishing inside of car body, but not vestibules.....	1.25
Shellacing doors.....	3 cents each
Painting first coat of door.....	4 cents each
Painting second coat of door.....	4 cents each
Varnishing door.....	9 cents each
Stenciling wording "Exit Only" and "Enter by the Rear".....	6 cents each

### THE PONTEDECIMO-BUSALLA ELECTRIFICATION

The Italian Westinghouse Company has received a contract from the Italian State Railways for the three-phase electrification of a 12½-mile double-track main line extending from Campasso to Genoa, via Pontedecimo and Busalla. This section has grades of 3½ per cent and a 12,000 ft. tunnel with grades of 2.9 per cent. The contract prescribes that a 380-ton train must be hauled over the maximum grade at 28 m.p.h. It is estimated that the electrified line will be capable of carrying twice the tonnage possible with steam. The average 18-ton trains are to consist of 21 cars and will be run on 15-minute headway, but a 10-minute headway may be operated eventually.

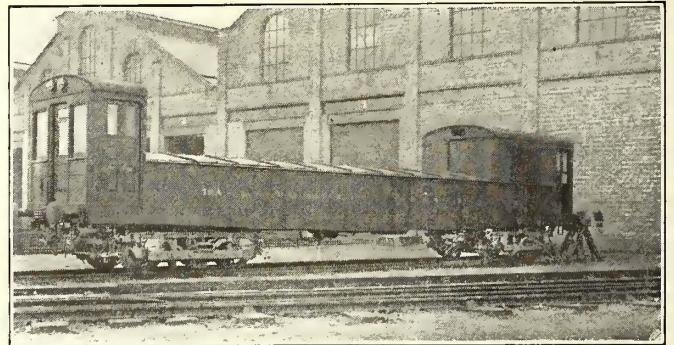
Power at 13,000 volts, 15 cycles, will be transmitted from Genoa. The generating equipment first will comprise two 5000-kw turbo-alternators with a 100 per cent overload capacity for five minutes, with space for a third unit. The regeneration of energy when the three-phase trains are going down grade will be an important element in the power economy. There will be four brick and concrete transformer stations, each of which will contain a 3000 k.v.a., oil-cooled transformer to reduce the transmission potential to 3000 volts. The transformers are built for an ultimate difference of potential of 22,000 volts to handle the 22,500-volt transmission which will be used when the power station contains three turbo-alternators. The overhead construction will consist of steel poles carrying two 5/16-in. steel wires over each track; the third conductor will be formed by the rails. The 40, 2000-hp locomotives ordered weigh 60 tons each, representing a capacity of 33.3 hp per ton. These locomotives have five coupled axles and 42-in. diameter wheels. The two end axles have a lateral play of 7/8 in. The central wheels have no flanges. This arrangement is to allow free running around

1200-ft. radius curves. Each locomotive is to have two 1000-hp motors which will receive 300-volt current from transformers.

### STORAGE BATTERY LOCOMOTIVE, LONDON, ENG.

The following are some particulars of two storage-battery locomotives used on the Metropolitan District (underground) Railway, London, England. One of these is shown in the accompanying cut. These locomotives were built to replace steam locomotives for taking breakdown trains from Lillie Bridge yard and for switching permanent way material, etc., in the same yard. The Lillie Bridge yard is not fitted with conductor rails. These locomotives are also used for hauling ballast trains at night. They are equipped with a special control apparatus so that they may be worked from the current rails when current is available or from the accumulator when the current is switched off the line after traffic hours. The total weight of each locomotive is approximately 70 tons; the accumulator itself weighs 32 tons.

Each locomotive is mounted on two motor trucks, each fitted with two G.E.-69 motors. When running off the current rails the motors are connected all four in series when starting. For higher speeds the motors are connected in pairs and each pair is connected in series so that at full speed running off the current rails the locomotives attain about 20 m.p.h. and are able to pull a heavy ballast train at that speed. When



London Storage Battery Locomotive

working off the batteries only two motors are used, these being connected in series when starting and in parallel for the higher speeds. The maximum speed when running off the battery is 7 m.p.h. when hauling a train of 100 tons on the level.

The accumulators for these locomotives were supplied by the Chloride Electrical Storage Company, London, England, and are of their "C" type. Each battery is capable of giving a discharge of 179 amp for eight hours, and can discharge for short periods up to 800 amp. Each battery consists of 80 cells, each containing 21 plates. The normal battery potential is 150 volts to 155 volts. A motor-generator for charging these locomotives is installed at Ealing Common Works, and current is also obtained for charging at Lillie Bridge from a similar motor-generator in the works belonging to the Great Northern, Piccadilly & Brompton Railway. The locomotive bodies were constructed by Renshaw, of Stoke-on-Trent, England, from designs supplied by the mechanical engineering department of the Metropolitan District Company. The electrical equipment, including motors, was supplied by the British Thomson-Houston Company and is of its Sprague-Thomson-Houston type. Practically all of the control apparatus is at one end of the locomotive. Westinghouse quick-acting air brakes are installed. The compressed air is supplied by a small air compressor driven from the accumulator.

Renewable spring buffers are fitted at each end of these locomotives for coupling to ordinary ballast cars, and automatic center couplings are also fitted so that the locomotives may couple up to the company's electric passenger stock for convenience in hauling disabled cars at breakdowns.

## REPRINTS OF CENTRAL ELECTRIC ASSOCIATION PAPERS

The Central Electric Accounting Conference has reprinted in pamphlet form the article "The Central Electric Accounting Conference," contributed by William H. Forse, president of the conference, to the *ELECTRIC RAILWAY JOURNAL* of Jan. 1, 1910, the report of the committee of the conference on "Uniform Practice in the Treatment of Car-Miles and Car Houses," submitted at the meeting of the conference in Dayton, Ohio, on Dec. 11, 1909, and the papers "Conductors' Fare Collections," by Charles E. Thompson, auditor of the Chicago & Milwaukee Electric Railroad, and "Accounting Features of the Corporation Tax Law," by E. D. Gault, auditor of the Mahoning & Shenango Railway & Light Company, both of which were also presented at the meeting of the conference on Dec. 11, 1909.

### CINCINNATI ACCIDENT BOOKLET FOR CHILDREN

A valuable booklet entitled "To Help Children Avoid Accidents" has been prepared for use in Cincinnati public schools through the collaboration of William Wallace, chief city street car inspector, Department of Public Service; Thomas Fitzgerald, assistant general manager of the Cincinnati Traction Company; and F. P. Goodwin, professor of civics at the Woodward High School. The pamphlet is prefaced by a note from Frank B. Dyer, superintendent of schools, in which attention is called to the fact that there should be developed in children the wholesome habit of caution when in the streets; and by a note from a teachers' committee in which attention is called to the increasing number of wagon, automobile and street-car accidents within the past few months, despite the fact that in no cases were the accidents due to imperfect car equipment. A large proportion of the pamphlet explains what constitutes a danger zone in front and alongside of cars, under different conditions of track, line and rolling stock, skilfulness of motormen and weather. A number of clippings from Cincinnati newspapers describing typical accidents to children are also reproduced, together with the following list of warnings which the teachers are asked to impress upon their pupils:

#### CAUTION

- Don't cross the street when a car is coming within the square.
- Don't roller skate on streets where there are car tracks.
- Don't play ball on streets where there are car tracks.
- Don't get on or off a car until it stops.
- Don't ride on the rear platform of a car. This is dangerous.
- Don't touch any loose wire that you see in the street. It may be charged and hurt you.
- Don't send your little brother or sister across the street to buy candy.
- Don't forget the instructions of your teacher and parents.
- Don't jump on or hang on any wagon or other vehicle in the street. This is extremely dangerous.
- Don't cross any street until you first ascertain if any fast vehicles are approaching.
- Don't get off of a car backwards. Always face the front end.
- Don't cross the street directly behind a car. You are liable to be run over by a car going in the opposite direction.
- Don't throw snowballs or rocks at a car. You are liable to injure someone.
- Don't tease irresponsible persons on the street. They may throw at you and cause you to run in front of a car at the risk of your life.
- Don't roller skate behind vehicles by holding onto same. This is very dangerous.
- Don't hitch the rope of your sled to any car or other vehicle when you sled ride in winter.
- Don't hold on to cars or wagons when you are riding a bicycle. This is very dangerous.
- Don't ride your Irish mail down hill on streets that cross a car track; and don't ride it in streets on which street cars run.

#### THINGS YOU SHOULD DO

- Tell your playmates to be careful when crossing a street and look out for all kinds of vehicles.
- Tell your mother and sisters to wait until a car comes to a full stop before getting off or on.
- Tell your mother and sisters always to get off a car facing the front end.
- Tell your playmates that you will not play ball or roller skate in streets where there are car tracks. It is dangerous.
- Tell your playmates to keep away from all wires that they see hanging in the street.
- If you see a wire in the street emitting sparks or flashes, get away. It is very dangerous, especially in damp weather.
- Always hold to your mother's hand when crossing a street with her.

### ASSOCIATION CIRCULAR ON EXPRESS AND FREIGHT TRAFFIC

P. P. Crafts, chairman committee on express and freight traffic, American Street & Interurban Railway Transportation & Traffic Association, has sent out through Secretary Donecker's office data sheet No. 59 for confidential information on matters relating to the handling of express and freight traffic. The members are asked to explain how they credit earnings in their accounts and what basis and method they use for their estimates. A series of questions is also presented with reference to charging off the expense of operating the express and freight departments in various branches such as track and roadway, power, rolling stock, operation, buildings, dispatching system, management, etc. The companies are also asked to give their interest and depreciation charges, to explain what classes of traffic are termed "Freight" and "Express" respectively and to state if they handle any of this traffic by steam.

### MEETING OF COMMITTEE ON INTERURBAN RULES

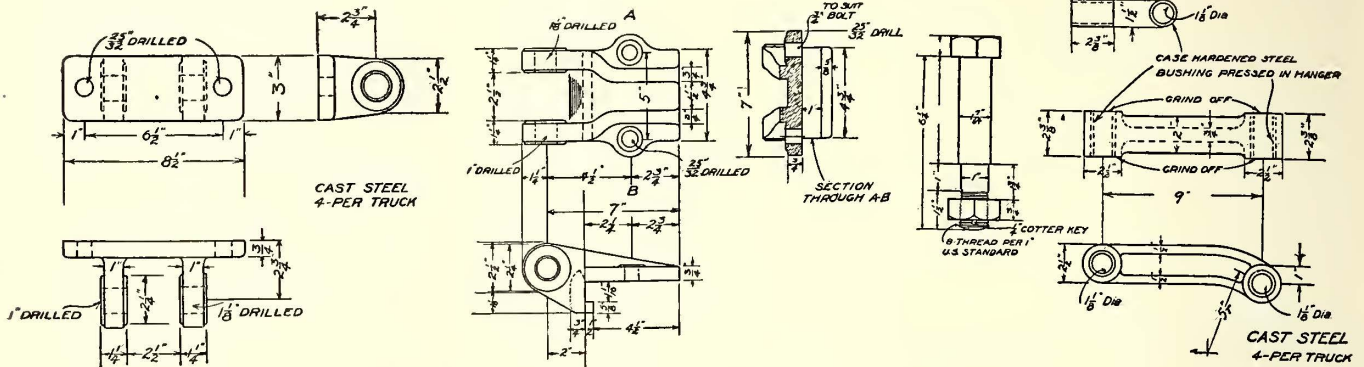
The committee on interurban rules of the American Street & Interurban Railway Transportation & Traffic Association held a meeting at the Hotel Hollenden, Cleveland, Ohio, on June 22. There were present: C. D. Emmons, Fort Wayne & Wabash Valley Traction Company, chairman; J. E. Duffy, Syracuse Rapid Transit Railway Company; W. R. W. Griffin, East Liverpool Traction & Light Company; J. W. Brown, West Penn Railways; H. A. Nicholl, Indiana Union Traction Company, and C. F. Handshy, Illinois Traction System.

Mr. Emmons read some correspondence which he had had with a number of steam railroad officials regarding a conference with them to discuss the subject of rules. The committee then took up the consideration of the code of interurban rules adopted last October at the Denver convention, beginning with the rules covering the movement of trains by train order. The changes proposed and accepted by the committee consisted largely in adopting the wording of the American Railway Association's standard code of rules. There was considerable discussion on the subject and the committee decided to add a few rules necessary for the operation of interurban cars by telephone dispatching and to permit of direct communication between the dispatcher and the train crews. In the afternoon the committee took up the forms of train orders and adopted the forms given in the American Railway Association standard code with a few slight additions and modifications.

The traffic of the municipal street railways of Liverpool, England, for 1909 was as follows: Milcage, 11,952,373; passengers, 121,532,940; receipts, \$2,727,767, which left a net profit of \$400,242, while the contribution of the system to the city relief fund amounted to \$133,411. The experiment of cars wholly first class was initiated on one of the routes in 1908. Experience proved the necessity of reserving the inside of the cars only for first-class traffic, while utilizing the upper deck at the usual prices. First-class fares have been extended to a second route, the fare to be 4 cents for any distance.

**BRAKE HANGERS IN RICHMOND**

The accompanying drawings show the details of the brake hanger designed by the mechanical department of the Virginia Railway & Power Company, Richmond, Va., to take the place of various hangers originally furnished with the trucks. The original hangers were superseded because whenever any part, such as the upper casting, lower casting or hanger links, wore out, it was necessary to scrap the entire hanger. In this new hanger a case-hardened pin, made with a shoulder, locks rigidly against the upper castings so that nothing can wear on the latter. This pin is locked in the lower casting in the same way so that the lower casting is also saved from wear. The hanger links between the two castings are provided with case-hardened bushings both top and bottom to take up all hanger abrasion.



Top and Bottom Castings and Links and Bolts of Brake Hanger

When these bushings are worn out, nothing more than a hammer is necessary to knock out the old bushings and press in a new one. It will be seen that only the pins and bushings of this brake hanger require renewal, so that the most costly parts need be made only once.

**EFFECT OF COLLISION ON A SYRACUSE CAR**

A rather interesting example of sturdy car construction is shown in the accompanying illustration of a standard city car of the Syracuse (N. Y.) Rapid Transit Railway Company. The view was made from a photograph taken after the car had been struck by a locomotive and carried on its side for about



Car Struck by a Freight Train

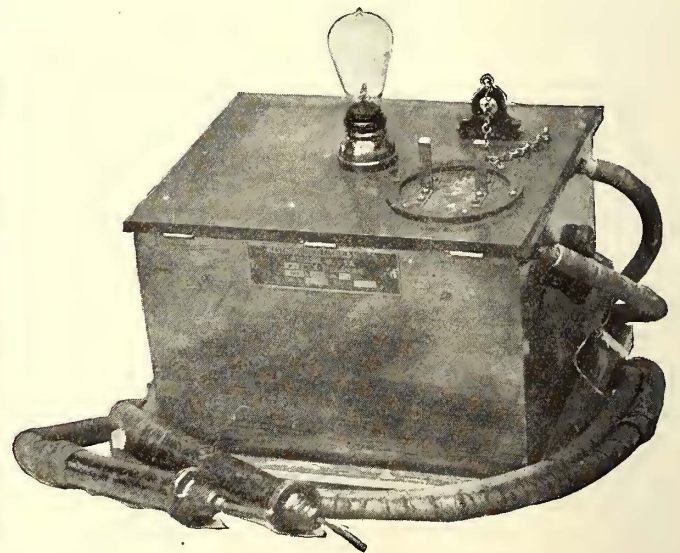
25 ft. The collision occurred on April 22 when the car was hit at an angle of 58 deg by the head of a train consisting of a head-on locomotive, 40 freight cars and a pusher engine. The illustration shows the side which received the impact. Only one panel was entirely destroyed while but two others received any damage. The opposite side of the car remained practically intact. It was remarkable also that not a single window

was broken nor were any of the 11 passengers seriously injured. The car was returned to the car house on its own trucks. This car was of standard Brill construction with wood frame, the only reinforcing being a 15 x 1/4-in. steel plate running the length of the car along the side sills. This received the impact on one side only, but it was not necessary to remove it for straightening. The train was stopped in less than 50 ft.

**A LOW-TENSION PORTABLE TESTING OUTFIT**

The Westinghouse Electric & Manufacturing Company has recently developed a portable testing device that will give an alternating voltage sufficiently high to test armature coils, meters, switches, and other details that are used in low-tension

systems and require an insulation test varying from 500 to 2000 volts. It has a rating of 0.5 kw, and gives testing voltages up to and including 2000 volts in 100-volt steps. It is designed for circuits of any frequency from 25 cycles up. The box, in which the testing transformer is mounted, is approximately 9 1/2 in. x 12 1/2 in. x 14 3/4 in., and weighs 60 lb. The testing voltage is varied by two small rheostat dials which with the high-tension binding posts are mounted within the box. The taps from the high-tension winding of the transformer are brought to the contacts of the dial. When the hinged cover is lifted to change the dial setting, the low-tension primary circuit is automatically



Low-Tension Portable Testing Set

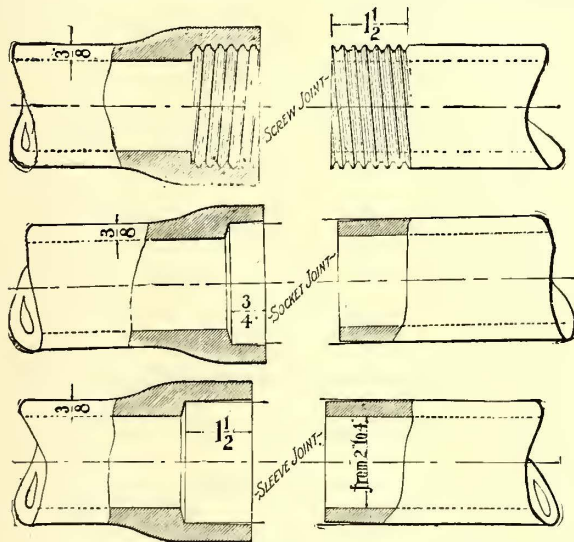
opened, so that the box is absolutely fool-proof against any touching of the dials, binding posts, etc., while the transformer is excited. Two high-tension testing leads, which consist of rubber-covered cable, passing through rubber tubing, are brought out of the box and provided with heavily insulated terminals so that they may be handled with perfect safety. A pilot lamp indicates when the primary circuit is closed.

**FIBER CONDUIT FOR UNDERGROUND CABLES**

The cable conduit recently placed on the market by the H. W. Johns-Manville Company, New York, known as J-M fiber conduit, is made of indurated fiber, a material which has been used very extensively for insulating purposes, such as third-rail coverings, controller linings, battery boxes, etc. In making this conduit, the fiber is molded into shape under high temperature and immense pressure, and is entirely without grain or laminations. This process gives each length of conduit a solid,  $\frac{3}{8}$ -in. one-piece homogeneous wall, with a tensile strength that is remarkable when compared with the light weight of the conduit. However, the most interesting feature of this conduit lies in the bell joints illustrated. One end of each section is belled out with an opening as large as the outside diameter of the opposite end of the next section. Any two sections fit together without any reduction in the wall thickness of either section at the joint.

In laminated fiber conduit, half the wall thickness at the ends of each length must be cut away in order that one length may fit or screw into the other. This, of course, reduces the strength of the joint by half.

The manufacturer has also arranged to make this new conduit with straight line joints, which are machine-moulded and



**Three Types of Fiber Conduit Bell Joints**

are perfectly smooth inside. Each length of the conduit is also smooth throughout its bore. This greatly facilitates the insertion of cables and saves them from abrasion. It is asserted that since there are no seams or roughness at the joints and as the air-tight joints prevent particles of concrete from seeping through, a No. 6 wire can be pushed through each duct from manhole to manhole, doing away with the ropes and rods necessary with ordinary conduits. The smooth, tight joints and the smooth bore of this conduit should add greatly to the life of cable.

Tests made of this conduit with  $\frac{3}{8}$ -in. thickness of wall show that it has an average puncture voltage of 40,800 volts dry and 33,000 volts after 40 hours immersion in water. Danger of electrolysis should therefore be practically eliminated by the use of this conduit. This conduit weighs only about one-sixth as much as stone. This makes it easier to handle and cuts down the freight charges. Breakage with this conduit is also reduced to a minimum because of the great tensile strength of its walls. A variety of fittings such as bends, elbows, tees, etc., provide for bends and curves in the trenches. Two, three and four-way junction boxes provide for branch and service connections.

The Adawara (Japan) Electric Railway proposes to expend about \$2,000,000 on the extension of its Kozu-Yumato line to Gotemba.

**EXHIBITS AT THE ATLANTIC CITY CONVENTIONS**

The exhibits of railway equipment and supplies made this year at the Atlantic City conventions of the Master Mechanics and Master Car Builders' Association exceeded in number and space occupied those of any previous conventions. A total of 71,453 sq. ft. of floor space on Young's Million-Dollar Pier was occupied by the exhibit booths of 228 companies. The booths were all of uniform design and many were elaborately decorated with rugs and flowers. All of the machine tools and most of the other heavy exhibits were grouped on the south side of the pier near the entrance. Among the manufacturers of electric railway supplies who exhibited were the following:

Acme White Lead & Color Works, Detroit, Mich., showed samples of railway paints, enamels, colors and varnishes.

Adams & Westlake Company, Chicago, Ill., had an exhibit of electric, gas and oil car lighting fixtures, basket racks, car hardware, white Ajax metal washstands, signal lamps and lanterns.

American Brake Company, St. Louis, Mo., exhibited its automatic slack adjuster.

American Brake Shoe & Foundry Company, Mahwah, N. J., had a display of samples of locomotive brake shoes, brake heads, coach brake shoes, car brake shoes.

American Car & Foundry Company, New York, N. Y., had a booth reserved for social purposes only.

American Car Screen Company, Pittsburgh, Pa., showed adjustable car ventilators.

American Mason Safety Tread Company, Boston, Mass., exhibited Mason safety treads; Empire carborundum treads; Karbolith composition floors for coaches and buildings.

American Nut & Bolt Fastener Company, Pittsburgh, Pa., displayed a stand showing application of multiple and wood fasteners, and other designs of Bartley fasteners.

American Radiator Company, Chicago, Ill., exhibited steam and hot-water boilers, radiators, tank heaters, hot blast heaters, improved car heaters, packless valves, temperature regulators and automatic air valves.

American Railway Steel Tie Company, Harrisburg, Pa., exhibited a new design of steel tie.

American Steel Foundries, New York, N. Y., exhibited Susemihl side bearings, springs, brake beams, Davis steel wheels, miscellaneous steel castings.

American Vanadium Company, Pittsburgh, Pa., had samples of vanadium alloys; vanadium iron and steel products, such as railway machinery and engineering steels, vanadium steel forgings, vanadium steel castings, vanadium brass, bronze and aluminum.

Anchor Packing Company, Philadelphia, Pa., showed metal and fibrous packings and mechanical rubber goods.

Bird & Company, J. A. & W., Boston, Mass., showed samples of Ripolin enamel, signal joint packing; Rex refrigerator felt; red and black rope car insulating paper; car roofing.

Bowser & Company, Inc., S. F., Ft. Wayne, Ind., displayed an oil storage system complete; long distance, self-measuring pumps; power pumps; automatic registering oil meters; oil storage tanks of all sizes and shapes, with pumps for handling and measuring all kinds of lubricating, paint and other oils, including gasoline, etc., suitable for storehouses, machine and paint shops.

Boyle & Company, Inc., John, New York, N. Y., exhibited bayonne roof and deck cloth, a scientifically treated cotton duck for car roofing; cotton ducks, cotton drills and sheetings for head linings, upholstery, etc.

Brill Company, J. G., Philadelphia, Pa., had on exhibit a Brill No. 27-M. C. B. 3 truck; woven cane, canvas lined and unlined, for car seats.

Buck Boring Bar Company exhibited the Buck boring bar.

Buckeye Steel Casting Company, Columbus, Ohio, showed couplers, truck and body bolsters, truck frames, journal boxes.

Buffalo Brake Beam Company, New York, N. Y., had samples of brake beams for all classes of cars, locomotives and electric equipment.

Burrughs Adding Machine Company, Detroit, Mich., ex-

hibited the Burroughs adding machine, electrically driven, for railroad accounting.

Carborundum Company, Niagara Falls, N. Y., displayed samples of Carborundum and Aloxit wheels, sharpening stones, rubbing bricks, Carborundum paper and cloth, garnet paper, Carborundum valve grinding compound.

Carnegie Steel Company, Pittsburgh, Pa., exhibited a section of standard railway track laid with 100-lb. rails and Duquesne joints on steel cross ties, with various type fittings; a section of portable track for industrial railways laid on steel cross ties; various samples of rails, cross ties and Duquesne joints; 34-in. Schoen steel wheel for street railways; 34-in. Schoen steel wheel for interurban railways.

Central Electric Company, Chicago, Ill., showed samples of Okonite wires, cables, cords and tapes, car fans, wall, oscillating and exhaust; car lamps, tungsten, tantalum and Gem; shallow flush switches.

Chase & Company, L. C., Boston, Mass., had a display of Goat brand car plushes in plain and frieze effects, Angora mohair showing process of manufacture; Chase's car seat duck.

Chicago Pneumatic Tool Company, Chicago, Ill., had an exhibit of air compressors and special drills.

Chicago Varnish Company, Chicago, Ill., had several car sides, showing "Ce Ve Process" of painting cars.

Chisholm & Moore Manufacturing Company, The, Cleveland, Ohio, exhibited a complete line of cyclone high-speed chain hoists from 1/2 ton to 30 tons inclusive; Matchless I-beam trolleys.

Clow, James B. & Sons, Chicago, Ill., had an exhibit of automatic closets, drinking fountains, lavatories, Buena radiators.

Coc Brass Manufacturing Company, The, Ansonia, Conn., showed samples of extruded metals in great variety of intricate designs especially adapted to railway car construction and ornamentation; also for use in electrical and other apparatus.

Coe Manufacturing Company, W. H., Providence, R. I., exhibited Coe's ribbon gold leaf and Coe's gilding wheels.

Commonwealth Steel Company, St. Louis, Mo., distributed catalogs describing its cast-steel products.

Consolidated Car Heating Company, Albany, N. Y., showed electric heaters and switches for 600 and 1200-volt operation, automatic safety train signal, Consolidated buzzer system, electric boilers.

Cooper Hewitt Electric Company, New York, N. Y., had on exhibition mercury vapor lamps and rectifier for operating same.

Crane Company, Chicago, Ill., displayed Cranetilt steam traps, motor operated valve, Crane blow-off valve, brass valves of all kinds, malleable and cast-iron fittings.

Crosby Steam Gage & Valve Company, Boston, Mass., exhibited safety valves, gages and blow-off valves, testing instruments.

Curtain Supply Company, The, Chicago, Ill., showed sample curtain fixtures and a full line of curtain materials.

Davis-Bournonville Company, New York, N. Y., exhibited samples of oxy-acetylene welds.

D. P. Company, New York, displayed dust guards.

Dearborn Drug & Chemical Works, Chicago, Ill., exhibited water treating preparations for the prevention of scale, leaking, foaming and corrosion in boilers.

Dixon Crucible Company, Joseph, Jersey City, N. J., displayed samples of graphite products especially adapted for railroad work, including Dixon pure flax lubricating graphite, graphite greases, silica-graphite paint, crucibles, belt dressings and pencils.

Dressel Railway Lamp Works, The, New York, N. Y., showed headlights, train tail lamps, coach lamps, switch lamps, semaphore lamps, station lamps, gage lamps.

Duff Manufacturing Company, The, Pittsburgh, Pa., had an exhibit of Barrett track jacks, automatic lowering jacks, geared ratchet jacks, Duff ball-bearing screw jacks, Duff-Bethlehem hydraulic jacks, independent pump hydraulic jacks.

Duntley Manufacturing Company, Chicago, Ill., showed Dunt-

ley pneumatic enroute car cleaner, Duntley air purifier for passenger coaches.

Durbin Automatic Safety Car Coupler Company, The, Fort Scott, Kan., exhibited an automatic safety car coupler or drawbar.

Edwards Company, The O. M., Syracuse, N. Y., exhibited car window fixtures, sash balances, shade rollers, metal trap doors, sheet metal specialties and railroad padlocks.

Electric Hose & Rubber Company, Wilmington, Del., had samples of braided fabric rubber hose.

Electric Storage Battery Company, The, Philadelphia, Pa., showed storage batteries for car lighting, signal, vehicle propulsion and automobile ignition service.

Fairbanks, Morse & Company, Chicago, Ill., displayed gasoline section and inspection motor cars, telescopic standpipe and sectionalized valve, chain hoists, tools, rail drills, line of geared ratchet and cone bearing screw jacks and hydraulic jacks.

Flower Waste & Packing Company, New York, N. Y., showed samples of resilient journal packing.

Ford & Johnson Company, The, Michigan City, Ind., exhibited car seats of various types, cane webbing used in car seats, reed and fiber rush chairs for railroad service.

Forsyth Brothers Company, Chicago, Ill., had an exhibit of press-steel doors, Brinkerhoff side construction for passenger car, pressed-steel moldings and sash.

Franklin Manufacturing Company, Franklin, Pa., displayed 85 per cent magnesia boiler lagging and pipe coverings, asbestos pipe coverings and asbestos supplies, "Springtite" corrugated copper gaskets, composition metallic gaskets, "Chapman" circular glass cutter, Perfection journal box packing, wool and cotton waste.

Galena Signal Oil Company, Franklin, Pa., had a large reception booth.

Garlock Packing Company, The, Palmyra, N. Y., showed samples of throttle packing, air pump packing, new process sheet packing, new process gaskets, metal packing, hydraulic packing and steam hammer packing.

General Electric Company, Schenectady, N. Y., exhibited a portable air compressor (100 lb. pressure) with pressure regulator, 12-amp G. I. flaming arc lamps, 6 1/2-amp multiple magnetite arc lamps, 6 1/2-amp intensified arc lamps, "Mazda" lamps, Curtis turbo-generator for car lighting, cabinet containing an exhibit of train lighting lamps, mercury arc rectifier, 25-kw hardening furnace, emery grinder, motor generator set with starting and field rheostats, soldering irons, glue pot, solder melting pot, oil tempering bath, GE-212 railway motor, motor-driven machine tools, switchboard.

General Railway Supply Company, Chicago, Ill., showed the stub end of a vestibuled passenger car and samples of metallic (steel) sheathing; National steel trap doors; Flexolite composition flooring; Imperial car-window screens; Perfection sash balances; Resisto insulation; roller deck sash ratchets; National standard roofing; National vestibule curtain catches.

Gilbert & Barker Manufacturing Company, New York, N. Y., exhibited self-measuring pumps; oil storage tanks; oil storage systems for oil houses, storerooms, etc.; siphons; transfer pumps; storage indicators and lubricating oil tanks.

Gold Car Heating & Lighting Company, New York, N. Y., had a display of car heating and lighting apparatus and car ventilators.

Goldschmidt Thermit Company, New York, N. Y., exhibited materials required for making welds on broken wrought-iron and steel sections; samples of welds made on steel bars, trolley rails; standard and extra heavy pipes, etc.; metals free from carbon produced by the Thermit process; cans of heating thermit for making semi-steel; cans of titanium thermit for purifying molten iron.

Green, Tweed & Company, New York, N. Y., showed samples of Palmetto packing and reversible ratchet wrenches.

Grip Nut Company, Atlantic City, N. J., exhibited Grip nuts of all sizes.

Hale & Kilburn Manufacturing Company, The, Philadelphia, Pa., exhibited seats for all standard types of railway cars; all-



steel seats for steel cars; steel interior finish; steel doors; steel sash.

Harrington, Son & Company, Inc., Edwin, Philadelphia, Pa., showed Peerless hoists; screw hoists; differential hoists; plain and geared travelers to run on lower flange of I-beam.

Heywood Brothers & Wakefield Company, Wakefield, Mass., had a display of a complete line of Universal car seats, showing pressed-steel features.

Independent Pneumatic Tool Company, Chicago, Ill., exhibited Thor piston air drills; pneumatic riveting, chipping, caulking and flue-beading hammers.

International Correspondence Schools (Railway Department), Scranton, Pa., had a booth attended by students from various Southern railway apprentice instruction classes exhibiting specimens of the work of the students in mathematics and mechanical drawing.

Jenkins Brothers, New York, N. Y., displayed samples of brass globe valves, regular and extra heavy; automatic Graber gages; radiator valves and air valves; iron-body globes, gates, etc.; safety car disks; "96" packing; pump valves and Jenkins disks.

Johns-Manville Company, H. W., New York, N. Y., exhibited high and low-pressure sheet packings; high and low-pressure pipe coverings; insulating cements; steel passenger car insulation; asbestos roofings, car and engine cab roofings; asbestos lumber; electrical fiber conduit; underground pipe covering; J-M sanitor seats and tanks; vulcabeston packing; vitribestos pipe coverings; bridge deckings; J-M asbestos sill covering; train pipe coverings; furnace cements.

Joliet Railway Supply Company, Joliet, Ill., exhibited brake beams; Perry passenger and freight roller side bearings.

Joyce-Cridland Company, The, Dayton, Ohio, showed several types of railroad jacks.

Kerite Insulated Wire & Cable Company, New York, N. Y., displayed samples of Kerite insulated wires and cables; Kerite tape.

Keystone Lantern Company, Philadelphia, Pa., exhibited the Casey standard railway hand-lantern.

Kilbourne & Jacobs Manufacturing Company, Columbus, Ohio, had a track exhibit of an automatic M. C. B. air dump construction car.

King Automatic Car Platform Company, Inc., Washington, D. C., showed models of sliding platform extensions for passenger coaches.

Lackawanna Steel Company, New York, N. Y., exhibited rails; rail joints; tie plates; beams; channels; angles; steel plate; steel forgings; corrugated and deformed bars; twisted squares; the Abbott base plate; sheet piling.

Lehon Company, The, Chicago, Ill., showed Roofrite roofing for coaches, refrigerator cars, locomotives and railroad shops; also dry-art insulating paper.

Linde Air Products Company, Buffalo, N. Y., had an exhibit of oxy-acetylene welding and oxy-coal gas cutting apparatus and wrecking equipment.

Love Brake Shoe Company, Chicago, Ill., displayed Armbrust brake shoes for driver brakes, passenger, freight and coach brakes; also motor brake and traction brake shoes.

Lunkenheimer Company, Cincinnati, Ohio., exhibited engineering specialties, including brass and iron gate, globe, blow-off and swing check valves.

Lupton Sons Company, David, Philadelphia, Pa., exhibited Lupton rolled-steel skylight; Lupton steel sash; Pond continuous sash and Pond operating device for pivoted sash.

Macleod & Company, Walter, Cincinnati, Ohio, showed lights for wrecking outfits and construction work; portable oil burners; sand-blast machines; oil furnaces; tire heaters; water-softening apparatus.

McConway & Torley Company, The, Pittsburgh, Pa., exhibited freight couplers; Pitt passenger coupler; a new swivel-head coupler with McConway centering device as applied to new steel passenger coaches of the Pennsylvania Railroad; Buhoup steel truck side frame; Buhoup three-stem coupler, and the McConway steel wheel.

McCord & Company, Chicago, Ill., showed several types of journal boxes; National equalizing wedge; McCord draft gear; and McCord spring dampener; McKim gasket. Models of Universal windows for wood and steel cars; Universal weather-stripping; gravity wedging sash locks; Universal wedging sash locks; Universal extension sash locks; one special design metal sash; Universal deck sash ratchets.

McGraw Publishing Company, New York, N. Y., distributed copies of ELECTRIC RAILWAY JOURNAL; *Electrical World*; *Engineering Record*; electric railway directories.

Midvale Steel Company, The, Philadelphia, Pa., exhibited rolled-steel wheels.

Milburn Company, The Alexander, Baltimore, Md., had on exhibit a railroad construction light, 5000 cp; lights for wreckers, cranes, steam shovels, etc.; fire lights; miners' lights.

Modoc Soap Company, Philadelphia, Pa., showed samples of Perfectol car cleaner.

Nachod Signal Company, Philadelphia, Pa., exhibited Nachod automatic block-signal, type C, connected up with miniature track to show operation; high-speed trolley contact switch.

National Lock Washer Company, The, Newark, N. J., exhibited sash locks; curtain fixtures, sash balances; spring parallel sash guides and lock washers; chain attaching device for sash balances.

Newhall Engineering Company, George M., Philadelphia, Pa., showed photographs of wrecking and locomotive cranes; pillar and transfer cranes; pile drivers; transfer tables; rail saws. etc., as manufactured by the Industrial Works, Bay City, Mich.

Nickelized Casting Company, Pittsburgh, Pa., exhibited nickelized chilled car wheels cast from open-hearth furnace and double annealed.

Niles-Bement-Pond Company, New York, N. Y., exhibited several large machine tools.

Norton Company, Worcester, Mass., had a large showcase containing an assortment of aluminum grinding wheels and India oil stones; alundum in grains.

Norton, Incorporated, A. O., Boston, Mass., exhibited high-speed ball-bearing lifting jacks.

Okonite Company, The, New York, N. Y., showed specimens of all kinds of cables and wires for electric light, power, transmission, telephone, telegraph, etc.; also specimens of crude fine Para rubber.

Osburn Company, B. M., Chicago, Ill., showed samples of the new "Boss" nut lock.

Pantasote Company, New York, N. Y., displayed Pantasote curtains and materials; Pantasote upholstery fabrics; Agasote millboard for headlinings, interior trim, etc.

Pay-Within Car Company, Philadelphia, Pa., had a working exhibit of a center side door for the Interborough subway cars of New York.

Pennsylvania Steel Company, The, Steelton, Pa., displayed switch stands; models of frogs and switches; pictures of material made by the frog and switch and bridge and construction departments; samples of rivet steel; samples of "never slip" switch plate.

Pressed Steel Car Company, Pittsburgh, Pa., displayed photographs of its various products.

Railways Materials Company, The, Chicago, Ill., had a reception booth.

Rapp Company, John W., New York, N. Y., exhibited steel car doors and moldings.

Restein Company, Clement, Philadelphia, Pa., showed samples of fibrous packing for steam, water, ammonia, hydraulics, oil, gases, acids, etc.

Revolute Machine Company, New York, N. Y., exhibited a continuous electric blue-printing machine.

Rockwell Furnace Company, New York, N. Y., exhibited furnaces for railroad shops.

Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., exhibited cast-steel bolsters and truck side frames.

Scully Steel & Iron Company, Chicago, Ill., exhibited blow-off valves; journal-box jacks; boiler tools; expanders, etc.

Sherwin-Williams Company, Cleveland, Ohio, displayed panels showing Sherwin-Williams passenger coach painting systems.

Spencer Turbine Cleaner Company, Hartford, Conn., exhibited a 5-hp, vertical, direct-driven turbine cleaner; new pressed-steel vacuum cleaning tools.

Sprague Electric Company, New York, N. Y., displayed flexible steel-armored air-brake hose; flexible steel-armored signal hose; flexible steel-armored steam, pneumatic, hydraulic and water hose and fittings for shop use; electric conduit supplies; electric fans.

Standard Car Truck Company, Chicago, Ill., displayed Barber roller-bearing center plates.

Standard Coupler Company, New York, N. Y., exhibited steel platforms; friction draft gears and Standard slack adjusters.

Standard Steel Car Company, Pittsburgh, Pa., had a reception booth.

Standard Steel Works Company, Philadelphia, Pa., had a reception booth.

Strong, Carlisle & Hammond Company, Cleveland, Ohio, exhibited Randall graphite sheet lubricator; Strong's steam specialties, including steam and vacuum traps, pressure-reducing valves, steam separators, and the Handy wrench.

Symington Company, The T. H., Baltimore, Md., had a large exhibit of journal boxes; flexible dust guards and roller side bearings.

Templeton, Kenly & Company, Ltd., Chicago, Ill., exhibited Simplex car and track jacks.

Tindel-Morris Company, Eddystone, Pa., Paragon cold saw machine; standard and structural type "Tindel" inserted tooth cold saws; saw grinder.

Titan Steel Casting Company, Newark, N. J., showed samples of body and truck bolsters; manganese steel gears and pinions.

Underwood & Company, H. B., Philadelphia, Pa., exhibited several portable machine tools.

Union Spring & Manufacturing Company, Pittsburgh, Pa., had a display of elliptic and coil springs; pressed-steel spring plates and journal box lids; all-steel Kensington journal boxes; steel castings.

U. S. Metal & Manufacturing Company, New York, N. Y., exhibited diamond tapered steel pole; Owen-Cochran pressed-steel journal box; Barol wood preservative; St. Louis surfacer paint panels; Columbia lock nuts.

Vanadium Metals Company, Pittsburgh, Pa., showed samples of vanadium metals, comprising vanadium bronze shown in castings of bells, brasses, cold-drawn rods and sheets; Vanadium non-corrosive silver metal shown in ornamental fittings; Vanadium anti-friction metal.

Van Dorn Company, W. T., Chicago, had a very interesting exhibit at the Reading Terminal of one of the Van Dorn solid piece steel ends for freight cars. The end was one recently ordered and purchased by the Southern Pacific Railway Company and was exhibited at Atlantic City with the permission of that company.

Von Kokeritz & Company, R. G., New York, N. Y., exhibited durable high-pressure sheet packing and gaskets; Heather high-pressure piston packing; Hydra hydraulic packing; Cosmos paint; Glardon clips.

Walker & Bennett Manufacturing Company, New York, N. Y., exhibited simplified car seats.

Watson-Stillman Company, The, New York, N. Y., showed shop jacks; wrecking jack; journal-box jack; outside and inside pump and independent pump type jacks; telescopic motor lift jack; portable hydraulic beam punch; hydraulic T-rail bender; 125-ton crankpin press; 200-ton motor-driven hydro-pneumatic wheel press; 30-ton portable axle bearing press; portable shaft straightener.

West Disinfecting Company, Inc., New York, N. Y., displayed samples of soap dispensers; disinfectants; disinfecting appliances for toilet rooms; fumigating apparatus.

Westinghouse Air Brake Company, Pittsburgh, Pa., had in operation a seven-car passenger train rack, equipped with the P. C. equipment; in connection with this rack is an electric sign

showing braking power and deceleration curves for the purpose of comparing the P. C. equipment with the high-speed equipment in the stopping of modern passenger trains; empty and load brake equipment as applied to cars.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., showed motors, controllers, transformers, switchboards and arc lamps. It also exhibited one of the new side-rod electric locomotives built for the New York terminal of the Pennsylvania Railroad. This locomotive was shown on the track on Mississippi Avenue.

Westinghouse Lamp Company, Bloomfield, N. J., exhibited railway incandescent lamps; tungsten and carbon filaments.

Westinghouse Machine Company, Pittsburgh, Pa., exhibited the Le Blanc condenser and vacuum pump, turbine-driven.

Wheel Truing Brake Shoe Company, Detroit, Mich., displayed samples of abrasive brake shoes.

Whipple Supply Company, New York, N. Y., had a reception booth.

Williams Company, J. H., Brooklyn, N. Y., exhibited samples of drop forgings.

Wilson Remover Company, New York, N. Y., exhibited a varnish remover and instruments.

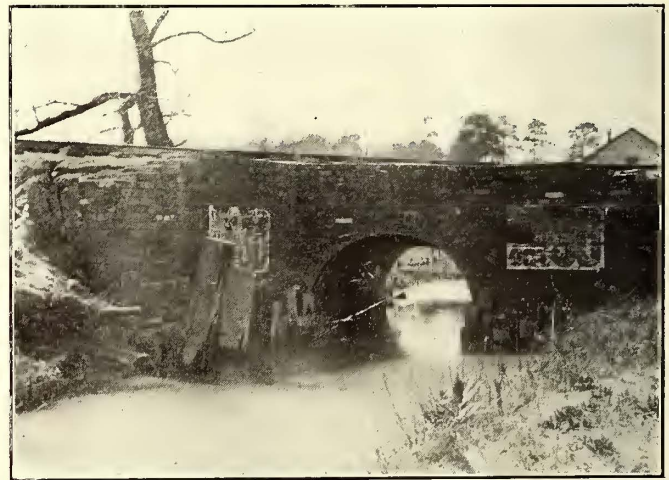
Wood, Guilford S., Chicago, Ill., had an exhibit of Wood's flexible nipple end hose protector; monogram bracket and samples of rubber tiling.

Wright Wrench Manufacturing Company, The, Canton, Ohio, showed Wright monkey and pipe wrenches.

Yale & Towne Manufacturing Company, New York, N. Y., exhibited electric hoists; triplex chain blocks; I-beam trolleys; electric triplex hoists; padlocks; car-door checks; night latches; builders' hardware.

### A BOILER PLATE CULVERT

The possibility of making practical use in one department of material discarded by another is illustrated in one instance by the Augusta-Aiken Railway. Some time ago it was necessary



Culvert Made of Old Boiler Shells

to install a 24-ft. culvert over a creek near Langley, along the interurban line to Aiken. The material used for this purpose consisted of the shells of two old Babcock & Wilcox boilers each 6 ft. in diameter and 12 ft. long. Concrete was placed over the intersection of the two shells while the rest of the structure was built up of brick as shown in the accompanying cut.

As a means for supplying steam with which to soften wood for bending during the summer, when it is not economical to operate the shop boiler plant, the shop forces of the Illinois Traction System have installed just outside the wood mill at the Decatur shops a Peter Smith No. 2-B heater. Connected above this heater is a steam drum with a water gage and leading from the drum are connections to a steaming box within the shop and a section of pipe placed close outside the shop wall in which long pieces of wood may be steamed.

# News of Electric Railways

## Cleveland Traction Situation

At a meeting of the directors of the Cleveland Railway on June 18, 1910, J. J. Stanley, president of the company, submitted a report which shows that there was a deficit of \$68,298.19 for the quarter ended May 31, 1910, although the monthly reports made according to the Tayler ordinance indicate a surplus of \$70,494.16. The allowance made under the Tayler grant for maintenance and renewal is said to be inadequate. A portion of the track on Superior Avenue has been renewed and the track on Payne Avenue has been rebuilt, and the cost has been incorporated in the expenditures made for the period named. The amount expended for maintenance and renewal was \$409,466.22, while the allowance under the Tayler ordinance was \$250,706.80. The number of car-miles operated was 23,941,101 last year, while in 1907 the number was 25,590,566. No remarks or suggestions were made in the report, and the directors took no action, other than to file it.

Mr. Stanley stated that the expenses for the quarter were about normal. For June, July and August the allowance for maintenance and renewals will be 6 cents a mile, but this will hardly cover the deficit for the quarter. It is probable, however, that the company will go through the second quarter without taking any action on this matter, as it is desired to ascertain the results of operation under the additional allowance. If it is shown that the allowance is insufficient, then the Council must make some provision for the additional necessities. No tracks less than 20 years old have been renewed, this being the average life of track agreed upon during the settlement negotiations.

The statement for the first quarter, prepared according to the Tayler ordinance, follows:

Gross earnings from operation.....	\$1,449,661.22
Maintenance .....	\$250,706.80
Operating expenses.....	720,782.06
Total operating expenses, 15.50 cents per car-mile.....	971,488.86
Net earnings from operation.....	\$478,172.36
Miscellaneous income.....	6,510.75
Gross income, less operating expenses.....	\$484,683.11
Taxes .....	80,328.52
Income, less operating expenses and taxes.....	\$404,354.59
Interest .....	333,860.43
Surplus .....	\$70,494.16

The statement prepared by Mr. Stanley for the directors follows:

Gross earnings from operation.....	\$1,449,661.22
Maintenance (actual).....	\$409,466.22
Operating expenses (actual).....	700,814.99
Total operating expenses, 17.71 cents per car-mile.....	1,110,281.21
Net earnings from operation.....	\$339,380.01
Miscellaneous income.....	6,510.75
Gross income, less operating expenses.....	\$345,890.76
Taxes .....	80,328.52
Income, less operating expenses and taxes.....	\$265,562.24
Interest .....	333,860.43
Deficit .....	\$68,298.19

The report for May, prepared in accordance with the plan in the Tayler grant, shows a surplus of \$26,355.29. It is believed that a readjustment of the allowance for maintenance and renewals and the rate of fare is inevitable.

The board of arbitration which recently heard arguments on the demand of the motormen and conductors for an increase of wages to 32 cents an hour flat, has reported an agreement on 27 cents for the first year and 30 cents thereafter. The present scale provides for a range of wages from 23 cents to 26 cents per hour. The decision of the board says in part:

"The arbitrators have come to an agreement that the rate of wages of motormen and conductors for the first year of service should be 27 cents an hour, and that the rate for the second year and thereafter should be 30 cents per hour.

"Further, that the scale of wages herein provided shall be in force and take effect from and after June 15, 1910."

Elroy M. Avery, who was a member of the board of arbitration, said that the arbitrators did not take into consideration the effect that the increase of wages would have on the fare. Their work was based upon the contract made by the Cleveland Electric Railway in 1906, and was done wholly with a view to giving the men what the arbitrators considered fair. The increased expense will have to be arranged by the company and the city. Mr. Stanley estimates that the new wage scale will increase operating expenses \$216,000 a year. He is not opposed to the advance except upon the principle that it will destroy the possibility of operating at the fare that has been fixed by the City Council. Both the rate of fare and the allowance for maintenance and renewals are subjects of arbitration in case the company and the City Council cannot agree upon terms.

## Transit Affairs in New York

Justice Brady, of the Supreme Court, has dismissed the charge of criminal contempt of court brought by him against William R. Willcox, chairman of the Public Service Commission, for an alleged statement by the latter which Justice Brady took as a reflection on the court. The version of Mr. Willcox's statement to which Justice Brady took exception was printed in a newspaper, whereas the full statement of the Public Service Commissioner, as submitted in writing to the court, differed materially from the newspaper article. The proceeding brought by Justice Brady was the outgrowth of a suit by the Public Service Commission against Frederick W. Whitridge, as receiver of the Union Railway, for \$750,000 for alleged failure to equip cars with wheel guards. The case came before Justice Brady for trial. At the outset he explained that he was a stockholder in the Third Avenue Railroad, of which Mr. Whitridge is also receiver, at the same time expressing some hesitation about presiding over the trial of the case. Counsel for plaintiff and defendant agreed to try the case before Justice Brady. A few days later, on the motion of counsel for Mr. Whitridge, the justice dismissed the suit on a technicality.

The Public Service Commission, by a majority vote, has approved an opinion prepared by Commissioner McCarroll relating to the route of the Fourth Avenue subway, Brooklyn. The commission recently adopted a resolution asking the Board of Estimate to authorize the widening of Ashland Place, Brooklyn, by 10 feet, so that the subway would be shifted 10 feet west of the present plan, and so avoid possible danger to the Academy of Music. At that time Commissioners Bassett and Maltbie submitted a memorandum, in which they advocated the abandonment of the present planned line north of Atlantic Avenue and proposed that it be deflected to the westward through Atlantic Avenue and the tunnel under the East River so as to connect at the Battery with the Broadway-Lexington Avenue subway. In the opinion made public on June 6, 1910, Commissioner McCarroll advocates the present route and he is supported by Chairman Willcox and Commissioner Eustis. The final conclusion is that, considering the great delay which is likely to be caused by attempting to secure authorization for a new route it would be a great mistake to abandon any part of the Fourth Avenue subway, already under construction, even though the cost would be greater than estimated.

## Quarterly Meeting of the Central Electric Accounting Conference

The regular quarterly meeting of the Central Electric Accounting Conference will be held on board the White Star Line steamer *Greyhound* leaving Toledo, Ohio, for Detroit on June 25, 1910, at 8:30 a. m. The following program will be carried out in the smoking room on the hurricane deck of the steamer at 9 o'clock:

Business session.

Remarks by H. S. Swift, president of the American Street & Interurban Railway Accountants' Association.

Paper, "Park Accounting," by E. L. Schmock, assistant secretary-treasurer of the Cleveland, Painesville & Eastern Railroad.

Paper, "Comparative Statements," by W. B. Wright, auditor of the Indianapolis & Cincinnati Traction Company.

Discussion, "Interline Baggage," led by Walter Shroyer, auditor of the Indiana Union Traction Company. Adjournment.

The *Greyhound* will leave Toledo at 8:30 a. m. on June 25, and arrive at Detroit at 1 p. m. The fare is 75 cents one way or \$1.25 round trip, good returning any time during the season. The return may be made the same day if desired, the boat leaving Detroit at 4:30 p. m. and arriving at Toledo at 8:30 p. m. It has been suggested that members of the conference have their wives accompany them to the meeting. Particular attention is called to the fact that H. S. Swift is to address the conference.

#### Receiver Whitridge Replies to a Criticism

Frederick W. Whitridge, receiver of the Third Avenue Railroad, New York, N. Y., has addressed the following letter to James N. Wallace, president of the Central Trust Company, New York, chairman of the committee of bondholders of the company, in reply to a letter which Mr. Wallace received from a bondholder who objected to Mr. Whitridge's attitude toward the Public Service Commission of the First District of New York:

"Referring to Mr. —'s letter to you of the first instant, protesting against the animosity being engendered between the Public Service Commission and myself as receiver of the Third Avenue Railroad system, I beg to say that my own feeling about the members of the Public Service Commission is entirely impersonal, and that I do not consider that I am responsible for any animosity that they may cherish toward me or anybody else.

"There are about 2000 printed pages of correspondence between the commission and myself, and with the exception of two short letters, there is not a line in the whole 2000 pages from me except by way of reply to some order or communication from the commission.

"The commission has brought nine suits against me, each of which in my judgment as a lawyer was without reasonable foundation. All of them have been dismissed or decided in my favor, and the commission now appears to have entirely lost its temper over its defeat and has begun to be merely personally abusive.

"I think Mr. — should consider these matters and I have only to say that on the slightest intimation from you or from any considerable number of bondholders that my services are imperiling their property I shall be only too happy to retire.

"And having said that, Mr. — will pardon me for saying that his letter seems to me to be an excellent instance of that pusillanimity of the American people, and of capitalists in particular, which causes them to bow before all public officials and to be willing to submit to almost anything from them. This unwillingness on the part of the people—and particularly of corporations—to stand up for their rights has for years seemed to be one of the causes why this country has to submit to so much bad government.

"In this case the commission seems to share the widespread notion, engendered by politicians and newspapers, that corporations and everybody connected with them are neither law-abiding, truthful nor honest. That, in some cases, may be true. It is not true of me. And I find the state of mind of the Public Service Commission toward most of the things with which they have to deal in this district to be stupid and insolent.

"I long ago made up my mind that, so far as I was concerned, it was my duty as a citizen to uphold my own interest, and anybody else's interest intrusted to me, against any sort of governmental aggression or incompetency, and that it was my duty to treat every official as his character required that he should be treated—and not otherwise. That course I intend to continue to pursue. I think in the long run it will be found beneficial to the interests intrusted to me. But if anybody thinks otherwise, I shall, as I say, be only too happy to retire from the position I now hold."

**Company Asked to Outline Plan of Settlement in Detroit.**—Mayor Breitmeyer, of Detroit, has asked J. C. Hutchins, president of the Detroit (Mich.) United Railway, to outline in detail a plan along the line of his suggestion of a settlement of the street car question, contained in the letter of Mr. Hutchins to the Mayor, mention of which was made in the *ELECTRIC RAILWAY JOURNAL* on June 18, 1910.

**Strike in Yonkers.**—The employees of the Yonkers (N. Y.) Railroad went on strike on June 15, 1910. They have demanded a flat rate of pay of 30 cents an hour instead of the present sliding scale of wages of from 21 cents to 25 cents an hour. Leslie Sutherland, who is operating the property as receiver, requested the men to return to work pending an adjustment of the wage question. This the men declined to do, and Mr. Sutherland has stated that the cars will be permitted to remain in the car house until the men return to work.

**Meeting of Wisconsin Electrical Association.**—The executive committee of the Wisconsin Electrical Association met at the office of Clement C. Smith, president of the association, in Milwaukee, Wis., on June 15, 1910, and preliminary arrangements were made to hold a midsummer meeting of the association at the Oshkosh Yacht Club, on June 28 and 29. J. P. Pulliam, general manager of the Wisconsin Electric Railway, Oshkosh, Wis., is chairman of the entertainment committee, and will make hotel reservations. The program will be devoted largely to a discussion of rate problems. A luncheon and outing at Electric Park are planned.

**Outing of the New England Street Railway Club.**—The July outing of the New England Street Railway Club will be a ladies' day and will be held on July 1, 1910, at Narragansett Bay, R. I. A special train will leave Boston at 9:30 a. m., and arrive at Providence at 10:30 a. m., and at 10:50 a. m. the steamer *Warwick*, of the Providence & Fall River Steamboat Company, will leave Providence for Narragansett Bay. The *Warwick* will dock at Tiverton, R. I., at 1 p. m., and at 1:20 p. m. a Rhode Island clambake will be served at Island Park. At 2:30 p. m. the *Warwick* will proceed down Sakonett River, around Newport, and return through Narragansett Bay to Providence, at 7 p. m. A special train for Boston will leave Providence at 7:35 p. m. and arrive at Boston at 8:35 p. m. Tickets for the day's entertainment, including transportation from Boston, dinner, etc., are \$3 each. Tickets to members who join the party at Providence and do not use the transportation ticket between Providence and Boston are \$1.75.

**Trains to the New York Convention.**—The Street Railway Association of the State of New York mailed with the program of the convention of the association at Cooperstown, N. Y., on June 28 and 29, 1910, published in the *ELECTRIC RAILWAY JOURNAL* of June 18, 1910, a time-table of trains between New York and Cooperstown and between Buffalo and Cooperstown over the New York Central & Hudson River Railroad and the Otsego & Herkimer Railroad, and between Albany and Cooperstown over the Delaware & Hudson Railroad. In traveling over the New York Central & Hudson River Railroad change has to be made to the Otsego & Herkimer Railroad at Herkimer. Over the New York Central & Hudson River Railroad and the Otsego & Herkimer Railroad trains leave New York daily at 10:30 a. m. and 12:03 a. m., and arrive at Cooperstown at 5:30 p. m. and 10:30 a. m., respectively. Returning trains leave Cooperstown at 7:19 a. m., 11:19 a. m., 6:19 p. m. and 8:48 p. m., and arrive in New York at 3:45 p. m., 8:33 p. m., 5:05 a. m. and 5:05 a. m., respectively. Over the New York Central & Hudson River Railroad and the Otsego & Herkimer Railroad trains leave Buffalo at 1:45 a. m., 4:10 a. m., 7:55 a. m. and 10:00 a. m., and arrive at Cooperstown at 10:30 a. m., 11:54 a. m., 3:45 p. m. and 5:54 p. m., respectively. Returning trains leave Cooperstown at 6:19 a. m., 7:19 a. m., 12:19 p. m. and 1:19 p. m., and arrive at Buffalo at 1:20 p. m., 4:20 p. m., 8:05 p. m. and 8:45 p. m., respectively. Over the Delaware & Hudson Railroad, trains leave Albany at 7:30 a. m., 10:00 a. m., 3:20 p. m. and 4:30 p. m., and arrive at Cooperstown at 10:55 a. m., 1:20 p. m., 7:30 p. m. and 7:30 p. m., respectively. Returning trains leave Cooperstown at 6:00 a. m., 9:10 a. m., 11:15 a. m., 3:25 p. m. and 5:45 p. m., and arrive at Albany at 9:20 a. m., 12:15 p. m., 2:00 p. m., 6:35 p. m. and 10:50 p. m., respectively.

# Financial and Corporate

## New York Stock and Money Market

June 21, 1910.

Wall Street has rarely had duller weeks than the one just passed. There was practically no outside trading and the dealing among the professionals was very limited. In spite of this stagnation there was an extremely healthy tone to the market and prices were remarkably well sustained. The passage of the railroad bill has relieved the uncertainty.

The money market continues to be easy with the banks abundantly supplied with funds. Quotations to-day were: Call, 2½ to 3 per cent; 90 days, 3½ per cent.

### Other Markets

After having displayed some strength earlier in the week and advancing to 21½, Rapid Transit, in the Philadelphia market, to-day took a down turn and dropped to 19½. Although the market was otherwise lifeless, there was considerable desire to sell this issue and about 4000 shares changed hands in the day's trading. Other tractions are quoted at former figures.

In the Chicago market there has been some activity in Elevated shares owing to the prospect that the merger plans will be carried through. Both Northwestern and Metropolitan have been active, and the preferred issue of the former has advanced 10 points. Metropolitan preferred has also recorded good advances.

There has been very little activity in traction securities in the Boston market and quotations are practically unchanged.

In Baltimore there has been limited trading in both the bonds and shares of the United Railway Company, but prices have only fluctuated fractionally.

Quotations of various traction securities as compared with last week follow:

	June 14	June 21,
American Railway Company.....	a44¾	a43¾
Aurora, Elgin & Chicago Railroad (common).....	a60	*60
Aurora, Elgin & Chicago Railroad (preferred).....	a93	*93
Boston & Suburban Electric Companies.....	a14	a14
Boston & Suburban Electric Companies.....	a14	a14
Boston & Suburban Electric Companies (preferred).....	a74¾	a74
Boston & Worcester Electric Companies (common).....	a10½	a10½
Boston & Worcester Electric Companies (preferred).....	a41	a41
Brooklyn Rapid Transit Company.....	77½	79
Brooklyn Rap. Transit Company, 1st pref. conv. 4s.....	83¾	83¾
Capital Traction Company, Washington.....	a130	a129½
Chicago City Railway.....	a195	a195
Chicago & Oak Park Elevated Railroad (common).....	*¾	*¾
Chicago & Oak Park Elevated Railroad (preferred).....	*7½	*7½
Chicago Railways, ptcptg., ctf. 1.....	a80	a75
Chicago Railways, ptcptg., ctf., 2.....	a18½	a19
Chicago Railways, ptcptg., ctf., 3.....	a11	a11
Chicago Railways, ptcptg., ctf. 4s.....	a6¾	a6½
Cleveland Railways.....	*91½	*91½
Consolidated Traction of New Jersey.....	a76	a76
Consolidated Traction of N. J. 5 per cent bonds.....	a103½	a103
Detroit United Railway.....	*50½	*50½
General Electric Company.....	a146½	a147
Georgia Railway & Electric Company (common).....	a107½	a108½
Georgia Railway & Electric Company (preferred).....	*88	a87
Interborough-Metropolitan Company (common).....	18½	19¼
Interborough-Metropolitan Company (preferred).....	52¼	51½
Interborough-Metropolitan Company (4½s).....	79	79¾
Kansas City Railway & Light Company (common).....	a25½	a25
Kansas City Railway & Light Company (preferred).....	a79	a72
Manhattan Railway.....	a136	a130½
Massachusetts Electric Companies (common).....	a16¾	a16
Massachusetts Electric Companies (preferred).....	a83	a81
Metropolitan West Side, Chicago (common).....	a21	*24½
Metropolitan West Side, Chicago (preferred).....	a62¾	a71
Metropolitan Street Railway.....	*15	*15
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	69½	69
Northwestern Elevated Railroad (common).....	a18	a22
Northwestern Elevated Railroad (preferred).....	a57	66
Philadelphia Company, Pittsburg (common).....	a48½	a48½
Philadelphia Company, Pittsburg (preferred).....	a43½	a43½
Philadelphia Rapid Transit Company.....	a19½	a20
Philadelphia Traction Company.....	*85¼	a84½
Public Service Corporation, 5 per cent col. notes.....	*96	*96
Public Service Corporation, ctf.....	a101	a101
Seattle Electric Company (common).....	a110½	*110½
Seattle Electric Company (preferred).....	a101	*101
South Side Elevated Railroad (Chicago).....	a62	a72
Third Avenue Railroad New York.....	5¾	7½
Toledo Railways & Light Company.....	81¼	9¼
Twin City Rapid Transit, Minneapolis (common).....	109½	110½
Union Traction Company, Philadelphia.....	a46¾	a46¾
United Rys. & Electric Company, Baltimore.....	*13	a13¾
United Rys. Inv. Co. (common).....	*37	*32
United Rys. Inv. Co. (preferred).....	*65	*65
Washington Ry. & Electric Company (common).....	a34	a35
Washington Ry. & Electric Company (preferred).....	a87½	a89
West End Street Railway, Boston (common).....	*88	a88
West End Street Railway, Boston (preferred).....	*102½	a101
Westinghouse Elec. & Mfg. Company.....	61	65¼
Westinghouse Elec. & Mfg. Company (1st pref.).....	a125	*125

a Asked.

\* Last Sale.

## Earnings of the Chicago City Railway for Quarter

For the three months ended April 30, 1910, the Chicago City Railway (including the Southern Street Railway) reports earnings as follows:

	1910.	1909.
Quarter Ended April 30.		
Passenger .....	\$2,266,453	\$2,130,713
Mail .....	6,573	5,947
Advertising .....	26,610	26,667
Interest on bank deposits.....	1,886	1,542
Miscellaneous earnings.....	10,332	9,696
Gross earnings.....	\$2,311,854	\$2,174,565
Expenses.		
Maintenance and renewals.....	* \$351,026	\$287,863
Operation of power plants.....	223,717	228,194
Operation of cars.....	665,316	619,049
General expense and taxes.....	363,159	371,949
Total expenses.....	\$1,603,218	\$1,507,055
Net earnings from operation.....	\$708,636	\$667,510

\* Includes \$31,755.31, being 8 per cent of gross earnings, April 16 to 30, inclusive, set aside in a separate fund as required by Section 16 of the ordinance for renewals and depreciation.

## Report of Interborough Rapid Transit Company for Eleven Months

The Interborough Rapid Transit Company, New York, N. Y., reports earnings as follows for the 11 months ended May 31, 1910:

	1910.	1909.
Gross operating revenue.....	\$26,666,568	\$24,352,626
Operating expenses.....	10,079,379	9,867,885
Net operating revenue.....	\$16,587,189	\$14,490,741
Taxes .....	7,591,196	1,655,381
Income from operation.....	\$14,995,992	\$12,835,359
Non-operating income.....	*379,060	919,518
Gross income.....	\$15,375,052	\$13,754,877
Interest, rentals, etc., including Manhattan Ry. guarantee.....	9,673,219	9,520,937
Net corporate income.....	\$5,701,833	\$4,233,939
Dividends on \$33,000,000, Interborough Rapid Transit Company capital stock for 11 months ended May 31, 1910, at the rate of 9 per cent per annum.....	2,887,500	2,887,500
Surplus .....	\$2,814,333	\$1,346,439
Operating per cent.....	37.80	40.49
Passengers carried.....	517,856,049	472,928,296

\* The decrease in non-operating income is largely due to the policy inaugurated on July 1, 1909, of not crediting to the income of the company the interest upon the advances made for the construction of the New York & Long Island Railroad Tunnel.

**American Cities Railway & Light Company, New York, N. Y.**—The American Cities Railway & Light Company has declared a semi-annual dividend of 1¾ per cent on the common stock of the company, payable on July 1, 1910. This is an increase of ¼ of 1 per cent over the previous disbursement.

**Burlington County Railway, Mt. Holly, N. J.**—The property of the Burlington County Railway was sold under foreclosure in Mt. Holly on June 16, 1910, to A. Merritt Taylor, Philadelphia, Pa., president of the New Jersey & Hudson River Railway & Ferry Company and the Philadelphia & West Chester Traction Company.

**Chicago (Ill.) Railways.**—The committee of security holders of the Chicago Railways and the Chicago Consolidated Traction Company has been reduced from the eight men chosen at the conferences in New York to three men, Andrew Cooke, Charles G. Dawes and John Barton Payne. The plan for the exchange of securities, mentioned in the ELECTRIC RAILWAY JOURNAL of June 18, 1910, page 1075, will, it is stated, be modified. Two bodies of the security holders of the Chicago Consolidated Traction Company are expected to remain outside of the plan for the exchange of the securities.

**City & Elm Grove Railroad, Wheeling, W. Va.**—John A. Howard, president of the City & Elm Grove Railroad, has sold his interest in the company to Joseph Spidel, A. S. List, J. N. Vance, J. L. Dickey, L. E. Sands and H. S. Sands. Joseph Spidel has been elected president of the company to succeed Mr. Howard.

**Forty-second Street, Manhattanville & St. Nicholas Avenue Railway, New York, N. Y.**—Judge Lacombe, in the United States Circuit Court, has amended the decree ordering the sale of the property of the Forty-second Street,

Manhattanville & St. Nicholas Avenue Railway under foreclosure on July 1, 1910, by directing that the successful bidder, irrespective of how much he may have deposited in the bidding, shall in making good his bid pay \$350,365 in cash, the amount of the surplus income invested by Frederick W. Whitridge, the receiver of the company, in 75 convertible pay-as-you-enter cars.

**Gary & Interurban Railway, Gary, Ind.**—The Gary & Interurban Railway has authorized an issue of \$10,000,000 of refunding and first mortgage 5 per cent gold bonds. Part of the proceeds will be used to redeem the first mortgage bonds now outstanding. Only \$1,500,000 of the new bonds will be issued at this time.

**International Traction Company, Buffalo, N. Y.**—A committee consisting of Robert L. Fryer, Thomas De Witt Cuyler, Lewis Cass Ledyard, Thomas E. Mitten and Charles Steele, has been appointed to protect holders of the \$30,000,000 of 50-year 4 per cent collateral trust bonds of the International Traction Company. The main security for the bonds is the stock of the International Railway, all of which is owned by the International Traction Company. The International Traction Company has issued all of the bonds under the collateral trust indenture reserved for extensions and betterments, and there remain unissued \$11,665,000 bonds reserved for the acquisition or retirement of underlying bonds secured by liens on the property of the railway company. Many of these underlying obligations mature in the near future and they cannot be provided for by the collateral trust bonds of the International Traction Company, which have a limited market and are selling much below par. It is proposed to have the new company put out an issue of 5 per cent first mortgage bonds and to offer the right to the holders of the existing collateral trust bonds to exchange them for the new bonds at 80 or to accept 70 per cent in cash with accrued interest in full. This, the committee points out, would give the bonds a cash value in excess of the present market price.

**Mexico, Santa Fé & Perry Traction Company, Mexico, Mo.**—The Mexico, Santa Fé & Perry Traction Company has filed a mortgage with the Fidelity Trust Company, Kansas City, Mo., as trustee to secure an issue of \$1,600,000 of bonds, issuable at \$15,000 per mile of road and an additional amount for power stations on its line between Mexico and Perry, 27 miles distant.

**Ocean Shore Railway, San Francisco, Cal.**—The sale of the property of the Ocean Shore Railway under foreclosure has been ordered to be held at San Francisco on Sept. 1, 1910.

**Owensboro (Ky.) City Railroad.**—C. H. Battin and Arthur Funkhouser, Evansville, Ind., have been elected directors of the Owensboro City Railroad.

**Philadelphia (Pa.) Rapid Transit Company.**—On June 20, 1910, the stockholders of the Philadelphia Rapid Transit Company and the Union Traction Company authorized the directors to carry into effect the plans for financing the proposed loan of \$5,000,000 which were prepared by a committee composed of J. J. Sullivan, Robert A. Balfour, George W. Elkins, William H. Shelmerdine and Clarence Wolf. The report of this committee was published in the *ELECTRIC RAILWAY JOURNAL* of June 18, 1910, page 1076.

**Philadelphia & Chester Railway, Philadelphia, Pa.**—The sale of the property of the Philadelphia & Chester Street Railway to L. A. Eisenthal, A. W. From and R. I. D. Ashbridge, representing the bondholders, of which mention was made in the *ELECTRIC RAILWAY JOURNAL* of June 11, 1910, page 1041, has been confirmed in the United States Circuit Court in Philadelphia.

**Public Service Corporation of New Jersey, Newark, N. J.**—The Public Service Electric Company has been incorporated with a capital stock of \$15,000,000 to manage the electric light and power properties of the company, in accordance with the plan of separating the railway, electric light and power and the gas departments.

**Sedalia Light & Traction Company, Sedalia, Mo.**—A second protective committee of the bondholders of the Sedalia Light & Traction Company, consisting of Otto T. Bannard and Robert T. Sheldon, New York, N. Y., with David H. Clark as secretary, has requested the deposit of bonds of the company with the New York Trust Company as depository.

## Traffic and Transportation

### Report of Brooklyn Employees' Association

The annual report of the Brooklyn Rapid Transit Employees' Benefit Association for the year ended April 30, shows a total credit balance as of May 1, 1910, of \$31,610. Of this \$400 is in the hands of G. W. Edwards, president and secretary of the association, as an emergency fund; \$1,210 is deposited at 3 per cent, and \$30,000 is invested in guaranteed real estate mortgage, on which the return varies from 4½ per cent to 5½ per cent. The statement shows that \$2,356 was paid out in benefits, etc., to members in excess of the dues and initiation fees received. The benefit fund statement shows that \$2,815 were received from initiation fees and \$37,337 from monthly dues, making the total receipts from members \$40,152. The sum of \$42,509 was disbursed to members, making these disbursements \$2,357 in excess of the receipts. Receipts from sources other than initiation fees and dues amounted to \$15,461, and as the administration expenses were only \$9,820, there remained a credit balance of \$3,284 for the year after charging off the deficit due to disbursements made to members. On May 1, 1909, there was a credit balance of \$28,325, making the total credit balance on May 1, 1910, \$31,610. The receipts which make up the special fund of the association, which include returns from sale of ball, picnic and excursion tickets, rent from restaurants, etc., amounted to \$13,678, and the disbursements made for education, entertainments, etc., were \$12,681, leaving a balance of \$997. The receipts which make up the clubhouse fund of the association, which include returns from billiard rooms, bowling alleys, the sale of tobacco, cigars and candy, the rent of barber shops, etc., were \$19,428, and the disbursements for wages of clubhouse employees, repairs and renewals were \$20,737. The balance credited to this fund on May 1, 1909, was \$15,372, so that the credit balance on May 1, 1910, was \$14,063. The report is issued in the form of a pamphlet and is a very interesting exhibit, particularly to those interested in employees' associations.

**Tickets Over Indianapolis & Louisville Traction Company's System to Northern Indiana.**—The Indianapolis & Louisville Traction Company, Louisville, Ky., is selling tickets to points north of Indianapolis, including such places as Ft. Wayne, Peru, Logansport and South Bend.

**Massachusetts Farming Special.**—The Detroit, Lansing & Grand Rapids Railway, Detroit, Mich., has republished in pamphlet form, with illustrations, the article "Trolley Farming Special Operated in Massachusetts," which appeared in the *ELECTRIC RAILWAY JOURNAL* of April 23, 1910.

**Fares in Lawrence, Mass., to Be Investigated.**—The Railroad Commission of Massachusetts has received a petition from citizens of Lawrence asking for a hearing upon fares and service upon the Prospect Hill line of the Boston & Northern Street Railway. The commission will hear the case on June 22, 1910.

**Arbitration in Connecticut.**—The members of the board of arbitration which is to consider the readjustment of the terms of service of the motormen and conductors in the employ of the Connecticut Company have all been selected. As previously stated in the *ELECTRIC RAILWAY JOURNAL*, Clarence Deming will represent the company. David E. Fitzgerald has been selected to represent the employees, and William S. Case has been selected by Mr. Deming and Mr. Fitzgerald as the third member of the board.

**Handling a Circus on the Illinois Traction System.**—The traffic and transportation departments of the Illinois Traction System, Peoria, Ill., are fulfilling a contract for handling the property of the Jones Brothers' Carnival Company, which is exhibiting a circus in the principal cities in Central Illinois. A train of 16 cars is required to carry the circus equipment, and the contract made by the circus with the Illinois Traction Company provides for moving this train daily for 23 days over the company's lines on a car mileage basis.

**Proposed Freight Service of the Boston & Northern Street Railway.**—The Boston & Northern Street Railway, Boston, Mass., proposes to establish freight service to Hudson and Nashua, N. H. The company has already secured freight rights in Burlington, Billerica, Danvers, Dracut,

Gloucester, Georgetown, Groveland, Hamilton, Haverhill, Lowell, Lynnfield, Methuen, Essex, Middleton, Newbury, North Andover, North Reading, Newburyport, Rowley, Reading, Tewksbury, Wilmington, Wakefield, Wenham, West Newbury, Rockport and Lawrence. A petition to carry freight in Stoneham is pending.

**Arbitration in Albany.**—The representatives of the United Traction Company and the representatives of the employees of the company have agreed on the general terms of service to govern the men in the employ of the company, but did not agree on the question of wages and the length of time the new agreement should be in force. The company has proposed that any agreement entered into between the company and the men shall continue for three years, and this subject and the demand of the men for an increase in wages from 25 cents an hour to 30 cents an hour will be considered by a board of arbitration, to consist of three members, one chosen by the company, one by the representatives of the employees and the third by the other two.

**Chicago Suburban Railway Guide.**—The Interstate Guide Company, Chicago, Ill., is publishing monthly for free distribution a guide and time table to the Aurora, Elgin & Chicago Electric Railroad, Bloomington, Pontiac & Normal Railway, Chicago & Milwaukee Electric Railroad, Chicago & Joliet Electric Railway, Joliet & Eastern Railway, Aurora & Elgin Traction Company, Calumet & South Chicago Railway, Chicago Consolidated Traction Company, Chicago, Lake Shore & South Bend Railway, Elgin & Belvidere Electric Railway and the Rockford & Interurban Railway, all of which operate in the vicinity of Chicago. The guide is distributed by the electric railways at their ticket offices and is placed in the guide racks at the principal hotels. It is also sold at all news stands in Chicago for 5 cents, and is mailed to every factory and more than 1000 business houses in Chicago and vicinity.

**New Through Route in Chicago.**—The Chicago (Ill.) Railways and the Chicago City Railway have established service over the first through route to be operated according to the franchises of 1907. This route, which is called Route No. 2, is about 15 miles long, and 26 through cars are operated in addition to the local service of each company. The route extends from Riverview Park, in the northwestern part of the city, along the Claybourn Avenue line of the Chicago Railways to the business center of the city; thence south over the Clark Street and Wentworth Avenue line of the Chicago City Railway to Seventy-ninth street and Wentworth Avenue; thence west to the Seventy-ninth Street and Halsted Street. The through-route cars are furnished by each company in proportion to the mileage of its section of the route, the Chicago Railways supplying 10 cars and the Chicago City Railway 16 cars. This 15-mile ride with the privilege of transfer to the cars of either company may be made for a 5-cent fare.

**Observation Parlor Cars Between Peoria and St. Louis.**—The Illinois Traction System, Peoria, Ill., has ordered five observation cars from the American Car Company for use as trailers in fast limited service between Peoria, Ill., and St. Louis, Mo., a run of 175 miles. Arrangements for handling traffic with the new cars have not been fully completed, but it is expected that an excess fare, probably  $\frac{1}{2}$  cent per mile, will be charged for the superior service offered by the observation cars. These cars will each seat 36 passengers. At the word end there will be an enclosed Pullman smoking compartment, seating eight passengers, two toilet rooms, and then two fixed-seat sections with tables for card-playing. These sections will be set off by an ornamental grille, from the main or observation section, which will be fitted with movable easy chairs. The floors will be carpeted. The rear bulkhead will include a large window and a swinging door at one side leading to an observation platform.

**Map of Baltimore.**—The United Railways & Electric Company, Baltimore, Md., has issued as part of its annual report a map showing Baltimore and the interesting points in its vicinity and how they can be reached by the lines of the company. The map is a bird's-eye view, divided into squares by letters and numbered lines, similar to maps in standard atlases. A key makes it easy to locate all

places of interest, and the user of the map can very easily determine what line is the most suitable to reach any point, as the cars of each line in Baltimore are indicated by a number which shows their destination. The sheet on which the bird's eye map of the city is printed also contains a map of Baltimore, on which the principal streets, buildings, parks, prominent institutions, etc., are indicated. The company has printed several thousand of these maps, to be hung up in steam railroad stations, hotels and prominent public resorts. Many of the maps and advertising folders of the company are sent by the Baltimore wholesale houses to their country customers, for the convenience of the latter when they visit the city.

**Complaint Filed Against Rates in Oregon.**—Complaint has been filed with the Railroad Commission of Oregon, charging that the rates now in effect over the line of the Portland Railway, Light & Power Company between Oregon City and Portland are unreasonable and discriminatory to the patrons of the Oregon City division of the Portland Railway, Light & Power Company and in violation of the Railroad Commission Act of 1907. It is set forth in the complaint that the fare charged between First Street and Alder Street in Portland to Canemah, Park Place and Oregon is 25 cents, and to other points on the line, such as to Gladstone, Fern Ridge, Meldrum, Jennings, Roethe, Naef and Concord, 20 cents; that no transfers are issued or transfer privileges allowed a passenger to travel between any of the points named and Portland, and that passengers who desire to travel from Oregon City or any other point in Clackamas County to points beyond First Street and Alder Street, Portland, must pay an additional fare of 5 cents. It is further charged that patrons of the Oregon City division must pay a greater fare or charge per mile than patrons of the Springwater division.

**Folder of the Boston & Northern Street Railway and the Old Colony Street Railway.**—The passenger department of the Boston & Northern Street Railway and the Old Colony Street Railway, Boston, Mass., has issued a folder for 1910, which has an especially attractive cover distinctive of trolley travel. The folder proper consists of 24 pages of interesting and instructive matter about the various trips which can be taken over the 908 miles of track comprised in these two systems, as well as trips upon connecting lines. The book is illustrated with half-tone engravings of attractive sights along the lines. Aside from the information about the distances, the fares, the running time and the places where cars are to be taken, and where changes are necessary, there are two special departments, one devoted to the principal points of interest along the lines, and the other to the more important pleasure places by the shore, inland and by lakes and rivers. At the back of the folder is a new four-color map of southern New Hampshire, Rhode Island and Massachusetts east of Worcester, covering the lines of the Boston & Northern Street Railway and the Old Colony Street Railway and the lines of all street railways operating throughout that district and the steam railroads.

**New Arrangement in New Jersey for Transporting Letter Carriers.**—An agreement has been entered into between the Public Service Railway, Newark, N. J., and the United States Government for carrying postmen on the cars of the company, under the terms of which the Government will pay a lump sum per year based upon an estimate of the number of carriers in the service and the number of rides each carrier would ordinarily be called upon to make in performing his duties. The company agrees to transport any letter carrier in uniform who carries his mail pouch, the pouch to indicate that the man is on duty. The postal authorities have agreed to require all mail pouches to be left in the post office at the conclusion of each man's work. In this manner the company will be protected against carrying letter carriers to and from work. Prior to the execution of the new contract, which went into effect on June 1, 1910, the Government purchased tickets from the company and supplied them to the carriers according to their needs. In a number of instances the carriers abused the transfer privileges by exchanging the transfers with other carriers. They would then ride on the transfers and use the tickets when they were off duty or give them to others to use. This was one of the principal reasons for the change in the agreement between the company and the Government.

## Personal Mention

**Mr. W. A. Carson** has been appointed general manager of the Owensboro (Ky.) City Railroad.

**Mr. P. M. Lott** has been appointed master mechanic of the Ocean City Electric Railroad, Ocean City, N. J.

**Mr. L. M. Levinson** has resigned his position with the Salt Lake & Ogden Railway, Salt Lake City, Utah.

**Mr. S. H. Dailey** has resigned as general superintendent of the Geneva & Auburn Railway, Seneca Falls, N. Y.

**Mr. A. S. List** has been elected treasurer of the City & Elm Grove Railroad, Wheeling, W. Va., to succeed Mr. W. C. Handlan, resigned.

**Mr. Carl B. Gilbert** has been elected assistant secretary and assistant treasurer of the Meridian Light & Railway Company, Meridian, Miss.

**Mr. Henry L. Doherty** has been elected president of the Meridian Light & Railway Company, Meridian, Miss., to succeed Mr. A. J. Paterson.

**Mr. Paul R. Jones** has been elected secretary and treasurer of the Meridian Light & Railway Company, Meridian, Miss., to succeed Mr. C. S. W. Price.

**Mr. Edward Lucas** has been appointed publicity agent of the Northern Indiana Railway, South Bend, Ind., with the traffic department of the company.

**Mr. Russell Palmer** has been elected first vice-president of the Meridian Light & Railway Company, Meridian, Miss., to succeed Mr. William H. Ambrecht.

**Mr. Joseph Speidel** has been elected president of the City & Elm Grove Railroad, Wheeling, W. Va., to succeed Mr. John A. Howard, who has disposed of his interest in the company.

**Mr. Harrie P. Clegg**, president of the Dayton & Troy Electric Railway, Dayton, Ohio, contributed to the *Dayton Daily News* recently an article entitled "Dayton the Center of the First and Most Important Chain of Interurban Roads."

**Mr. C. E. Armstrong** has resigned as general superintendent of the Cairo Railway & Light System, Cairo, Ill., to assist in organizing and establishing the firm of Maddox & Armstrong, Peoria, Ill., engineers and manufacturers' agents.

**Mr. J. L. Adamson** has been appointed general superintendent and purchasing agent of the Geneva & Auburn Railway, Seneca Falls, N. Y., to succeed Mr. S. H. Dailey, resigned. Mr. Adamson has been chief clerk and assistant to the superintendent of the company for the last four years.

**Mr. Charles Pearson** has been appointed agent of the Indianapolis, New Castle & Toledo Electric Railway, New Castle, Ind., at New Castle. Mr. Pearson was formerly assistant agent of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., at New Castle, Ind.

**Mr. L. C. Bradley**, the retiring general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., was given a gold watch, chain and an engraved charm by the employees of the company at a smoker held recently, as a token of esteem. Mr. Bradley has been appointed manager of the Galveston (Tex.) Electric Company, which operates both the electric railway and the electric lighting properties in Galveston.

**Mr. F. A. Healy**, secretary and treasurer of the Ohio Electric Railway, Cincinnati, Ohio, will study street railway operations and fire insurance protection in Kansas City, Topeka, Oklahoma City, Enid, Pueblo, Colorado Springs, Denver, Salt Lake City, Ogden, Los Angeles, San Diego, San Francisco, Portland, Seattle and Tacoma this summer, and return via Vancouver over the Canadian Pacific Railway to Montreal, visiting Buffalo, Cleveland, Detroit and Toledo.

**Mr. John P. Jones**, formerly master mechanic of the United Railroads, San Francisco, Cal., has been appointed superintendent of rolling stock of the company. Mr. Jones has been connected with the mechanical department of the United Railroads since August, 1902. He was appointed

master mechanic of the company in February, 1907, to succeed Mr. H. E. Farrington. Mr. J. M. Yount has been appointed to succeed Mr. Jones as master mechanic, as noted in the *ELECTRIC RAILWAY JOURNAL* of June 11, 1910, page 1044.

**Mr. A. L. Ruff**, who has been appointed assistant general freight and passenger agent of the Oregon Electric Railway and the United Railways, Portland, Ore., was formerly in the employ of the Spokane, Portland & Seattle Railway, which he served for a year as general agent in Spokane, Wash. Previous to that he was in the service of the Great Northern Railway at Seattle for three years as chief clerk to the assistant traffic manager. Mr. Ruff's railroad experience covers a period of 14 years, during which he has been in the employ of the Northern Pacific Railway, Great Northern Railway and Chicago, Milwaukee & St. Paul Railway at Seattle in various capacities, and with the Southern Pacific Railroad at San Francisco and the Spokane Falls & Northern Railway, now a branch of the Great Northern Railway at Rossland, B. C.

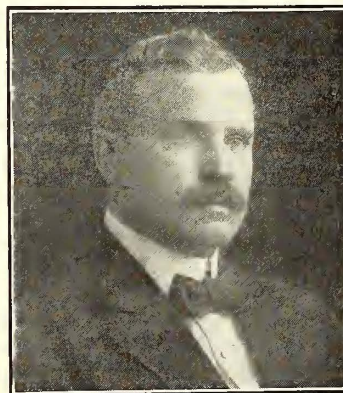
**Mr. August G. Snell**, who for six years has been chief clerk to Mr. C. A. Baldwin, superintendent of transportation of the Indiana Union Traction Company, Anderson,



A. G. Snell

Ind., has been appointed division passenger and freight agent of the company, with headquarters in Indianapolis, to succeed Mr. M. E. Graston, who has been appointed general manager of the Indianapolis, New Castle & Toledo Traction Company, with headquarters in Indianapolis. Mr. Snell was born in Muncie, Ind., on Aug. 24, 1876, and was educated at Culver Academy in northern Indiana. Mr. Snell began service with the Indiana Union Traction Company in the shops at Muncie 12 years ago. Shortly after entering the service of the company he became connected with the transportation department, which he served in various capacities, acting for seven months as a trainman on the line between Muncie and Indianapolis.

**Mr. James M. Wakeman**, retiring first vice-president of the McGraw Publishing Company, was given a luncheon at the Engineers' Club, New York, on June 21 by his



J. M. Wakeman

recent associates and other social and business friends. Mr. Wakeman was one of the incorporators of the McGraw Publishing Company and its vice-president from its organization up to the first part of this year, when he resigned on account of ill-health. He plans to return to England, his old home, about the middle of next month and to remain abroad for at least a year. Mr. T. C. Martin, formerly editor of the *Electrical World*, and now executive secretary of the National Electric Light Association, presided at the luncheon, and among the speakers were: Mr. John A. Hill, of the Hill Publishing Company; Mr. Arthur Warren, of the *New York Tribune*; Mr. Hugh M. Wilson and Mr. James H. McGraw, of the McGraw Publishing Company. At the conclusion of the luncheon Mr. Wakeman was presented a large silver loving cup and a set of the works of Mark Twain. The former was the gift of the outside men on the papers with which Mr. Wakeman has been connected; the latter was from all of his associates in the McGraw Publishing Company.



## Construction News

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

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

### RECENT INCORPORATIONS

**\*Ft. Wayne & Winona Traction Company, Ft. Wayne, Ind.**—Incorporated in Indiana to build a 40-mile interurban railway to connect Ft. Wayne, Arcola, Coesse, Columbia City, Larwell, Pierceton, Wooster, Winona and Warsaw. It will also furnish electricity for light, heat and power purposes. Capital stock, \$100,000. Headquarters, Ft. Wayne. Directors: J. A. Barry, Edward G. Hoffman, Ralph A. Barry, E. W. Cook and G. M. Leslie, Ft. Wayne.

**\*Southern Oregon Railway & Power Company, Albany, Ore.**—Incorporated in Oregon to build electric railways, power plants, etc., through the Rogue River Valley and Southern Oregon. Capital stock, \$3,000,000. Incorporators, J. R. Allen, J. Vilas and S. V. Beckwith.

**\*Harriman, Knoxville & Eastern Railway, Harriman, Tenn.**—Incorporated in Tennessee to build a railway to be operated by steam or electricity in Roane County. Capital stock, \$10,000. Incorporators: Warren A. Rockwell and Henry M. Winslow. Headquarters, Harriman.

**\*Northwestern Railway, Naples, Tex.**—Chartered in Texas to build a 25-mile railway to be operated by either steam or electricity in Titus County, from Naples to Sylvania. Capital stock, \$10,000. Incorporators: Max Kosse and F. T. Atkinson, Cincinnati.

### FRANCHISES

**San Francisco, Cal.**—A. J. Pon has been granted a 25-year franchise by the Board of Supervisors to build a line on Gough Street to connect the Fillmore-McAllister Street line and the Market Street lines, in San Francisco. The United Railroads will build and operate this new line.

**Marion, Ill.**—The Egyptian Traction Company, Eldorado, will shortly ask the Council for a franchise to build an electric railway in Marion. G. E. K. Hixon, general manager. [E. R. J., June 4, '10.]

**Hammond, La.**—The Hammond (La.) Interurban Railway will ask the City Council for a franchise to build an electric railway in Hammond. L. D. Spencer is interested. [E. R. J., May 28, '10.]

**Excelsior Springs, Mo.**—The Kansas City, St. Joseph & Excelsior Springs Electric Railway, Kansas City, has been granted an extension of one year on its franchise to construct a line through Clay County. This proposed 110-mile railway will connect Kansas City, St. Joseph, Excelsior Springs and Liberty, Mo. William J. Knapp, Kansas City, secretary. [E. R. J., May 8, '10.]

**University Place, Neb.**—The Omaha, Western & Lincoln Railway, Lincoln, has been granted a franchise to build a railway in University Place. This is part of a plan to connect Omaha, Hastings and Lincoln with an electric railway 219 miles in length. Frank F. Schaff, president. [E. R. J., June 4, '10.]

**\*Las Cruces, N. Mex.**—Isidore Armijo and Samuel Reynolds, Las Cruces, have been granted a franchise by the Town Board to build a 2-mile narrow-gage street railway to College Heights and Mesilla Park.

**Saratoga Springs, N. Y.**—The Hudson Valley Railway, Glens Falls, has been granted a franchise by the Town Board to build a railway in East Avenue, in Saratoga Springs, for the purpose of connecting the Glens Falls and Troy divisions, and thus forming a direct route from Troy to Warrensburg.

**Salem, Ohio.**—The Salem Electric Company has asked the Council for a 50-year franchise to operate a railway in Salem.

**Baker City, Ore.**—Anthony Mohr, representing the Baker Interurban Railway, has asked the City Council for a 50-year franchise for a street railway in Baker City. This is part of a plan to build an interurban railway from Baker City to North Powder and Rock Creek. [E. R. J., Jan. 8, '10.]

**\*McKeesport, Pa.**—The Jefferson-Wilson Street Railway Company has asked the Council for a franchise to construct a street railway between McKeesport and West Elizabeth.

**\*Amarillo, Tex.**—N. A. Brown has been granted a franchise by the City Council to build a 2-mile street railway from Amarillo proper to San Jacinto Heights.

**Houston, Tex.**—The Houston Electric Company has been granted a 25-year franchise by the Commissioners' Court to extend its South End line 2 miles to the Rice Institute and Bellaire, also to build double tracks where traffic justifies.

**Palestine, Tex.**—It is stated that George W. Burkett and associates will soon ask the City Commissioners for a franchise for the construction of an electric railway over certain streets in Palestine. The proposition provides for early construction of the line; 2 miles to be completed the first year and 2 miles each succeeding year thereafter until 8 miles have been built. [E. R. J., March 13, '10.]

**Port Orchard, Wash.**—The Bainbridge Development Company, Port Orchard, has been granted a 50-year franchise by the County Commissioners of Kitsap County for the construction of an electric railway on Bainbridge Island, in connection with a ferry service to Seattle. One line will run from Eagle Harbor to Fletcher Bay and Manzanito, and another line connecting Eagle Harbor with Port Blakeley and Pleasant Beach. About 28 miles of track will be built. Work will be started within six months. M. B. Jackson, Jr., president. [E. R. J., June 11, '10.]

### TRACK AND ROADWAY

**\*Mobile, Ala.**—William D. Bullard and R. A. Roberts, Scranton, Miss., are said to be interested in a plan to build a 40-mile railway from Mobile, Ala., to Scranton, Miss.

**Northern Electric Railway, Chico, Cal.**—Press reports state this company will build an extension from a point a little west of Ben Ali, on the American River, into Fair Oaks.

**Los Angeles-Pacific Company, Los Angeles, Cal.**—This company is considering plans for extending its line from Hollywood over Cahuenga Pass to Lankershim. Citizens of Lankershim are raising a bonus for the project.

**Peninsular Railway, San José, Cal.**—Right of way has been secured and plans have practically been completed by this company for the extension of its railway from Mayfield, through the Stanford estate to Redwood City, San Carlos, Belmont and San Mateo. It is said construction will soon be started. F. E. Chapin, general manager.

**Connecticut Company, New Haven, Conn.**—This company plans to build a 9-mile extension from Torrington to Litchfield and thence to the Bantam Lakes. This new line will be an extension of the Torrington & Winchester Street Railway, which is controlled by this company.

**Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.**—This company has purchased material to double-track two miles of its main line through Honolulu.

**\*Idaho Falls, Idaho.**—George H. Lawrence states he has succeeded in financing a proposed electric railway to connect Idaho Falls and Hizer Hot Springs. It is expected to start construction July 1.

**Illinois Traction System, Champaign, Ill.**—This company is now installing 94 miles of No. 0000 round copper feeder, in addition to a similar feeder and a single trolley wire, between Springfield and Venice, Ill.

**Rock Island-Southern Railroad Company, Monmouth, Ill.**—This company has practically completed its new interurban extension between Monmouth and Rock Island. It is expected to have the line in operation this month.

**Evansville (Ind.) Electric Railway.**—This company will extend its line from Rockport to Grandview. Work has already been started on the Grandview end of the line. H. W. Cast, New Albany, has charge of the construction.

**Valparaiso & Northern Railway, Valparaiso, Ind.**—This company has started construction of its proposed interurban railway in Valparaiso. This is part of a plan to connect Valparaiso with Chesterton, and ultimately with Gary, Laporte and Michigan City. Lewis E. Woodward, secretary. [E. R. J., July 3, '09.]

**Iowa City (Ia.) Electric Railway.**—This company reports that contracts will be awarded within 10 days, and that it will begin construction of its 38-mile railway in July. Capital stock authorized, \$100,000; issued, \$16,000. Bonds authorized, \$65,000. Power will be purchased and the company expects to operate five cars. Officers: J. O. Schulze, president and general manager; John H. Rober, vice-president, and D. A. Reese, secretary and treasurer. [E. R. J., June 11, '10.]

\***Conway Springs, Kan.**—J. M. Frantz, Conway Springs, is said to be interested in a project to construct an inter-urban railway to connect Hutchinson, Haven, Mt. Hope, Andale, Goddard, Viola, Conway Springs and Arkansas City; a spur between Wichita and Goddard and a branch running from Conway Springs to Anthony, via Milan, Argonia, Danville and Harper.

**Louisville & Eastern Railroad, Louisville, Ky.**—This company has practically completed the 23-mile extension of its railway from Beechwood to Shelbyville, and it is expected that the entire line between Louisville and Shelbyville will be placed in operation not later than Aug. 1, 1910.

**New Orleans Railway & Light Company, New Orleans, La.**—This company has ordered 425 tons of steel rails from the Carnegie Steel Company.

**St. Joseph & Savannah Railway, St. Joseph, Mo.**—This company has awarded the contract for the construction of its proposed 15-mile interurban railway to the J. L. Flick Construction Company, Chicago. This railway will connect St. Joseph and Savannah. [E. R. J., Feb. 5, '10.]

**Southwestern New York Traction Company, Bolivar, N. Y.**—This company has awarded a contract for 800 tons of steel rails to the Carnegie Steel Company. In addition it has ordered, from the Illinois Steel Company, 4000 tons of Bessemer and 24,000 tons open hearth rails. [E. R. J., June 4, '10.]

**Brooklyn & Jamaica Bay Railway, New York, N. Y.**—This company advises that construction will be started on its proposed line as soon as it obtains a franchise. The line will be 3 miles in length, and will be operated wholly in Brooklyn, connecting with the Brooklyn Rapid Transit Company and terminating at Old Mill, Jamaica Bay. Capital stock authorized, \$100,000. Its repair shop will be located at its terminal, in Jamaica Bay. Officers: Horace J. Subers, 25 Broad Street, New York, president; Nelson S. Easton, vice-president, and Ogden R. Pell, 54 New Street, New York, secretary and treasurer; Frederick B. Langston, engineer. Headquarters: Temple Court, New York. [E. R. J., June 11, '09.]

**Rochester Belt Line Railroad, Rochester, N. Y.**—This company, which was recently incorporated to build a 15-mile freight belt line around Rochester, making connections with various steam and electric railways, reports that its organization has been effected by the election of the following officers: John F. Alden, president; Clifford D. Beebe, vice-president; Frank A. Dudley, second vice-president; Harold C. Beatly, secretary, and W. A. Holden, treasurer. [E. R. J., June 11, '10.]

**Buffalo & Williamsville Electric Railway, Williamsville, N. Y.**—This company expects to build soon 1 mile of new track with 85-lb. T rails and brick pavement.

**Isothermal Traction Company, Rutherfordton, N. C.**—This company has completed the surveys from Rutherfordton towards Gastonia, via Carolien, Shelby and Cherryville. Another survey will now be made from Rutherfordton to Asheville, via Chimney Rock and Fairview, crossing the Blue Ridge at Hickory Nut Gap. The necessary franchises have nearly all been secured, and rights of way are now being obtained. Connections will be made with the Seaboard Air Line, the Southern Railway and the Carolina Clinchfield & Ohio Railway. K. S. Finch, Charlotte, general manager. [E. R. J., March 26, '10.]

**Fifth Avenue Railway & Light Company, Columbus, Ohio.**—This company, recently incorporated, reports that it has not yet completed its organization. It proposes to build a 7-mile railway in Columbus. It also expects to furnish power for lighting. Capital stock, \$10,000. Headquarters: 35 West Fourth Avenue, Columbus. Incorporators: A. C. Wolfe, E. W. Gantes, W. Cushing and J. W. Jennings, all of Columbus. [E. R. J., June 11, '10.]

**Oklahoma (Okla.) Railway.**—This company has ordered 1100 tons of rails from the Carnegie Steel Company.

**Peoples Railway, Berlin, Ont.**—This company will receive bids until July 15 for clearing and grading 29 miles of its proposed railway, construction of five bridge piers and one 400-ft. bridge, also for the following material for the same length of the line: Ties, 70-lb. T-rails, spikes, bolts, rail bonds, grooved trolley wire, trolley messenger wire, 50 miles of fence wire, gates and fence posts. A. N. Warfield, Berlin, general manager. [E. R. J., June 5, '09.]

**Toronto (Ont.) Railway.**—This company has been ordered by the Ontario Railway and Municipal Board to build 15 miles of new track in Toronto. The City Council has passed the resolutions which were endorsed by the Board of Control, consenting to the company making the extensions.

**Mahoning & Shenango Railway & Light Company, New Castle, Pa.**—This company has secured rights of way to construct an extension from Youngstown to Mineral Ridge, a distance of five miles. M. E. McCashey, Youngstown, general manager.

\***Gresham, Pa.**—Howard Conover and James Hancox, Gresham, are reported to be interested in a plan to build a railway from Titusville to Meadville, via Gresham, Diamond, Fauncetown, Townville, Guys Mills and Blooming Valley, Pa.

**Slippery Rock & Grove City Railway, Grove City, Pa.**—This company has secured rights of way, and surveys have been completed between Slippery Rock, Butler, West Liberty, Isle, Prospect and Mount Chestnut and Grove City. Bids will soon be asked for the construction of this line between Slippery Rock and Butler. Connection with the Pittsburgh, Harmony, Butler & New Castle Railway will be made in Butler. H. B. Graves, chief engineer. [E. R. J., May 21, '10.]

**Pittsburgh, McKeesport & Westmoreland Railway, McKeesport, Pa.**—This company has made arrangements with the Pittsburgh Railways for the use of its lines from McKeesport, to a point in Glassport at which a bridge will be built across the Monongahela River to connect with Wilson borough, passing through West Elizabeth, Glassport, Wilson and Clairton. Franchises will soon be asked for to build a railway through these cities.

**Ardmore & Llanerch Street Railway, Philadelphia, Pa.**—This company expects to double-track its railway from Llanerch to Ardmore. This is a branch of the Philadelphia Traction Company.

**Tower City, Reiner City & Johnstown Street Railway, Pottsville, Pa.**—This company advises that preparations are well under way for starting work on this proposed 3-mile railway to connect Reiner City, Tower City and Johnstown. It will operate four gasoline motor cars and will be operated as part of the Schuylkill & Dauphin Traction Company. Capital stock authorized, \$100,000. Officers: Joseph W. Moyer, Pottsville, president; Edgar D. Rank, Williamsstown, secretary and treasurer; W. E. Harrington, St. James, Philadelphia, general manager and chief engineer; W. T. Corbresier, Williamsstown, superintendent and purchasing agent. [E. R. J., June 11, '10.]

**Sylvan Dell Park Company, Williamsport, Pa.**—This company advises that construction will be started within the next few months on its proposed 3½-mile electric railway to connect Williamsport and Sylvan Dell Park. Capital stock, authorized, \$24,000; issued, \$7,000. Headquarters, 129 West Fourth Street, Williamsport. Power station and repair shops to be located at South Williamsport. Officers: H. W. Whitehead, 129 West Fourth Street, Williamsport, president; W. B. Stuart, vice-president; Charles G. Whitehead, secretary, and E. M. Bates, treasurer. [E. R. J., June 11, '10.]

**Houston-Bay Shore Traction Company, Houston, Tex.**—This company is said to have completed preliminary arrangements, and work will soon be started on its proposed 25-mile railway to connect Houston, Harrisburg and La Porte. A. Foster, Irwin, Houston, president. [E. R. J., May 14, '10.]

**Salt Lake & Ogden Railroad, Salt Lake City, Utah.**—It is stated that this company, which recently electrified its

railway, expects to double-track its entire line at once, a distance of 50 miles.

**Graham (Va.) Electric Railway.**—This company, recently incorporated, is considering plans for building a two-mile railway from East Graham to West Graham. One bridge will be built over the Bluestone River. Necessary equipment will be purchased. James F. Dudley, president. [E. R. J., June 18, '10.]

**Milwaukee Western Electric Railway, Milwaukee, Wis.**—This company has started to survey the right of way of its proposed extension from Fox Lake to Green Lake. It is also intended to continue the line through to Ripon and Berlin, and perhaps connect with Oshkosh or Fond-du-Lac. W. E. Elliott, general manager.

**POWER HOUSES AND SUBSTATIONS**

**Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.**—This company has recently placed orders for 840 hp additional boiler capacity and an order will be placed shortly for an engine and generator with 1000 kw capacity. C. G. Ballentyne, Honolulu, general manager.

**Oskaloosa (Ia.) Traction & Light Company.**—This company advises that within the next six weeks it will place contracts for building an extension to its boiler house in Oskaloosa. It also expects to purchase one 250-hp boiler and one 1000-gal. hot-water pump. H. W. Sarner, purchasing agent.

**Milford & Uxbridge Street Railway, Milford, Mass.**—This company has purchased one 225-hp Whelan boiler for installation at its power house at Milford. [E. R. J., May 7, '10.]

**Buffalo & Williamsville Electric Railway, Williamsville, N. Y.**—This company is installing a 300-kw converter and transformer at its power house in Williamsport.

**Johnstown (Pa.) Passenger Railway.**—This company has started on extensive improvements to its power house on Baumer Street, Johnstown. It will install two large boilers, which will furnish an additional 800 hp.

**Burlington (Vt.) Traction Company.**—This company has purchased from W. Seward Webb the Otter Creek water power rights at Vergennes. Formerly the company obtained its power from the Winooski River at Winooski. It is expected the falls will develop 6000 hp in high water.

**SHOPS AND BUILDINGS**

**Los Angeles (Cal.) Railway.**—This company will build a new paint and repair shop between Fifty-fourth Street and Fifty-fifth Street in Los Angeles. The structure will be 644 ft. x 122 ft., of reinforced concrete construction. It will contain 36 separate tracks.

**Connecticut Company, New Haven, Conn.**—This company has completed plans and let the contract for alterations to be made to the repair shops at Grand Avenue and Blatchley Avenue. An additional story of brick construction is to be added and the general layout of tracks is to be changed so that there will be four pairs of tracks. The cost of improvements will be about \$10,000.

**Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.**—This company is now constructing a new car house in Honolulu, which will have 1120 ft. of storage track.

**Bloomington & Normal Street Railway, Bloomington, Ill.**—This company has started work building a new station at the corner of North Street and School Street in Bloomington. The structure will be 52 ft. x 24 ft.

**Chicago & Joliet Electric Railway, Joliet, Ill.**—This company is receiving bids for the construction of a one-story brick car house, 50 ft. x 200 ft., at Summit.

**Philadelphia (Pa.) Rapid Transit Company.**—This company expects to build a new freight station at Hatboro.

**Blue Ridge Light, Power & Railway Company, Staunton, Va.**—This company reports it expects to build within the next 60 days a new car house in Staunton.

**Virginia Railway & Power Company, Richmond, Va.**—This company has awarded a contract to W. L. Ragland & Company, Richmond, to erect two car houses, paint shop and oil house in West End, Richmond. The structure is to be of brick and concrete construction. The estimated cost is \$50,000.

**Manufactures & Supplies**

**ROLLING STOCK**

**Capital Traction Company, Washington, D. C.,** has ordered 150 closed cars from the Jewett Car Company.

**Shreveport (La.) Traction Company** has placed an order with the American Car Company for three 20-ft. 8-in. closed cars.

**El Paso (Tex.) Electric Company** is preparing specifications for several new cars which it intends to purchase in the near future.

**People's Railway, Berlin, Ont.,** will receive bids until July 15 for several car bodies and trucks. A. N. Warfield, Berlin, general manager.

**Jersey Central Traction Company, Keyport, N. J.,** has purchased 10 dump cars from the Kilbourne & Jacobs Manufacturing Company.

**Morris County Traction Company, Morristown, N. J.,** has ordered five 28-ft., semi-convertible cars from the John Stephenson Company.

**Saginaw Valley Traction Company, Saginaw, Mich.,** has placed an order with the G. C. Kuhlman Car Company for six 28-ft., semi-convertible, pay-as-you-enter cars.

**Rockford & Interurban Railway, Rockford, Ill.,** has ordered four 22-ft. closed cars and two 28-ft., semi-convertible, pay-as-you-enter cars from the G. C. Kuhlman Car Company.

**Syracuse (N. Y.) Rapid Transit Railway** has ordered 25 30-ft. 11-in., semi-convertible cars from the G. C. Kuhlman Car Company. The cars will be equipped each with four 50-hp General Electric motors.

**Knoxville Railway & Light Company, Knoxville, Tenn.,** noted in the ELECTRIC RAILWAY JOURNAL of June 11, 1910, as contemplating the purchase of 15 closed cars, is reported to be considering the purchase of 15 additional cars.

**Philadelphia (Pa.) Rapid Transit Company,** noted in the ELECTRIC RAILWAY JOURNAL of June 18, 1910, as having placed an order with the Pressed Steel Car Company for 20 elevated cars, has specified Brill 27 M. C. B. trucks for these cars.

**Interborough Rapid Transit Company, New York, N. Y.,** noted in the ELECTRIC RAILWAY JOURNAL of April 2, 1910, as having ordered 75 steel passenger cars from the Pressed Steel Car Company, has included the following in its specifications for this equipment, which is to be ready for October, 1910, delivery:

Seating capacity.....	52	Bumpers.....	Hedley anti-climber. Lack. Steel Co.
Weight (car body only) .....	28,000 lb.	Car trimmings,	Dayton Mfg. Co.
Bolster centers, length.	.36 ft.	Center bearings,	annealed steel
Length of body....	39 ft. 4 in.	Curtain fixtures,	Nat. Lock Washer Co.
Over vestibule....	49 ft. 9 in.	Curtain material...pantasote	Destination signs,
Width over sills...8 ft. 6 3/4 in.			Col. Mach. Wks.
Over posts at belt.8 ft. 6 3/4 in.		Hand brakes..bevel gear type	Heaters .....
Height from top of rail to sills.....	3 ft. 2 3/8 in.	Paint.....	Flood & Conklin
Body .....	metal	Roofs.....	Pressed Steel
Interior trim.....	metal	Seats .....	Heywood
Underframe .....	metal	Seating material...	Heywood
Air brakes,	West. Trac. Brake Co.	Ventilators,	swing sash, I. R. T.
Bolsters, body,	Carnegie rolled steel plate		
Brakeshoes,	Nat. Brake Shoe Co.		

**TRADE NOTES**

**Griffin Wheel Company, Chicago, Ill.,** is planning to build four new buildings at its South Tacoma, Wash., plant at a total cost of \$125,000.

**Emergency Car Brake Company, Cumberland, Md.,** maker of the Fresh emergency car brake, is now being re-financed to permit manufacture of this brake on a large scale.

**Pelton Water Wheel Company, San Francisco, Cal.,** has recently shipped two 2000-hp Pelton impulse units to be

installed in an extension of the power house of the Dunedin (New Zealand) Municipal Tramway System.

**W. M. Wampler**, who was for some time in charge of the electric railway truck department of the American Locomotive Company, has accepted a position with the sales department of Forsythe Brothers Company.

**Dodge Manufacturing Company, Mishawaka, Ind.**, has completed the installation of Dodge rope drives on two 1000-hp generators in the hydraulic power plant of the Winchester & Washington Railway at Millville, Md.

**Lord Manufacturing Company, New York, N. Y.**, announces the appointment of John S. Parmalee as assistant manager. Mr. Parmalee has had many years of experience in the manufacturing, operating and selling departments of the electrical field.

**Falkenau Electrical Construction Company, Chicago, Ill.**, was the electrical contractor and carried out the change in motive power on the Salt Lake & Ogden Railway, Salt Lake City, Utah, from steam to electricity. Regular service with electric cars is now being given between Salt Lake City and Ogden, a distance of 55 miles.

**Lackawanna Steel Company, New York, N. Y.**, has decided to move its principal offices from New York to its works at Lackawanna, near Buffalo, N. Y., as soon as the necessary additions to its present office building at Lackawanna can be completed. Selling offices necessary for local business will be maintained at the present location, 2 Rector Street, New York.

**Lucius I. Wightman, New York, N. Y.**, who has been advertising manager of the Ingersoll-Rand Company for the past six years, has resigned his position, effective Aug. 1. Mr. Wightman will open an office in New York as an independent specialist in machinery advertising, handling the accounts of manufacturers of machinery and engineering products.

**Allis-Chalmers Company, Milwaukee, Wis.**, has secured from the United States Steel Corporation additional orders for six gas-engine-driven electrical units, which will increase the corporation's generating equipment at Gary, Ind., by 25 per cent. In addition the Allis-Chalmers Company has secured from the American Steel & Wire Company orders for two large gas engines for its central furnaces at Cleveland, Ohio, of the same rating as the engines for the Gary plant.

**Cooper Heater Company, Dayton, Ohio**, is removing its plant from Dayton to Carlisle, Pa., and will be at this location after July 1. It is now introducing on the market a car heater made entirely of pressed steel which is seamless, being welded with the oxy-acetylene process. The Cooper Heater Company also announces the appointment of W. R. Crawford as sales engineer in charge of the entire Western territory. Mr. Crawford was formerly sales engineer of the air brake and railway motor department of the Allis-Chalmers Company.

**Universal Safety Tread Company, Boston, Mass.**, has recently supplied its safety treads to the following railways: Third Avenue Railroad, New York, 100 cars; Chicago (Ill.) Railways, 350 cars; Chicago (Ill.) City Railway Company, 187 cars; Benton Harbor & St. Joe Railway & Light Company, Benton Harbor, Mich., 11 cars; Toledo Railways & Light Company, Toledo, Ohio, 12 cars; Lincoln (Neb.) Traction Company, 7 cars; Clinton Street Railway, Lyons, Ia., 5 cars; Mason City & Clear Lake Railway, Mason City, Ia., 5 cars; Kokomo, Marion & Western Traction Company, Kokomo, Ind., 5 cars.

**Paragon Sellers Company, Chicago, Ill.**, has taken over the business of the Durant Electric Supplies Company and F. W. Pardee, who have been marketing among other specialties, the Paragon ground cone. The Paragon cone consists of a small cone of heavy-gage copper either tinned or bare, with numerous perforations which act as discharge points. The cone is equipped with a laced cable hollow and of 61,968 circ. mil cross section into which the ground wire may be run and soldered. It is filled with charcoal, which tends to insure at all times a perfect ground. To install the cone, it is only necessary to use a post-hole auger. Among the users of the Paragon cone are the Chicago & Milwaukee Electric Railway and several steam railroads.

**Keystone Varnish Company, Brooklyn, N. Y.**, reports that it has furnished several thousand gallons of "Key-

stona" paint for inside work on the New York terminal of the Pennsylvania Railroad. This paint is a development of a product of zinc known as "Lithopone," which was discovered some 20 years ago. As a paint pigment it is claimed to have double the density of any other white pigment for painting purposes. It had the objectionable feature, however, of turning gray under sunlight. It is asserted that this defect was eliminated about a year ago. The company has secured control of this product for the United States, and is making it under the name of "Keystona" for outside as well as inside work.

**Anthracenol Wood Preserving Company, New York, N. Y.**, had an interesting exhibit at the Atlantic City convention of the Master Car Builders' Association, consisting of samples of wood impregnated with Barol—coppered carbolineum—wood preservative. Samples of the preservative were also shown in glass tubes filled with water to demonstrate the fact that water has no effect on the preservative. Arrangements have been entered into by this company with the United States Metal & Manufacturing Company, New York and Chicago, to handle its products in the Eastern and Central Western States. For the further extension of this company's business arrangements have been completed to carry Barol in stock in New York, Chicago, St. Louis, Atlanta, New Orleans and Providence, R. I.

#### ADVERTISING LITERATURE

**Ingersoll-Rand Company, New York, N. Y.**, has printed a catalog describing and illustrating Class OC duplex Corliss steam-driven air compressors.

**Nashville Carbon & Oil Company, Nashville, Tenn.**, is mailing a folder referring to Durbon paint for steel cars, trolley poles, stacks, bridges, roofs, electrical apparatus, etc.

**Fitchburg Steam Engine Company, Fitchburg, Mass.**, has printed a 48-page catalog on Fitchburg engines. It contains detailed descriptions and illustrations of the principal parts of the engine.

**Northern Water Softener Company, Madison, Wis.**, has printed bulletin No. 6, which contains illustrations of representative installations of Bartlett water softeners. In bulletin No. 5 the type C Bartlett water softener is described and illustrated. Bulletin No. 3, issued by the company, explains the economy in using softened water for boiler feed.

**Anthracenol Wood Preserving Company, New York, N. Y.**, has prepared a pamphlet describing the composition, effects and varied uses of Barol, a wood preservative compounded from heavy anthracene oils and antiseptic copper solutions. The same company is also selling agent in the United States for Steelflex anti-corrosive metal paint, and this product is described in another catalog just issued.

**Edison Storage Battery Company, Orange, N. J.**, has issued a 48-page catalog describing and illustrating its new type A storage battery. It also contains tables of data and a price list of cells and their parts. Another catalog issued by the company contains useful hints and information relating to the care and operation of the Edison storage battery. The Edison Storage Battery Company is also distributing in circular form a reprint of an article in the *Electrical World* for April 28, 1910, entitled "The Edison Storage Battery—Its Pre-eminent Fitness for Vehicle Service," by Walter E. Holland.

The interests in Connecticut in favor of a measure to create a public utilities commission are arranging to make the subject a prominent issue before the Legislature of 1911, there being no legislative session in Connecticut this year. The State Business Men's Association met in Hartford recently, and as a result that body is circulating among its members a tentative act for the regulation of public service corporations which is to be reported on at subsequent meetings of the association. The measure favored by the association would substitute for the present Railroad Commission a commission of five residents of the State to be appointed by the Governor, each member to serve for five years at a salary of \$7,500 a year. The commission would have power to require the establishment of joint rates and through routes, and to order such increases in the plant, equipment and service of companies which would come under its jurisdiction as might be deemed necessary. Issues of securities would also be subject to the approval of the commission.