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STRIKES NOT CONCLUSIVE

The critical condition of the labor situation on the steam railroads as well as recent labor agitation on the electric railways in New York City and elsewhere emphasizes the necessity of some radical change in the method of settling disputes between employer and employee on public utility properties. The present plan of the employees striking when they wish conditions changed no longer represents the contest of relative strength of each side which it formerly did. Such a plan, as we said recently, may have been all right when the companies were smaller, and it may still be the most available method of settling disputes in industrial undertakings in whose service the public has only a minor interest. But in the vast aggregations of labor which now can at least be nominally marshalled under one banner, a cessation of work on any one of the major public utilities means vastly more to the public than it did at any previous time. Indeed, it is this dread of the public that it will be deprived for a longer or shorter time of utility services which have become indispensable that furnishes the means by which labor nearly always now hopes to win its battles. A realization of its dependence on the service makes the public unwilling to wait and see whether the employers can fill the places of their striking employees at the wages which the latter deem insufficient. It may be argued that the public will not support the demands of employees if they are unfair, and in these circumstances will exercise forbearance during the temporary delay necessary while the employers are rehabilitating the service. But we do not believe that this will usually be the case. In the first place, the points at issue are usually so technical that the public cannot easily determine the merits of the question in dispute, and in the second place the same methods can just as easily be used to advance unjust demands as those which are entirely reasonable. It is the method used, not the position taken in any case, which is reprehensible, and as the possession of irresponsible power usually means that it will be exercised without regard to the rights of others and for selfish ends, it is obvious that a very serious situation exists.

CAN LIBERTY OF ACTION BE ABRIDGED?

The fact is that in the development of our industrial conditions, public utility service has become as necessary to the community as police protection or the service of the mails and the fire department, and a complete interruption of any one of these is as unthinkable as that of any other. Unless some plan is

worked out, there seems no recourse but to government ownership in which the utility employees will be on a semi-military basis, as in Germany, but this is an alternative which we believe the public would be loath to adopt except as a last resort, and which would be inimical not only to its interests but to those of labor as well. But can the right of the workman to stop work be abridged? And would not this be an infringement of his liberty of action? Some years ago this might have been so considered, but such is hardly the case now. Capital learned the power which comes from mobilization earlier than labor, but in the Northern Securities case and later similar ones before the Supreme Court it was found advisable in the public interest to set a limit to what a man could do with his property. And if with his property, why not with his labor? The common law has a maxim handed down from Roman times that the safety of the state is the first law, and while liberty of choice for investment and for work is a cherished ideal in this country, the abridgement of its free exercise which would be required to protect the public against abuses would be slight. Just how this can best be done remains to be determined, but that some plan is possible without seriously interfering with the Anglo-Saxon ideal of personal liberty is shown by the successful working of the industrial disputes investigation act in Canada, which inherits its common law from the same source as ourselves.

PROFIT SHARING A POSSIBLE HELP

One more thought before we close. The combinations in labor and capital which are such a characteristic of modern times have effected changes other than those relating directly to the relative size of the undertakings and the numbers of men employed in them. Principal among these changes is the absence of individual contact between employer and employee, with a considerable tendency on the part of the workman to consider his employer's interests and his own as widely separated if not absolutely antagonistic. It is useless to expect a manager of a property employing many thousands of men to be acquainted with any considerable number of his employees, but any plan to remove the thought of both the laborer and the capitalist that their interests are opposed would be beneficial. Personally, we believe that some system of profit-sharing with a minimum wage provision or some bonus plan for the men, depending either upon the financial success of the company during each year or upon the individual efforts of the men in their own lines of work,

could be adopted to advantage to a greater extent than it now is on the larger public utility systems of the country.

KEEPING SUBSTATION RECORDS

Careful bookkeeping, or the keeping of complete records of transactions, is just as necessary for true success in substation operation as it is in any other business. From the point of view of a business man, the records of substation operation are the books of the railway company along that particular line of its business. An engineer judges of the correctness of a motor application from a graphic meter chart which shows the input to the motor while it is performing its specified task, or he judges of the accuracy of a wheel fit by the pressure diagram taken on the wheel press while the wheel was being forced in place. To him, therefore, the records of a system are to that system what the graphic meter records are to the motor or tool. But just as it is not sufficient for a business corporation to pile up book records which are never analyzed and for an engineer to accumulate graphic records which he never even looks at, it is, likewise, not sufficient simply to keep records of equipment. To secure results, records must be studied and analyzed as well as kept. That substation records, carefully kept and as carefully studied, have been of value to the Illinois Traction System, is rather well shown, we feel, in an article, printed elsewhere in this issue, which deals with the substation record practices of that company. Since the development of its record practices, substation costs have decreased and maintenance efficiency increased and, further, these results have been secured despite the facts that traffic has increased and the equipment grown older.

A POSSIBLE BY-PRODUCT OF THE SUBSTATION

The plan for utilizing the spare time of substation operators, as tried out on a small scale on the Illinois Traction System and described in last week's issue of this paper, is worthy of more than passing notice. Substation operation is not the most stimulating occupation in the world. Entering a few meter readings at intervals, resetting a circuit-breaker now and then, recharging the lightning arresters daily, cutting a rotary converter in or out as needed, etc., make up the daily routine. The regular duties are simple, but intelligence and reliability are necessary characteristics of the operator. Emergencies requiring quick, accurate thinking and promptness of action may arise at any time, and the lives of linemen and others may at times be in the hands of the substation employees. Here, then, we have a job which may be intellectually deadening, and yet which requires a clear head. The average operator also has a considerable part of his time on his hands. If work can be found which will vary the monotony of the routine and at the same time yield a profit, "two birds are killed with one stone." There are, of course, substations and substations. Of course, some substations are of such importance that the attendants must be constantly on the *qui vive*, as a short

lapse of attention or a false move might cause great damage or interruption to service. Side occupations are here out of the question. On the other hand, some stations are so simple as to need practically no attention, only such as a ticket or baggage agent can give without interference with his duties. It would be interesting and helpful to learn from our readers whether or not they have found it practicable to utilize the by-product of the substation, *i.e.*, the operator's spare time, in doing work not normally appertaining to the substation.

COEFFICIENTS OF ADHESION

In last week's issue we published an abstract of an article in which a number of formulas for finding the tonnage rating of an electric locomotive for inter-urban service are given. In this article the formulas for tonnage capacity, where accelerating ability fixes the loading limit, are based on a coefficient of adhesion of 25 per cent.

The coefficient of adhesion, or the ratio of the pull at the rim of the drivers to the weight on the drivers, is affected by a number of things, important among which are rail conditions and the character of the tractive effort. For an intermittent tractive effort, such as is given by a steam locomotive, with an unsanded rail covered with a light snow, this coefficient may be as low as 10 per cent. With sanded rails and an electric locomotive which developed a uniform tractive effort, coefficients of adhesion as high as 41 per cent have been secured. The results of many tests indicate that 30 per cent is about the right figure for an electric locomotive on clean, dry rails. In fact, a number of electric locomotives have been so designed that their motors will slip the drivers at 33 per cent adhesion. The use of 25 per cent, therefore, seems to be conservative. This tendency toward the use of conservative figures in matters of this kind is to be commended as a general thing. A machine which fulfills its guarantee pleases its purchaser and acts as a stimulant for the wider use of apparatus of its kind. Further, tonnage rating calculations, as far as adhesion is concerned, are usually based on the dry rail assumption and reduced ratings are supposed to be used when rail conditions are bad. But the men in charge of trains sometimes forget about these reductions, and as there is a tendency to judge a machine by its general performance, the conservatively rated locomotive is more likely to come through with a clean reputation than one less conservatively rated.

The use of conservative values for the coefficient of adhesion has its disadvantages as well as its advantages, however. For one thing, if train crews in the course of operation find that a locomotive will start more tonnage than its rating calls for, they are liable to assume that its tonnage rating for continuous hauling is correspondingly low, and in line with this assumption overload the locomotive, unless proper operating rules are provided and rigidly enforced. Another objection appears when one attempts to compare the tonnage which an electric locomotive can start with that of a steam locomotive. The maximum tractive effort ratings of steam loco-

tives are usually based on coefficients of adhesion ranging from 22 to 25 per cent, while as a matter of fact many tests have shown that even with good rail conditions the upper value is rarely obtained. Comparisons of the starting tractive efforts of steam and electric locomotives are, therefore, manifestly unfair when a conservative value of the coefficient of adhesion for the electric locomotive is used, and, unless the individual making the comparison is fully informed, are liable to lead to faulty conclusions.

The disadvantages just cited are not intended to be arguments against the use of a conservative value for the coefficient of adhesion, but rather as arguments for careful operation and complete information in connection with the use of locomotives, particularly, on an interurban railway where, on account of the few locomotives in use, the status of this type of motive power is not likely to be as clearly defined as it is on a heavy electrification where many locomotives are in use.

SELLING POWER

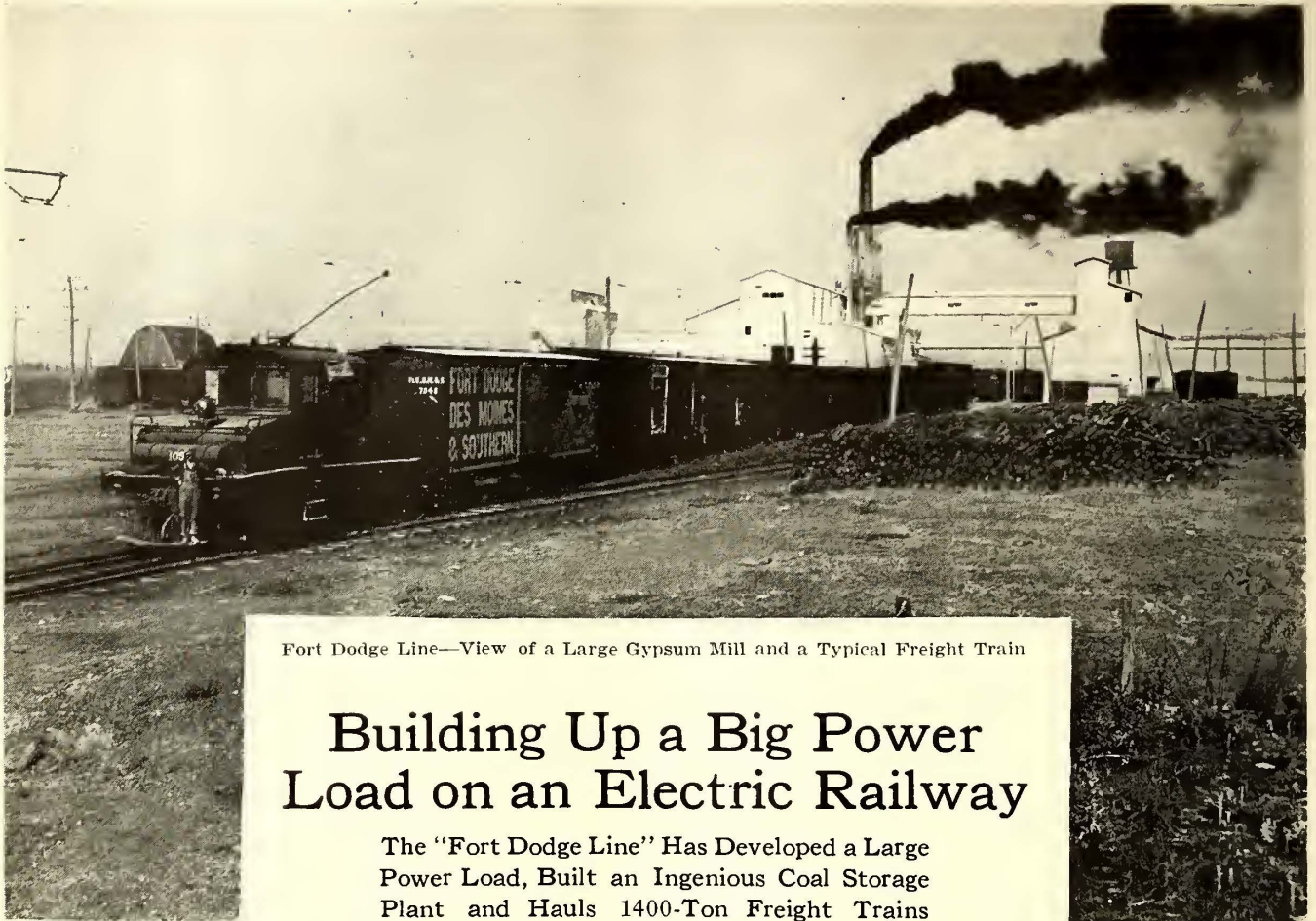
The question of whether an electric railway should generate its own electrical energy or purchase it of an outside party has received considerable attention during recent years. When the railway is near a large central station, or when it traverses a district which is also traversed by a high-tension transmission network, it has been shown pretty conclusively that purchased energy is cheapest. It so happens, however, that many railways are not so fortunately located. This is particularly true of many of the interurban railways of the Central States. For them, purchasing energy would usually mean purchasing it from a number of small plants of heterogeneous character, a scheme not liable to commend itself to the railway official who is responsible for getting trains over the road. These railways, therefore, have felt it necessary to build their own power houses and transmission lines, and to organize adequate operating forces.

The close economy and the seeking out of new sources of revenue which have been necessary in order to keep out of a receiver's hands have turned the attention of the managers of many of these railways to the power house as another possible source of revenue. The widespread publicity given to power sales work by central station men has emphasized the value of this source in their minds, and there seems to be an increasing tendency on the part of these railways to enter the power field by selling energy, wholesale or retail, to municipalities, quarries, mines, grain elevators and stock companies organized for the purpose of retailing energy. In some localities, charter or other limitations forbid railway companies from carrying on business other than that of transportation, but elsewhere railways may be found which are entering the power sales field on a rather large scale. Energy is sold not only along the right-of-way, but outdoor substations and low-voltage transmission lines are built for the purpose of supplying energy to communities located some miles away. Even the demands of the farm customer have been given attention by some roads.

The power sales development work of two well-known railways, the Fort Dodge line and the Illinois Traction system are noted elsewhere in this issue. On the Fort Dodge line the power development work has been important enough to necessitate the installation of considerable additional generating equipment and the construction of a duplicate transmission line. The Illinois Traction System, in addition to supplying energy to outside parties from a number of its railway substations, has erected ten out-door substations for its power customers.

The most important reason for selling power is, of course, that of increased revenue. Also, since the peak loads due to power and lighting have some diversity with the railway peak, the load factor of both generating and transmitting plant is improved, and the cost of energy, by reason of the improved load factor and greater volume of output, is reduced. Another advantage is that such a source of revenue is fairly steady and sure, since it is not affected by as many variable factors as affect the revenues derived from the sale of transportation. On the other hand, the retailing of energy involves an organization which is quite apart from the transportation field, and this introduces into the general organization of a company complexities which may not be altogether desirable. Further, with a generating and transmitting equipment which may be satisfactory from the standpoint of railway operation, it may be impossible to meet the service standards for light and power which are set by regulative bodies. Thus it may be necessary to install additional facilities in order to meet voltage and frequency limitations and to guarantee continuity of service. Certainly more than one interurban railway, after considerable pressure has been brought to bear by prominent local citizens, has arranged to supply electric power to a small village only to find, after a year or so, that this same village would be satisfied with nothing less than metropolitan service and, through complaints to the public utilities commission, be the cause of much trouble and expense.

In any event, when a railway proposes to enter the power sales business, present conditions and future possibilities and liabilities should be carefully weighed. To be worth while a business must pay dividends, and it is not sufficient that the revenue from power sales simply augment the gross revenue of the road. The net revenues from such a source should, at the very least, pay a reasonable return on the investment necessary for carrying on the business. It does not seem worth while, therefore, to build an outdoor substation and a low-voltage transmission line for the purpose of supplying energy to a sawmill which only uses a few hundred kilowatt-hours per year, neither does it appear to be good engineering to operate a railway powerhouse several hours daily for the sole purpose of supplying street lights to a small country village. On the other hand, if a railway has ample first-class facilities for the generation and distribution of power or facilities which permit of easy extension, and if a power load of considerable magnitude may be developed, the development of that load will be well worth while.



Fort Dodge Line—View of a Large Gypsum Mill and a Typical Freight Train

Building Up a Big Power Load on an Electric Railway

The "Fort Dodge Line" Has Developed a Large Power Load, Built an Ingenious Coal Storage Plant and Hauls 1400-Ton Freight Trains

THE Fort Dodge, Des Moines & Southern Railroad, originally a steam road, was partially electrified in 1906 when the steam locomotive-drawn passenger trains were replaced with high-speed electric cars. The freight service was not electrified until 1912. At that time the original 600-volt equipment was changed to 1200-volt, electric locomotives were purchased, new terminal facilities were procured and the property rehabilitated in general. Descriptions of the various changes were published in the *ELECTRIC RAILWAY JOURNAL*, issues for June 25, 1910, page 1094, and May 18, 1912, page 820. Since 1912, however, the heavy traffic which has been developed has necessitated several other interesting improvements and additions. Recently, the Crooked Creek Railroad, an 18-mile steam freight line connecting Webster City and Lehigh, Iowa, was purchased. As indicated on the accompanying map, it is proposed to extend this road, in the near future, until it connects with the Fort Dodge-Hope division of the main line. These additions will increase the route mileage of the system from 125 to 150 miles.

PASSENGER SERVICE

In the passenger service of this road, cars are operated with a one-hour headway between Des Moines and Boone, 43.13 miles, and with a two-hour headway between Boone and Fort Dodge, 43 miles, and between Boone and Rockwell City, 47.1 miles. Shuttle-car service is also operated between Ames and Kelly Junction, 7.3 miles, to meet all through trains. Observation parlor cars are attached to two through trains each way daily. The average schedule speed of the passenger trains is about 25 m.p.h.

The new terminal building at Fort Dodge, an exterior view of which is shown in one of the illustra-

tions on page 346, is of fireproof construction. It contains a waiting room, baggage room, lunch room, two stores, nine living apartments and offices for the local power and lighting and street railway departments of the railroad. Fort Dodge is a city with a population of 20,000. Near it are located the mines and manufacturing plants of several large gypsum companies from which the railroad obtains a substantial share of its freight traffic. At Des Moines the passenger cars of "The Fort Dodge Line" use the fine terminal facilities of the Chicago, Rock Island & Pacific Railroad.

FREIGHT SERVICE

The freight service is operated by steam railroad men, following steam railroad rules and methods. The equipment includes seven 40-ton and four 60-ton, 600-1200-volt General Electric locomotives and more than 2000 standard freight cars. As the major portion of the road's earnings is from freight traffic, its terminal and yard facilities have been highly developed as compared with those of the usual interurban road of the Central States. At Fort Dodge three switching locomotives are required for service on the industrial sidings and in the classification yard. One train each of 1000 tons, 1400 tons and 700 or 800 tons, are run daily from Fort Dodge to Des Moines. The average gross freight tonnage of the road is about 4000 tons a day. One of the illustrations on page 346 shows a view of one of the 60-ton locomotives purchased in 1915. Some data relative to this locomotive are given in the table on the same page.

ROADWAY

The heavy traffic handled on the main line requires substantial roadway construction. The standards established as a steam road have been improved upon and

several pieces of heavy engineering work have recently been completed. The main line crosses the Des Moines River about 7 miles north of Boone. The river valley is deep thus requiring long, heavy grades to reach the bridge level. On the south side of the valley the tracks cross a series of deep ravines, each of which was formerly spanned by a high, frame-bent trestle. The larger of these trestles, which was 156 ft. high and 784 ft. long, has been replaced by a heavy steel structure. The other frame structures are being filled in, water passages being provided by large reinforced concrete pipes. In this work nearly 300,000 cu. yd. of dirt will have to be handled.

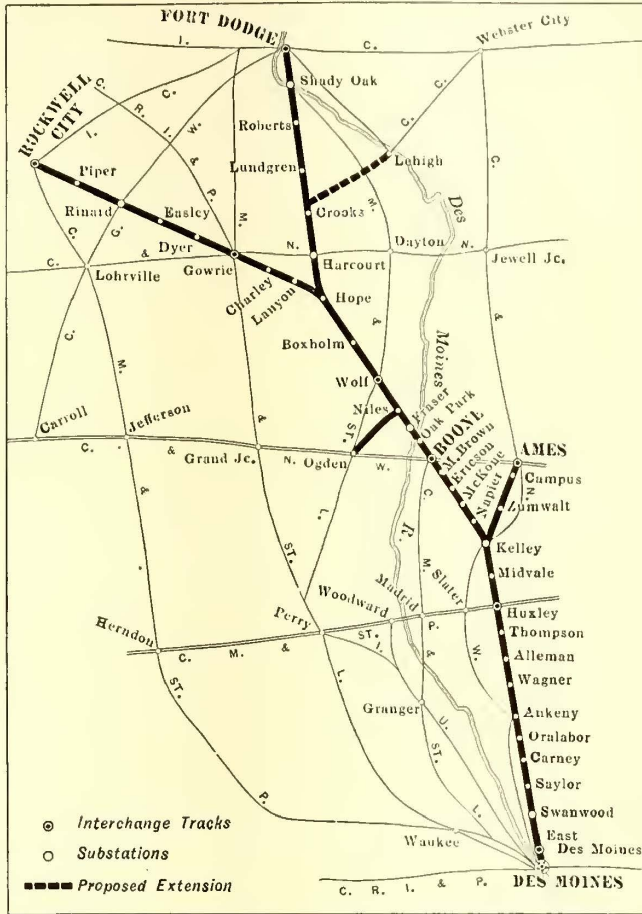
Several of the more hazardous locations on the road have been protected by the installation of General Railway Signal Company light signals. Twelve blocks are now in operation and it is expected that four more will be installed. The signal department reports the successful use of commercial 40-watt concentrated filament lamps in these daylight signals. These lamps may be focussed more accurately than ordinary mazda lamps, thus increasing the effectiveness of the signal illumination, it is said, from 30 to 50 per cent.

The Fort Dodge Line has built up a comparatively large lighting and power load, which is fed from its railway transmission system. Energy is sold in bulk to

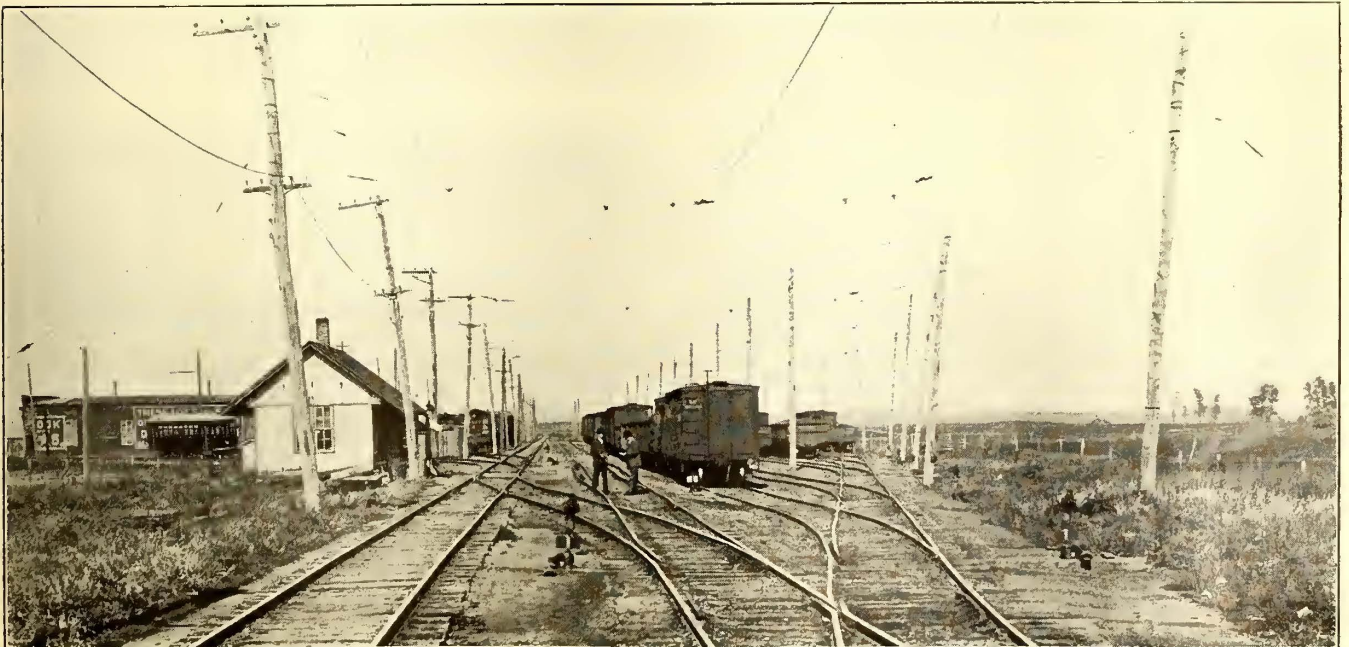
municipalities for lighting purposes, is retailed at many of the smaller towns on branch transmission lines and is sold to coal and clay-working mines. Trolley current at a potential of 1200 volts is sold to grain elevators at various points along the line, and in the Des Moines River valley a number of sand-pump motors are fed by an alternating-current, 2300-volt distributing circuit. These sand-pump outfits require from 100 to 200 hp. each. At Fort Dodge, the company operates the street cars, lights the city and supplies energy for operating the gypsum mills, several clay works and other industries.

POWER GENERATION AND DISTRIBUTION

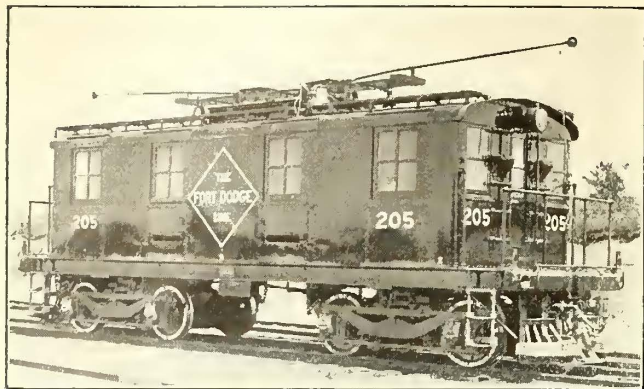
The power supply is obtained from a single generating station located on the Des Moines River at Fraser, about the midpoint of the main line between Des Moines and Fort Dodge. The fuel problem is simple because there are coal mines near the plant and the road operates one mine located at Ogden, 8 miles off the main line. The continued increase in power demand due to growing passenger and freight traffic and to the especially large power and lighting load, has required the installation of additional generating capacity. The units now in service are two Westinghouse 1250-kw., one General Electric horizontal 4000-kw., and one General Electric horizontal 6000-kw. turbine-driven generators,



FORT DODGE LINE—MAP SHOWING PROPOSED ADDITIONS



FORT DODGE LINE—FREIGHT YARD AT EAST FORT DODGE



FORT DODGE LINE—STANDARD ELECTRIC FREIGHT LOCOMOTIVE



FORT DODGE LINE—TYPE OF STANDARD CABOOSE

Weight of locomotive	60 tons				
Equipment	4-GE-251-600/1200-volt motors				
Rated tractive effort	21,400 lb.				
Speed at rating	14 m.p.h.				
Grades, in per cent.	Level,	0.5,	1,	1.5,	2
Tonnage capacity:					
Service A (switching)	1140				
Service B (rolling profile)	1140,	1140,	935,	690,	540
Service C (continuous grade)	1140,	800,	535,	385,	297

all of these units delivering energy at 2300 volts, 25 cycles.

The trolley circuit is fed from the power house and four synchronous-converter substations which are spaced about 20 miles apart. A fifth substation is being built at a junction where the load is especially heavy. This will reduce the average distance between substations to about 15 miles. The substations are connected with the generating station through a 22,000-volt, three-phase transmission system. There is also a duplicate transmission system carrying three-phase, 22,000-volt, 25-cycle current from the power house at Fraser, 37 miles north to Fort Dodge. The latter line was built to assure continuity of service at Fort Dodge.

WATER SUPPLY

Circulating water for the turbine condensers is taken from the Des Moines River. The water is turbulent and carries considerable suspended matter. To assure an uninterrupted flow of screened water, a traveling screen of the Chain Belt Company's design was installed at the river end of the condenser circulating water intake.

This screen is driven by a 5-hp. motor, which moves the screen sections slowly around two drums. The lower drum is at the bottom of the intake and thus all

the water drawn into the station must pass through the slowly-moving screens. As the screens travel around the drums they lift the accumulated rubbish above the intake level. It is then washed off by a spray and carried outside the building which houses the revolving screen. The power-plant engineers have attached to the driving shaft of the revolving screen a make-and-break contact which flashes a pilot light inside the engine room, when the screen is in operation.

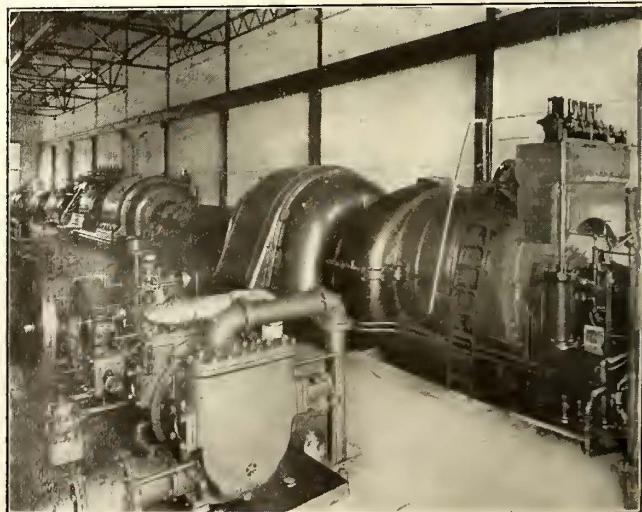
BOILER PLANT

The boiler equipment now includes two units of 500 hp. and four units of 400 hp., all equipped with Green chain grates. Iowa coal, which is very low in heat value and high in sulphur, is burned. Formerly there was trouble with poor ignition. The fire would die away at the front end of the grates and allow excess air to enter. This trouble was corrected by raising the front of the grate and inserting a protruding and sloping bridge at the rear. This bridge acts as a reflector and causes the coal to ignite as soon as it has left the hopper. These grates now burn from 40 to 50 lb. of coal per square foot per hour. The boiler settings are kept tight by painting with a mixture of roofing paint and asbestos.

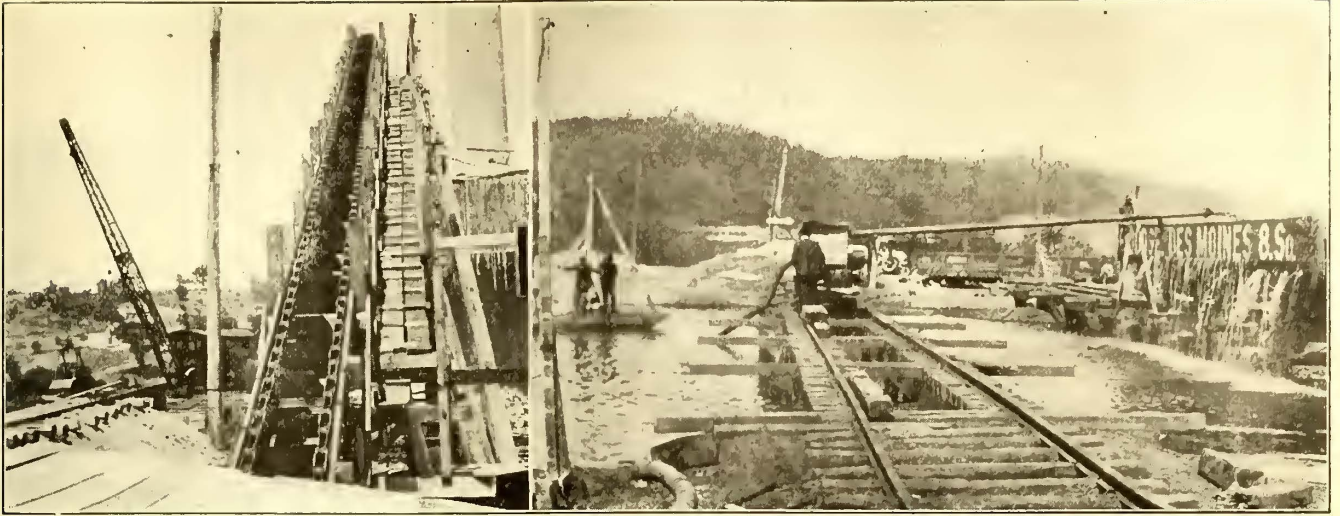
The original concrete stack which was about 185 ft. high and 8 ft. in diameter, has been taken down because of the development of horizontal and vertical cracks. The failure was attributed to the use of too little cement and water in making the concrete. The John Boland Construction Company has just completed the erection of two reinforced concrete stacks, 9 ft. 6 in. inside diam-



FORT DODGE LINE—VIEW OF NEW TERMINAL BUILDING AT FORT DODGE



FORT DODGE LINE—TURBINE ARRANGEMENT AND POWER-HOUSE CONSTRUCTION



FORT DODGE LINE—METHODS OF HANDLING COAL—UNDER-WATER STORAGE PIT

eter and 212 ft. high. Each of these stacks has sufficient capacity to handle five boilers.

In former years the cost of cleaning boilers amounted to as high as \$300 per month. One gang of cleaners was at work all of the time. The river water which was used contained from thirty to thirty-five grains of scale-forming material per gallon. A little more than a year ago a water-softening plant was installed which reduces the scale-forming material to about three grains per gallon. This is a continuous-process water softener manufactured by the William Graver Tank Works, East Chicago, Ill. The cost of operation of the water softener is about \$40 per month, and its use has almost eliminated boiler cleaning. An extra supply of softened water is stored in a large wooden tank which formerly was used for engine water when steam locomotives were operated.

UNDER-WATER COAL-STORAGE PLANT

Iowa coal has such a high sulphur content that when stored in bulk it ignites rapidly, and because of the need for a large reserve supply of coal an under-water coal-storage plant, with a capacity of 6000 tons of Iowa screenings, has recently been built. This storage pit is near the boiler house and coal is unloaded into it by gravity from hopper-bottom cars. The pit is 121 ft. square and 18 ft. deep. Water for submerging the coal is delivered to it by the power-station service pump. The pit cost \$12,000, not including the erection of the two trestles and tracks across the center.

The method of pumping coal from the storage pit is of particular interest. A centrifugal pump, driven by a 25-hp. motor, has been mounted on a trestle. A small barge which can be moved about as the coal is taken from the pit is used to support the suction pipe of the pump. With this outfit 40 tons of coal can be loaded into a car in thirty minutes.

The arrangement of tracks for delivering coal to the pit is such that incoming coal may be taken directly over the pit and dumped into the water, or may be run farther along and dumped into a hopper from which it is carried by a conveyor to the bunkers over the boiler, or the cars may be run still farther by gravity to a storage yard near by. Also the pumping outfit is designed to lift coal from the pit over the side wall into the hopper of the conveyor leading to the boiler-house bunkers.

The economy of this pit appears not only from its storage value and protection against spontaneous combustion, but also in another direction which probably would not appear except with Iowa coal. When this

coal is stored under water, the clay dissolves out and thus materially increases the fuel value of the coal.

Acknowledgment is made to C. H. Crooks, general manager; Byron T. Mottinger, electrical engineer, and T. J. Richards, superintendent of the power and lighting department, for information contained in the foregoing account of recent improvements on this electrified railroad.

Proposed Inspection Tour in Connection with I. E. S. Lecture Course

The committee in charge of the inspection tour, which it is expected will be an outstanding feature of the lecture course to be given under the auspices of the Illuminating Engineering Society and the University of Pennsylvania in September, has issued the following preliminary information:

The general purpose is to assemble as many as may be interested in taking this trip and take them as a party to visit places of notable lighting interest. At each city there will be a local committee having charge of the entertainment of the visitors and seeing to it that they obtain as much as possible of value in the way of information and interest.

The cities of Pittsburgh and Washington will be visited in advance of the convention. During the lecture course there will be a week-end side trip to Atlantic City. Subsequent to the lecture course the party will visit New York, Boston, Schenectady, Buffalo, Niagara Falls, Cleveland and Chicago.

Arrangements will be made so that those desiring to do so may join the party at any point and leave it whenever desired, provided only that each delegate must register for that part of the trip which he proposes to take in order that arrangements for taking care of him may be completed.

The following is the itinerary: Pittsburgh, Sept. 16; Washington, Sept. 17; Philadelphia, Sept. 18 to 23; Atlantic City, Sept. 24; Philadelphia, Sept. 25 to 28; New York, Sept. 29 to Oct. 1; Boston and Lynn, Oct. 2; Schenectady, Oct. 3; Buffalo and Niagara Falls, Oct. 4; Cleveland, Oct. 5; Chicago, Oct. 6.

In order to make it impossible for passengers sitting in an end cross seat to put their feet on the adjoining longitudinal seat the Kansas City (Mo.) Railway has installed a cast grill on the rattan seat ends. This grill is made comfortable as a seat rest, but uncomfortable as a support for the feet.

Regulating Motor-Vehicle Traffic

Three Speakers Before Pacific Claim Agents' Association in Tacoma on August 9-11 Told How to Regulate Motor Vehicles, Co-operate with the Drivers and Appraise Property Damages

BESIDES the general papers on the fundamentals of claim work, relations of claim departments with the public, and photographic and other aids in claim work, which were published in the ELECTRIC RAILWAY JOURNAL of Aug. 19 in connection with the proceedings of the eighth annual convention of the Pacific Claim Agents' Association in Tacoma, Wash., on Aug. 9-11, there were presented at this convention three papers discussing in detail various phases of motor-vehicle traffic closely related to claim department activities. To be specific, these dealt with the regulation of such vehicles, co-operation with their drivers and owners, and the appraisal of property damages, as shown by the accompanying abstracts.

Co-operating with Owners and Drivers of Motor Vehicles

BY J. W. BROWNE

Claim Agent Tacoma Railway & Power Company, Tacoma, Wash.

The increase of accidents under the heading of "vehicles colliding with cars" is a matter that should command the attention of all street railway men. Where this class of accident occurs, it is up to the claim department, in almost every case, to explain that the company is not at fault and at the same time to do it in a way that will make a friend instead of an enemy. The trouble is that the increase in motor-driven vehicles is so great that laws governing their operation are lacking and even the laws now on the state books are not properly enforced. It is comparatively easy to talk to claimants when they can be shown that they have violated a law or an ordinance; but where an accident is not covered by regulations it requires a great deal of tact to reject a claim and at the same time keep or make a friend for the company.

Our department has devised a "reckless-driving card," and all student trainmen are thoroughly instructed by the department in its use. On it appears the following:

REPORT OF CARELESS DRIVING	
AUTOMOBILES AND OTHER VEHICLES	
Date	Time
Location	
Description	
Auto. No.	Vehicle No.
Owner's Name	
Driver's Name	
Remarks:	
Signed by	
.....	Motorman
.....	Conductor

NOTE: If between sunset and sunrise state whether or not lights were burning on vehicle as required by ordinance.

When these cards are received at the claim department, a letter is written, such as the following:

We are advised that on Feb. 7, about 2.30 p. m., your automobile, Washington No. 1468, passed a standing car loading passengers at Division and I Streets without stopping, which it is unnecessary to state is a violation of the city ordinance and a very dangerous practice.

Every effort to promote safety in the city streets is of direct importance to you, as it also is to us. Every care-

less act, by whomsoever committed, is a menace to life and to property. To be sure, accidents will sometimes occur, and the purpose of this letter is to appeal to your own good judgment and to your personal interest to the end that we may have your co-operation in reducing accidents to the lowest possible minimum.

Safety First. It is far better to be safe than sorry.

This is the answer:

I have your recent letter advising me that my auto passed one of your standing cars while it was loading passengers. I thank you for calling my attention to this matter, and hope you will do so if such a thing ever occurs again, which I very much doubt. I fully appreciate the effort you are making for safety and protection to human life and will spare no pains to assist you in every way possible.

Another reply to the same kind of letter follows:

In reply to your kind favor of Aug. 25, we have instructed our drivers to be more careful in the future.

Thanking you for the courtesy shown, we are—

Here is an answer to a letter in which we called attention to the fact that there were not the proper lights on the auto:

We wish to say that it is a hard matter to put lights on a gasoline wagon which would be safe. In consequence of this, we have instructed our drivers positively to have their wagons at the plant before dark.

Thanking you, we beg to remain—

It is the exception when we receive a letter in which there appears any disposition to question our motives or to deny the occurrence which was referred to in our letter.

The use of safety zones can well and profitably be encouraged by the street railway, and it should be known that the company is advocating these zones not only for the benefit of passengers but also as a help and convenience to the motor vehicle driver. The best zone to adopt is a question which does not enter this discussion.

When accidents occur and the observers' statements show conclusively that the company is not at fault, then is the time to do a little missionary work and impress the claimant with the work done and money expended by the company in an effort to reduce accidents. Let the claimant read the statements and let him know that the company is anxious to make good any and all damages for which it is responsible.

In the company column of the daily papers there appeared the following advertisement:

SAFETY STOPS

For the single purpose of eliminating danger to the public so far as it is within our power to do so, in a single day's operation of twenty-four hours, we require our car operators to make the immense total of 25,582 safety stops.

This was followed up by repeating the above and adding:

Would it not be a good plan if you would try making a few safety stops each day at possible danger points and help avoid accidents both to the public and to yourselves? TRY IT.

Our company has posted in all garages and livery barns large cards with different accidents illustrated on them and cautious calling attention to the proper way to cross tracks and street intersections. We also have

a set of blotters, one of which we mail with every request for a statement. These blotters, however, cover a number of accidents. It might be a good idea to make up a series of illustrated blotters and enclose one with each request for a statement, having the illustration conform to the particular kind of automobile accident as nearly as possible. Cards hung in cars giving the number of automobile accidents would also call the attention of the public to the dangers of motoring. In general, the best policy for co-operation with owners and drivers of motor vehicles consists of publicity on the part of the company as to what the company is doing in trying to reduce accidents, and of tact and courtesy on the part of the men who come into contact with the owners or drivers of motor vehicles.

Regulation of Motor Vehicle Traffic in Seattle

BY A. J. FALKNOR

Attorney Puget Sound Traction, Light & Power Company,
Seattle, Wash.

About 40 per cent, a slight increase, of the accidents of the Puget Sound Traction, Light & Power Company for the first six months of 1916 consist of collisions between the street cars and the various types of motor vehicles. This shows how the regulation of such traffic

**Travers vs. Spokane Street Railway* (25 Wash. 225, 243):

"The defendant company, at the place where the accident happened and the collision occurred, had the preference and superior right to the use of the track, and it was the duty of the plaintiff not to obstruct the use of said track or the operation of the cars thereon. It was his duty to turn out to allow such street car to pass, if he was driving on the track, and it was his duty to remain off the track and not attempt to cross the same in front of the moving car, except at a safe distance therefrom. A failure in either of these respects constitutes contributory negligence and defeats recovery, and entitled defendant to a verdict."

Pantages vs. Seattle Electric Company (55 Wash. 453, 456):

"The court was requested to give the following instruction: 'You are instructed that if you find that the motorman saw the automobile upon the track and there was nothing to obstruct the view of the occupants of the automobile of the approaching car, such motorman had a right to assume that the automobile would be turned off of the track and out of danger in time to avoid a collision, and the motorman had a right to indulge in such assumption until the danger of a collision became imminent.' This requested instruction clearly states the law of the case and should have been given."

Arpagus vs. Washington Water Power Company (86 Wash. 83, 86):

"This involves an inquiry as to the relative rights of the drivers of vehicles and street cars. These rights are mutual and reciprocal. Each must have a due regard for the rights and safety of the other. Street cars, being operated upon fixed tracks, have in a sense a right of way over that part of the street upon which the tracks are laid. The motorman is entitled to act upon the assumption that a driver or a pedestrian will exercise due care for his own safety (it is not necessary for him to stop the car until he sees that the other is in apparent danger); and further, that traffic going parallel with a car track will not turn abruptly in front of a moving car."

Helber vs. Spokane Street Railway (22 Wash. 319, 322):

"While it is true, as this and many other courts have frequently said, that street cars have not an absolute right of way through the streets, and that pedestrians and others have an equal right to travel on or across any street, yet this latter right must be exercised reasonably, and is qualified by the fact that cars run on fixed tracks, and, in the nature of things, cannot accommodate themselves as readily to emergencies, and cannot even stop with the same promptness or facility, as can pedestrians or drivers of free vehicles, who can instantly stop, or turn to right or left and avoid a collision with an advancing car. The universal knowledge of this fact has established a custom, which ought in justice to have the force of law, making it the duty of the party who can more easily and readily adjust himself to the exigencies of the case to do so, and to stop or turn to avoid a collision; and the motorman has the right to presume that such duty will be performed."

Briscoe vs. Washington-Oregon Corporation (84 Wash. 29, 31):

"The only negligence claimed against the street car company was that the car was traveling at an excessive rate of speed. But whether it was or not, there was nothing in front of the appellant to obstruct his view. The street was open; the street car was in plain sight upon the track; and there can be no doubt of the fact that the proximate cause of the accident was the plaintiff's own negligence."

Bowden vs. Walla Walla Valley Railway (79 Wash. 184, 187):

"The driver of an automobile, approaching such a crossing as the one in this case, must make reasonable use of his senses to guard his own safety, and the failure to do so is negligence. Such a person cannot take a last look 150 ft. or 175 ft. away from the crossing, and then shut his eyes and go blindly forward. While we shall not attempt to say within what distance respondents should have looked for an approaching car before attempting the crossing, the law does require that such a look must be taken within such a distance as to enable one to ascertain whether or not there is an approaching car in sight."

with the view of diminishing the number and seriousness of the accidents is one of importance to all traction companies.

Many rules of conduct are and have been evolved through court decisions. All of the rules determining the relative rights of street cars and motor vehicles are not found in the statutes, but some through the application of common sense, developed and defined by the decisions of the courts. As far as Washington is concerned, from somewhat brief excerpts of court decisions,* it appears that two of the fundamental features of the regulation of motor-vehicle traffic in cities are as follows:

1. As the street car is operated on fixed tracks it has the superior right to that portion of the street where its tracks are laid, and it is the duty of the driver of motor vehicles to yield that right to the street car company. A motorman has the right to assume that the driver of an automobile will act accordingly.

2. A driver of an automobile must make reasonable use of his senses to guard his own safety and the failure to do so is negligence. If a person drives upon a street car track without using his eyes and his ears to learn if there is an approaching street car and a collision occurs, under the court's rulings he is not permitted to recover.

In Seattle a city ordinance† more definitely establishes the superior rights of the street cars over motor vehicles to that portion of the street over which the tracks are laid when the street car desires it in its operation. In addition to this general municipal provision, motor-driven vehicles are required to stop before passing any street car that is stopped to load or unload passengers, and not to turn or cross intersections at a greater speed than 8 m.p.h.—two very important municipal regulations looking toward safety, which if enforced would prevent many of the collisions which occur with motor vehicles.

A type of collision which has caused and is causing many of the accidents between street cars and the motor-driven vehicles is due to the oversight of drivers or inattention as to the overhang of the street cars. Ordinary prudence requires drivers of motor vehicles to take notice that there is an overhang to a street car when rounding a curve.‡ In the decision quoted, however, the court stated in effect that if the conductor or motorman discovered the perilous position in time to prevent an injury by the stopping of the car after it had been started, it was the employee's duty, of course, to do so.

While it is possibly not legally the duty of a motorman and conductor, or either, to be on the lookout to warn drivers of motor vehicles as to the danger of

†“(22) Excepting as provided in Rule 19, street railway cars shall be entitled to the track, and in all cases where any team, automobile or other vehicle shall meet or be overtaken by any car upon any of the tracks of any of the street railways of this city, such team or vehicle shall give way to said car as soon as possible, and in no event shall any vehicle overtaken by such car proceed on such tracks for a greater distance than one block or after arriving at any street intersection; nor shall any person wilfully or purposely obstruct, hinder, delay or in any way interfere with any of said street railway cars, by placing, driving or stopping, or causing to be placed or driven at a slow pace or stopped, any team, vehicle or obstacle, in, upon, along, across or near the tracks of said street railways in any manner so as to obstruct or interfere with the movement and operation of the same, after being notified by the motorman or conductor, by the ringing of the gong or otherwise.”

The exception referred to as Rule 19 has to do with fire wagons, ambulances, etc.

‡*Gannaway vs. P. S. T. L. & P. Co.* (77 Wash. 655):

"The respondents had ceased to be passengers on the car when the accident happened, and the appellant owed them no greater duty to look out for their personal safety than it owed to persons passing along the street generally. It is not a duty of street car companies to warn pedestrians on the streets that there is an overhang to an ordinary street car when it rounds a curve. This is a matter of common knowledge, and ordinary prudence requires that every one take notice of the fact."

the overhang, it certainly is good and proper practice for such employees to be vigilant in the operation of their cars at places where the overhang may cause accidents, so that they may warn the thoughtless or unmindful driver of motor vehicles of the danger. Indeed, too much stress cannot be laid upon the duty of employees not to go blindly forward in the operation of their cars, relying upon their legal rights as established either by the courts or fixed in municipal ordinances, but to be constantly on the alert and to yield at such times and places as is necessary to avoid an accident. It is well, of course, for employees to know their legal rights, but it is also well that they be advised that it is better to yield their legal rights, if by so doing an accident can be avoided.

The question of enforcement of municipal ordinances which are being violated by motor vehicles is one that frequently arises and challenges the correct attitude of the street car company—that is, should the employees of the street car company report violations of municipal ordinances, especially those that involve safety to those traveling on the street cars? We create for us a great many fishhooks if we report these violations, and undoubtedly by not so doing wink at a practice that results in more collisions. Undoubtedly it is the duty of the company, irrespective of whom it hits, to report flagrant violations. To do so probably brings a few curses on the company, but in the long run it tends to the observance of ordinances that make for safety.

Moreover, as a preventive of collisions and accidents between street cars and motor vehicles, settlements, especially where the damage is not beyond that of the automobile, should not be encouraged. It is a type of accident that by litigation is greatly discouraged. Fight them. They will be more careful the next time and their friends will also.

It seems that for some of the more congested streets during certain hours of the day the time must come when motor vehicle travel in the interest of safety will be excluded. To balance the rights between the general public and the drivers of motor vehicles requires time, patience, and determination to do right by all factions; but inasmuch as the street cars are the general means of conveyance, and undoubtedly will remain so, they ought to be accorded exclusively the limited portions of the business districts required for their operation during the congested hours.

While the subject is one that is broad enough to include regulation of the jitney, still such general regulation having largely to do with the welfare and growth of the city, especially the suburban districts, involves really a greater subject than that of safety. The jitney will not find its permanent and legitimate place in this State until it has been subjected to a just, fair and reasonable regulation. It will not reach such place by being permitted to run wild. The settlement of the jitney question must be approached and determined from the standpoint of the general public. Undoubtedly the general public good will require the jitney to be subjected to reasonable regulations. If it can survive reasonable and just regulation, to the extent of its survival it will find its permanent and legitimate place. If it cannot survive just and reasonable regulation, it will disappear. It is not the province or purpose of this paper to determine what is just and reasonable regulation, but such regulation will require safety, comfort and convenience to passengers, regular schedules and reasonable fares, and a just and due regard to the rights of other transportation companies that have expended their money in the paving of streets, the establishment of lines of travel and the building up of rural communities.

Appraisal of Property Damage

BY F. M. HAMILTON

Superintendent Department Accident Investigation, Puget Sound Traction, Light & Power Company, Seattle, Wash.

The following carefully compiled statistics from our Seattle records show a remarkable decrease in every class of accident excepting "collisions with vehicles," this particular type having steadily increased until it now represents nearly 50 per cent of our accidents:

	1911	1912	1913	1914	1915
Collisions between cars.....	22	15	15	21	9
Collisions with vehicles.....	363	424	537	515	\$49
Collisions with pedestrians....	176	149	139	116	\$9
Derailments	25	9	8	5	10
Defective car or track.....	79	21	56	28	18
Boarding moving cars.....	114	32	49	38	11
Boarding and leaving still cars.	172	151	172	184	150
Leaving moving cars.....	209	125	110	106	46
Persons while on cars.....	361	351	384	427	321
Miscellaneous	257	76	83	84	66

The steadily ascending curve of vehicle accidents is undoubtedly due to two principal causes: First, the constantly increasing number of motor vehicles, and, second, the almost criminal carelessness of many drivers and chauffeurs.

We have in our organization a man specially assigned to the appraisal of property damages, and investigating accidents wherein property loss is involved. We were fortunate in securing a practical mechanic, who is familiar with automobile prices, cost of parts, market values, etc. He has been with us several years, during which time he has had occasion to call frequently at almost every garage in town and is well known to the various automobile agents and garage owners. It may be added he has an intimate knowledge of these gentlemen and is able to distinguish between the fair and the unfair.

After the accident reports reach the office they are classified, and all reports involving property damage are turned over to him. The advisability of calling on the owners of damaged property is left to his judgment. It is generally considered advisable to call in all cases where there is apparent liability on the part of the company, or where the liability is doubtful but personal injury exists. To call upon owners of damaged property usually suggests the idea of the possibility of recovery from the company, and such calls are avoided as much as possible.

Each case in which it is considered advisable not to call is allowed to investigate itself, statement blanks being mailed to the witnesses for their version of the accident. Frequently the owner thus slighted by the company appears in his own behalf at our office, and is turned over to the appraiser. If the latter is absent from the office, an arrangement is made for him to inspect the property. Suits are seldom filed against the company in cases where neither the company deemed it advisable to call nor the party to come to the office.

In a case where it is considered advisable to call, an effort is made to interview the owner of the property and to learn his version of the accident. Moreover, careful inquiry is made to ascertain whether any personal injuries resulted from the accident, especially where women or children are involved. The reason for this is obvious, for when a property damage claim is rejected and a suit is instituted against the company, any slight personal injury is often greatly magnified. If any injury is complained of arrangements are made, if possible, for examination by the company's physician, or an effort is made to ascertain the name of the attending physician.

Property damage, as far as our company is concerned, comprises principally damage to vehicles, in which is included damage to contents, which often

amounts to a considerable sum; store windows, which are frequently broken by stones from the gads of repair crews in the downtown district; damage to buildings from escaping steam from our steam mains, and damage to clothing.

We leave it entirely to the owner of a vehicle to select his own shop where he wishes repairs made. Almost every owner favors a particular shop, and he is naturally suspicious of other suggestions. As a matter of fact, each prominent make of car is generally repaired at the shop representing that particular type.

To deal with large firms or corporations who own a number of commercial vehicles and who are acquainted with our methods of procedure is much easier than to deal with the individual. The vehicle is usually sent to a repair shop, and our appraiser is notified. He goes over the extent of repairs with the repair man, and usually no trouble ensues. It is understood that no responsibility is assumed on his part as to liability, which is later determined by the results of the investigation. It has taken a long time to reach this stage, however, as the appraiser has often been accused of authorizing the work done and making all kinds of promises. Yet he has managed to hold his own, though compelled at times to do so before the court. In cases where liability is conceded on the part of the company, it is not always discreet so to state to the owner of a vehicle before an agreement has been reached as to the extent of the damage.

The individual owner of a commercial vehicle usually raises the question of hiring a vehicle to operate during the time necessary to make repairs. And in cases where a specially constructed vehicle is damaged and cannot be temporarily replaced, the losses in revenue are to be considered. In some cases it is necessary to send to other cities on the Coast for parts, and sometimes to the Eastern factory. The appraiser takes account of these important items, and reports the reasonable time necessary to make repairs.

It is generally conceded in cases of liability that the claimant is entitled to be paid the whole of his damages, but it is not always easy to agree as to what constitutes "whole." Unfortunately our cars have at times collided with new automobiles, still in possession of the dealer. In one instance of recent date, an auto was on its way to be delivered, the bill of sale being in the pocket of the driver, when the street car prevented its delivery. The question of depreciation arises in such cases and is difficult to determine. The agent usually operates his own shop, and his mechanics are willing to testify in his interests. A similar condition obtains in cases where automobiles have been in collision when almost new. The owners are frequently informed by the agents that the machine will never be as good again, no matter what repairs are made. In such cases, where an agreement as to the extent of damage or depreciation cannot be satisfactorily reached, our appraiser is authorized to call in two or three auto experts to give their judgment of damages, and in the event of a suit they are called in as witnesses. This is also done in cases where the repair man and the owner are in collusion.

Cases are not infrequent where the owner of a private automobile refuses to have any repairs made until the company decides what, if any, settlement it will effect. Others will demand that all slightly damaged parts be replaced with new parts, though not intending to order the work done until the company settles. In the event of their claims being rejected, they usually have few repairs made, and sue for large sums, grossly exaggerating their damages. It is necessary to anticipate their actions and fortify the position of the company by additional testimony. The appraiser has a record

of claims filed against the company, and on his daily rounds he picks up much valuable information.

The appraiser is frequently brought in touch with the insurance adjusters in his work, and they can often work together to advantage. The insurance companies frequently take the initiative where the damaged auto is insured, and they usually effect a saving when possible. The difficulty of the appraiser grows out of the fact that he is endeavoring to determine a fair estimate of the damages, which is usually conceded in the event of a settlement being effected, but is immediately exaggerated when a suit is filed against the company.

The prime factor in the appraisal of property damage is to be always fair, both to the claimant and the company, and to build up a reputation by fair dealing which will convince all parties, even the most radical, however questionable their actions may have been, that the claim agent at least did the right thing.

Electrical Week Poster Selected

THE Society of Electrical Development has selected the poster shown in the accompanying illustration for use in Advertising America's Electrical Week which



AMERICA'S ELECTRICAL WEEK
POSTER

will be celebrated Dec. 2-9, 1916. The idea of the picture is taken from the Arabian Nights story of Aladdin's Lamp. The ancient Aladdin summoned an all-powerful slave by the mere rubbing of a certain mysterious lamp. The modern Aladdin pushes a button and the genie, Electricity, appears with a service of light, heat and power which rivals the treasures which the slave of the old story had to offer. The object of the Electrical Week is to make electricity popular and to drive

Boston Elevated Railway Wins Appeal in Damage Case

The Massachusetts Supreme Court has set aside a verdict of \$2,500 against the Boston Elevated Railway obtained by a woman plaintiff named Langley for injuries suffered when she was knocked down by two brakemen of the rapid transit lines, who were engaged in a friendly scuffle while off duty at the Sullivan Square terminal station. The men were waiting for a car to take them homeward. The full bench holds that to consider a carrier liable for acts and defaults of the servant as servant or employee it must be proved that the person so acting or failing to act was, in a legal as distinguished from a popular sense, in the employ of the defendant at the time of the acts complained of.

Substation Records Increase Efficiency

A Description of the Method of Compiling Substation Operating and Maintenance Records on the Illinois Traction System—Interesting Maintenance Cost Data Are Presented

By JOHN LEISENRING, Signal Engineer, and HARRY W. COE, Assistant Superintendent of Substations, Illinois Traction System

ABOUT four years ago the maintenance and operation of the thirty-nine substations on the Illinois Traction System were combined with the signal and overhead department, and the headquarters of the combined offices moved to Springfield, Ill. Prior to that time but few records of burnouts or other substation troubles which occurred from time to time had been compiled. The practical necessity for adequate data on past performances was forcibly brought before the new organization by its inability to compare maintenance and operating conditions as they were with what they had been. This situation brought about the development of the present system of records described in this article.

Thirty individual substations are located at various points along the Illinois Traction System's 450 miles of lines and five others are operated in conjunction with the generating stations used primarily to supply the utilities of the cities in which they are located. These generating stations are located at Danville, Riverton, Peoria and Venice, Ill., and, with the exception of Riverton, all furnish power jointly to the interurban railway and to city properties. These stations supply three-phase, 25-cycle energy to the railway substations at 33,000 volts. The locations of substations and power houses are shown in the map which appears on this page. The capacity and type of equipment in the various stations, as well as the intervening distances, are listed in the table published on page 356.

It is the standard practice in practically all substations to bring the transmission line loops into the station through wall bushings to disconnecting knife switches in a tower. Below the knife switches on one side of the tower, the leads to the station buses are opened through a standard automatic oil circuit breaker, and a similar circuit breaker is installed between the buses and each bank of transformers. Energy is supplied to some of the nearby towns and villages, and is required for the operation of the automatic block signal system. Where possible the special equipment required for these services is installed in the railway substations. However, ten additional outdoor substations furnish energy to small towns for power and lighting.

The substation maintenance organization consists of two repairmen with assigned territory, one meter in-

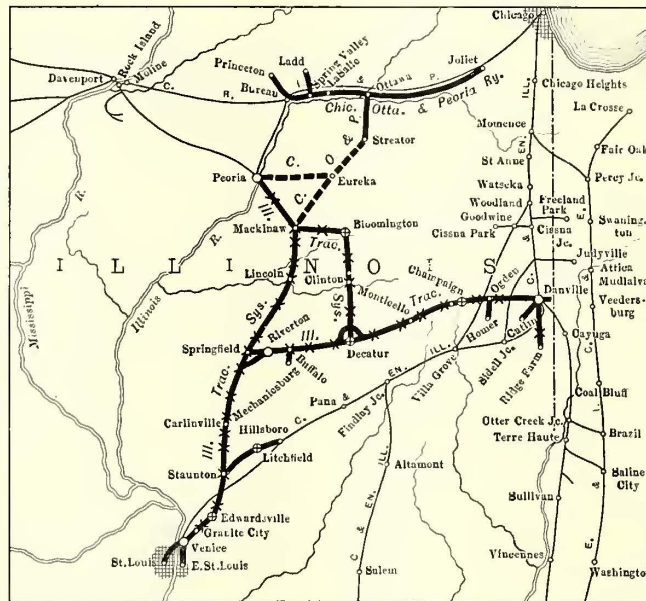
spector, one station inspector, and one general foreman whose gang is used on construction and on heavy or emergency maintenance work over the entire system. These men report to the assistant superintendent of substations, who in turn reports to the signal engineer. Due to the size of the system it has been found desirable to place the load or power dispatching in the hands of one man, who is located at Springfield, and issues, over the company's telephone lines, all instructions to substation operators for sectionalizing or distributing transmission line loads. All repairmen in the department

communicate frequently with this power dispatcher, who in turn transmits to them instructions from the heads of the department or other information as occasion demands.

The scheme of organization provides at least three ways by which information concerning operating conditions may be conveyed to the proper officials: Through daily substation operators' reports, through the system station inspectors' reports, and through the bi-monthly station inspection form. The daily substation report, which is shown in the reproduction on page 355, is practically a log sheet of the substation operation for the twenty-four hours prior to the hour of closing. It shows the hourly readings of meters, the operation of

switches, the time of shutting down units, the time of starting them, the power interruptions, etc. The reverse side of this report is used to record the existing condition of station apparatus, the work done during the period of shutdown and other items of interest.

Besides this written report telephone reports are made promptly by the substation operators to the power dispatcher in case any unusual condition arises or if there is emergency trouble. This latter practice enables repairmen to get to the source of the difficulty quickly and thus prevent more serious trouble from developing. On account of the heavy freight traffic, as well as the operation of sleeping-car trains during the night hours, it is impossible for a number of the substations to shut down for cleaning and general inspection, except during short intervals between regular trains in the daytime. As a check on the operators during the night, they are required to report hourly by telephone from 6 p. m. to 6 a. m. to designated stations located centrally on the various divisions. A record of these reports is



X Substation only
 O Substation in Connection with Power House Supplying Local Utilities
 O Substation in Connection with Generating Station for Interurban

ILLINOIS TRACTION SUBSTATION MAINTENANCE—LOCATION OF SUBSTATIONS AND POWER HOUSES ON SYSTEM

ILLINOIS TRACTION COMPANY

RECORD OF POWER DISTRIBUTION

For 24 Hours Ending 7 a. m. 8/26/16

1916

Table with columns for Substation, Time, and various power distribution metrics. Includes substation names like Georgetown, Danville, etc.

Table with columns for Power Station, Power Distribution, and Notes. Includes station names like Danville, Peoria, etc.

ILLINOIS TRACTION SUBSTATION MAINTENANCE—POWER DISPATCHER'S LOG

sent to the signal engineer each morning. Reports made more than five minutes prior to or after the hour are not accepted by the checking station or indicated on the report form.

Daily reports from the system station inspector and repairmen are also required. They show the date, the hours worked, the material used and work done. One of these forms is reproduced on page 354.

Orders are outstanding that each repairman or inspector shall make as thorough an inspection as is possible without causing unnecessary delays to train

operation whenever he visits a station. This daily report form is made in a size convenient for carrying in the inspector's coat pocket, and a sufficient quantity for a month's use is bound together with duplicate sheets which are provided for record and reference.

SURPRISE INSPECTION RAISES STANDARD OF OPERATION

Every two months, and without notice, a thorough detailed inspection is made of each station by the assistant superintendent of substations. Each piece of

Detailed Record of Interruptions, Illinois Traction Substation Maintenance System

TABLE II—BLACK—POWER HOUSE AND LINE TROUBLE

JANUARY—FEBRUARY—MARCH

- 1— 1/5—7.01 a.m. to 7.20 a.m.—Mindale to Emery—Line oil switch open at Mindale.
2— 1/5—6.55 a.m. to 7.32 a.m.—Champaign to Decatur—Trouble at storeroom—Danville unable to carry load
3— 1/6—4.36 p.m. to 4.31 p.m.—Stallings to Anderson
4.51 p.m. to 6.08 p.m.—Stallings to Hamel—Pole on fire at Granite and at Ruth—Venice unable to carry load.
4-1/16—6.45 p.m. to 7.06 p.m.—Ridgely—Smokestack on wire
5-1/16—8.26 a.m. to 8.54 a.m.—White Heath to Oakley—Pole in bad order at Decatur—Danville unable to carry load.
6-1/16—9 p.m. to 9.29 p.m.—Stallings to Gillespie
9 p.m. to 9.39 p.m.—Stallings to Behme
9 p.m. to 9.44 p.m.—Stallings to Anderson
9 p.m. to 9.54 p.m.—Litchfield
Pole in bad order at Ruth—Venice having transformer trouble
7-1/21—1.26 a.m. to 3 a.m.—Litchfield—Work on roof
8-1/30—10.40 a.m. to 5.25 p.m.—Litchfield—High-tension trouble
9-1/31—10.30 a.m. to 1.02 p.m.—Champaign to Decatur—Poles on fire at Staleys—Trouble in tower at Decatur
10— 2/1—8.26 p.m. to 9.30 p.m.—St. Joseph
8.24 p.m. to 9.54 p.m.—Bondville
8.24 p.m. to 9.13 p.m.—White Heath
8.24 p.m. to 10 p.m.—Bement
8.24 p.m. to 9.13 p.m.—Oakley
8.24 p.m. to 9.48 p.m.—Emery
8.24 p.m. to 9.48 p.m.—Danvers
8.24 p.m. to 9.30 p.m.—Mackinaw
8.24 p.m. to 9.30 p.m.—Mindale
8.24 p.m. to 9.30 p.m.—Union
High-tension trouble and stations unable to carry load.
11-2/23—2.25 a.m. to 4.05 a.m.—Mackinaw—High-tension trouble
12— 3/3—12.55 a.m. to 3 a.m.—Georgetown—Renewing high-tension insulation
13— 3/5—6.03 a.m. to 8.25 a.m.—Stallings—High-tension trouble
14— 3/4—10.21 p.m. to 10.30 p.m.—Chatham
10.21 p.m. to 10.41 p.m.—Virden
10.21 p.m. to 10.41 p.m.—Anderson
10.21 p.m. to 10.48 p.m.—Behme
10.21 p.m. to 10.48 p.m.—Gillespie
10.30 p.m. to 11.20 p.m.—Stanton
10.21 p.m. to 11.05 p.m.—Hamel
10.21 p.m. to 11.20 p.m.—Edwardsville
10.21 p.m. to 11.38 p.m.—Stallings
10.21 p.m. to 10.48 p.m.—Litchfield
High-tension trouble
15— 3/6—8 a.m. to 8.20 a.m.—Stallings—High-tension trouble
16—3/14—3.40 p.m. to 3.52 p.m.—Decatur to Champaign—High-tension trouble
17—3/18—6.43 a.m. to 7.23 a.m.—Stallings—High-tension trouble

GREEN—SHUTDOWNS FOR MAINTENANCE

JANUARY—FEBRUARY—MARCH

- 1— 1/3—10.30 p.m. to 1 a.m.—Turning alternating-current rings—Chatham
2-1/10—9.18 p.m. to 12.35 a.m.—Gillespie—Changing armatures
3-1/15—10.46 a.m. to 2.06 p.m.—Litchfield—Working on building
4-1/17—7.30 p.m. to 10.08 p.m.—Elkhart—Ridgely running backwards
5-1/30—7.25 p.m. to 8.20 p.m.—White Heath—Replacing choke coil insulator found in bad order
6— 2/2—11.10 a.m. to 11.30 a.m. and 12.20 p.m. to 12.35 p.m.—Edwardsville—Repairing alternating-current end of armature
7— 2/4—10.04 a.m. to 10.25 a.m.—White Heath—Repairing choke coils
8— 2/5—2.27 p.m. to 2.58 p.m.—Harristown—Work on alternating-current lightning arresters
9— 2/8—9.25 a.m. to 9.40 a.m.—Illioipolis—Tying in bus insulation
10-2/10—2.26 p.m. to 3.06 p.m.—Harristown—Work on alternating-current lightning arresters
11-2/10—7.47 a.m. to 8.38 a.m.—Riverton—Work in power house
12-2/11—1.25 a.m. to 5 a.m.—Buffalo—Rewiring switchboard
13-2/12—12.48 p.m. to 1.05 p.m.—Bement—Repairing roof
14-2/13—1.30 p.m. to 1.40 p.m.—Clinton—Repairing roof
15-2/13—2.53 p.m. to 3.30 p.m.—Harristown—Work on alternating-current lightning arresters
16-2/13—6.35 a.m. to 2.15 p.m.—Riverton—Work on transformers
17-2/20—9.22 p.m. to 9.40 p.m.—Union—Work on alternating-current lightning rings
18-3/11—1.52 a.m. to 5.07 a.m.—Bondville—Work on oil cells

RED—SHUTDOWNS FROM EMERGENCY

JANUARY—FEBRUARY—MARCH

- 1— 1/1—11.45 a.m. to 12.15 p.m.—Heyworth—Alternating-current rings flashing
2-1/16—8.28 a.m. to 9.12 a.m.—Anderson—Transformer in bad order
3— 2/9—12.40 p.m. to 2.52 p.m.—Fithian—Loose armature coils
4-2/20—7.46 p.m. to 8.15 p.m.—Union—Alternating-current rings flashing
5— 3/7—11.14 a.m. to 4.30 a.m.—Edwardsville—Armature in bad order
6-3/25—11.30 a.m. to 12 noon—Stallings—Rheostat in bad order
7-3/30—4.08 p.m. to 7 p.m. on 3/31—Georgetown—Armature in bad order

Form No. 154-8-27-15-100 B-94991

ILLINOIS TRACTION SYSTEM

Daily Substation or Wiring Report

Location and Job No. *Anderson Sub.*
N.H. Cox Foreman
June 12 - 1916 Date

Pay Roll for Today.

NAME	POSITION	Hours	Rate	Amount
<i>F.C. Borman</i>	<i>Maintainer</i>	<i>1.0</i>		
		<i>10</i>		

Amount of Pay Roll
 Material used Today

No.	ARTICLE	EST. COST
<i>3</i>	<i>Charging resistance tubes</i>	

Total Amount

REMARKS: *Installed 3 new charging resistances on North line of South set - A.C. Electrolytic Arresters at Anderson Substation*

2-23-15-95136

ILLINOIS TRACTION SYSTEM

RECORD OF TROUBLE

CLASS OF TROUBLE *Substation* DATE *6/10, 1916*
 DIVISION *Springfield* TIME OFFICE NOTIFIED *3:30 P.M.* NOTIFIED BY *ATTORNEY*
 REPORTED FOR REPAIRS TO *CoE* TIME REPORTED *3:35 P.M.* TIME REPAIRED *6/12-1916*

EXPLANATION OF DELAYS

REMARKS: *Grounded phase of transmission line broke resistance tubes on the North line of the South set of 33000 volt Electrolytic Sighting Arresters at Anderson Sub. New tubes installed.*

ILLINOIS TRACTION SUBSTATION MAINTENANCE—CARD RECORD OF STATION TROUBLES

<i>Anderson</i>	<i>6/12-1916</i>
<i>Sighting Arresters-33000</i>	
<i>New charging resistance tubes installed on North line of South set 1/2 old ones broken by surge due to the grounding of transmission line.</i>	
<i>Work done by Borman</i>	

ILLINOIS TRACTION SUBSTATION MAINTENANCE—CARD RECORD OF MAINTAINER'S WORK AT A CERTAIN STATION

ILLINOIS TRACTION SUBSTATION MAINTENANCE—MAINTAINER'S DAILY REPORT

ILLINOIS TRACTION SYSTEM

INSPECTION REPORT

Machinaw SUB-STATION *May 3, 1916*

Condition of	Report	Remarks	Condition of	Report	Remarks
A.C. Ltg. Arre. E line	✓		Field Switch	✓	
A.C. Ltg. Arre. W line	✓		Commutator	✓	
A.C. Ltg. Arre. S line	✓		Oscillator	✓	
Ground Wiring	✓		Speed Limit Device	✓	<i>Open at 540 R.P.M.</i>
Entrance Tubes	✓		Field Connections	✓	
High Tension Ins.	✓		Fine Cuts	✓	
Voltage Detectors	✓		Rheostat	✓	
Tower Switches	✓		Switch Board	✓	
Tie-over Switches	✓		Low Voltage Release	✓	
Line O. S. Setting	✓		D.C. Meters	✓	
Line Current Transformer	✓	<i>Low in oil</i>	Test Fuses	✓	
Line Oil Cells	✓		D.C. Switches	✓	
Line O. C. Bushings	✓		Circuit Breakers	✓	
Line O. S. Trip	✓		Setting R.C.R. No. 1	✓	<i>1200</i>
Line Ammeters	✓		Setting R.C.R. No. 2	✓	
Trans. O. S. Setting	✓		Setting H.C.R. No. 1	✓	<i>1000</i>
Current Transformer	✓		Setting F.C.R. No. 1	✓	<i>1000</i>
Oil Cells	✓	<i>Low in oil</i>	Setting F.C.R. No. 2	✓	<i>1000</i>
Oil Cell Bushings	✓		Alarm Bells	✓	
Oil Switch Bushings	✓		D.C. Lighting A	✓	<i>1000</i>
Tripping Dev.	✓		D.C. Lighting A	✓	<i>1000</i>
Ammeters	✓		D.C. Lighting A	✓	<i>1000</i>
Station Transformer	✓		Station Appearance	✓	
Oil In Gauge	✓		All Tools on Hand?	✓	
Entrance Bushings	✓		Dope Buckets	✓	<i>2 Full</i>
Flas-Motor No. 1	✓		Apparatus Grounded	✓	
Flas-Motor No. 2	✓		Alert's Extracutters	✓	<i>2 - OK</i>
Pump and Motor	✓		Pyrene Extracutters	✓	<i>1 - OK</i>
Rotary Appearance No. 1	✓		Powder Extracutters	✓	<i>6 - OK</i>
Rotary Appearance No. 2	✓		Sand and Buckets	✓	
Rotary Appearance No. 3	✓		Rail Return	✓	
A.C. Brushes	✓	<i>Need cleaning</i>	Lighting Circuits	✓	
A.C. Brush Holders	✓				
D.C. Brushes	✓				
D.C. Brush Holder	✓				
Slip Rings	✓	<i>Outside ring excessive</i>			
Oil Rings	✓				

REMARKS: *Maintainer test Fans blown Maintainer test Fan*

NOTE: Items checked in column headed "Attn?" must be attended to by Substation attendant before next inspection. Attendants are to keep all copies of reports until following inspections are made.

Signed *N.H. Cox* Inspector

ILLINOIS TRACTION SUBSTATION MAINTENANCE—STATION INSPECTION REPORT

ILLINOIS TRACTION SYSTEM

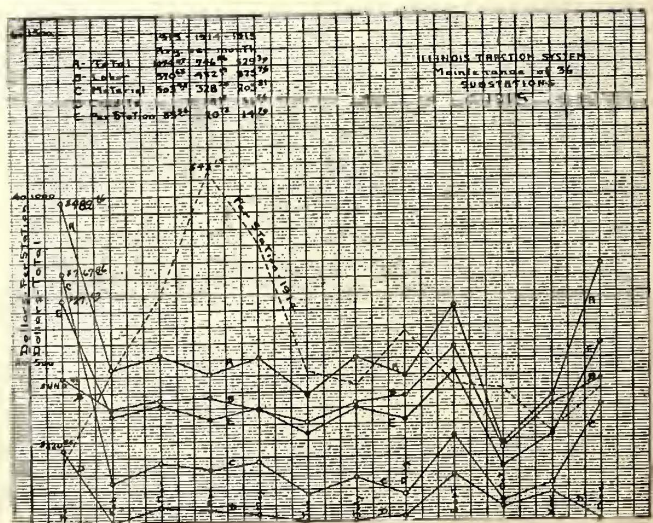
REPORT OF SUBSTATION REPAIRS

STATION: *Anderson.* DATE: *June 12, 1916.*
 EQUIPMENT: *NECESSITY FOR REPAIRS* WORK DONE
 Lighting Arresters. Charging Resistances B. O. New ones installed.

REMARKS: *Three new charging resistance tubes installed on north line of south set of 33,000-volt A.C. lightning arresters. Old ones broken by surge due to transmission line wire grounding.*

SIGNATURE: *F. C. Borman.*

ILLINOIS TRACTION SUBSTATION MAINTENANCE—MAINTAINER'S REPORT OF REPAIRS MADE



ILLINOIS TRACTION SUBSTATION MAINTENANCE—CHART OF STATION MAINTENANCE COSTS

apparatus is examined as to its operative condition and cleanliness. A special form, which is reproduced on the opposite page, is used to record this inspection. One column on this form is used to indicate that apparatus requires the attention of a repairman and the other that it requires the attention of the operator. Tachometer tests are made on the speed limit devices, and other tests are made with instruments that are not entrusted to the average repairman. A copy of this inspection report is left at each station so that the operator may benefit by the inspection and eliminate the defects before the next inspection. From the information so collected lists are prepared and are given to the division maintainers for their information and attention. These maintainers attend to their assignments as quickly as possible and in the order of their importance. When the repairs are completed at any one station a report is made to the general office, so that the defect may be checked off the list.

CARD RECORD OF TROUBLE VALUABLE

Card records are kept for each station showing all troubles, their nature and cause if possible, the dates they occurred, and when repairs were made. This has proved of immense value not only as a record of the efficiency of the various operators and repairmen, but also as a measure of the reliability of the apparatus. It also aids in locating chronic troubles due to special conditions existing at any particular station. Prior to the use of this inspection and record system it was a common occurrence to have as many as six or eight items needing attention at each station on every inspection report. This number has been reduced to such an extent that the inspectors now frequently find a number of stations in perfect condition, both as regards operation and appearance. As a matter of record and for comparison purposes, sheets are made up from these inspections to show the relative station condition. Each piece of apparatus is given a weight in units, dependent upon its importance, and a percentage is figured for each substation by dividing the sum of the units found to be in perfect condition by the total of possible units obtainable at that station. This has resulted in an increase in percentage from a system average of 82 to 98.5 during the past three years.

POWER DISPATCHER IMPORTANT FACTOR

The power dispatchers, referred to in a previous paragraph, play an important part in the organization, as they are constantly in touch with both the power houses and substations as well as with the maintenance men in both the substation and overhead departments. In addition to the work of handling the loads at the various stations the power dispatcher has charge of both the high and low-tension distribution lines. All requests for clearing any line or section of the line must be made through him, and orders in turn are issued by him to the proper stations. A complete daily log record of substation trouble and power interruptions is kept by the power dispatcher. These daily log sheets are filed and have proved to be a very valuable record of past performance, particularly when interruptions or other station troubles occur repeatedly. A reproduction of one of these log sheets is shown on page 353.

A synopsis of this log sheet is prepared each morning in a mimeograph form and divided according to the various classes of work handled by the department in order to show the conditions during the previous twenty-four hours. This report is placed on the superintendent's desk each morning. It keeps him in direct touch with the entire system and informs him of all

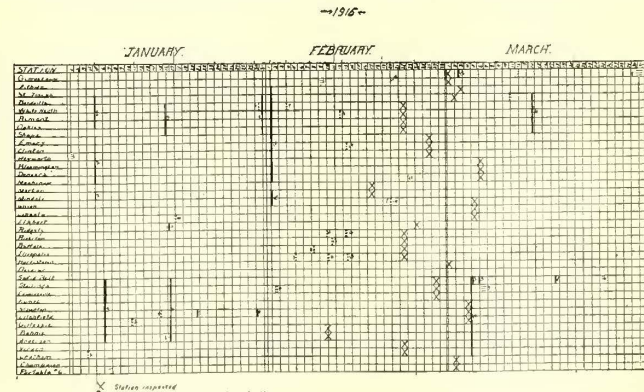
ILLINOIS TRACTION SYSTEM													
DAILY SUB STATION REPORT													
JUNE - 6 - 1916													
VIRBEN. Sub-Station for 24 hours ending 6 A. M.													
TIME	D. C. WATT METER READING	Value	Amps	RODS TRIP	RODS OFF	TOTAL SWITCHES OPENED IN OR OUT						ORDERED OUT BY	
						On	Off	On	Off	On	Off		
6:00 AM	719660	650	400	12 pm	12 pm								
7	840	"	400	2 pm	2 pm								
8	640	"	350	2 pm	2 pm								
9	450	"	350	2 pm	2 pm								
10	720000	"	400	3 pm	3 pm								
11	300	"	350	3 pm	3 pm								
12 Noon	1200	"	300	4 pm	4 pm								
1 PM	340	"	350	5 pm	5 pm								
2	360	"	350										
3	300	"	350										
4	300	"	350										
5	370	"	300										
6	640	"	350										
7	630	"	350										
8	630	"	300										
9	370	"	300										
10	370	"	300										
11	721810	"	300	7:30 pm	2:30 am								
12 PM	680	"	300										
1	450	"	350										
2	450	"	350										
3	310	"	300										
4	370	"	100										
5	721420	"	600										

ILLINOIS TRACTION SUBSTATION MAINTENANCE—DAILY SUB-STATION REPORT

troubles regardless of their importance, as many of the minor disturbances may not come to his notice at the time they occur. After these morning reports have served the purpose of the superintendent they are filed, and at the end of the month they are combined into a comparative form, which shows the number of cases of trouble and the number of hours of operative interruptions. This provides a concise method of comparing month by month and division by division the perfection of the operation obtained. Copies of these reports are sent to the office of the assistant general manager in charge of operation and to the vice-president executive.

GRAPHIC RECORD OF INTERRUPTIONS

The comparative frequency and duration of station interruptions and a classification of the causes are also shown graphically. The manner in which this is done is indicated on the chart in the accompanying illustration. Horizontal distance denotes intervals of time and in the spaces opposite the various stations the nature of the interruptions and their length are shown in different colored inks. Green is used to designate station shutdowns for maintenance work. These shutdowns are pre-arranged, and do not affect the operation of trains. Red is used to show shutdowns due to emergency causes, arising within the stations. Black is used to indicate transmission line interruptions caused by either line or power house trouble, which affects the operation of the substations. Detailed information concerning each interruption could not be shown on the



ILLINOIS TRACTION SUBSTATION MAINTENANCE—CHART OF SUBSTATION INTERRUPTIONS

TABLE I—LIST OF SUBSTATIONS, APRIL 1, 1916

Location	Miles	Capacity, Kw.	Apparatus
Georgetown	0.00	600	Two 300-kw. G.E. Rotaries
Danville	9.86	1,600	One 300-kw. Stanley One 300-kw. G.E. One 1000-kw. G.E.
Fithian	13.74	300	One 300-kw. Stanley
St. Joseph	8.92	300	One 300-kw. G.E.
Urbana	8.79	...	...
Bondville	9.58	300	One 300-kw. G.E.
White Heath	8.16	300	One 300-kw. G.E.
Bement	12.70	300	One 300-kw. G.E.
Oakley	12.80	300	One 300-kw. G.E.
Decatur	9.22	1,050	One 300-kw. G.E. One 750-kw. G.E.
Harristown	7.27	300	One 300-kw. West.
Illiopolis	8.47	300	One 300-kw. G.E.
Buffalo	8.80	300	One 300-kw. West.
Riverton	7.55	1,000	Two 500-kw. G.E.
Springfield Belt	6.32	500	One 500-kw. G.E.
Chatham	10.42	300	One 300-kw. G.E.
Virdeu	13.69	600	Two 300-kw. G.E.
Anderson	11.31	300	One 300-kw. G.E.
Behme	10.10	300	One 300-kw. G.E.
Gillespie	6.97	300	One 300-kw. G.E.
Staunton	8.55	400	One 400-kw. G.E.
Litchfield	16.20	300	One 300-kw. G.E.
Staunton	0.00	...	...
Hamel	8.20	600	Two 300-kw. G.E.
Edwardsville	8.16	300	One 300-kw. G.E.
Stallings	7.55	300	One 300-kw. G.E.
Venice	9.25	3,600	Two 1800-kw. G.E.
Decatur	0.00	...	...
Emery	9.40	300	One 300-kw. G.E.
Clinton	12.26	300	One 300-kw. G.E.
Heyworth	11.30	300	One 300-kw. G.E.
Bloomington	11.46	750	One 750-kw. G.E.
Danvers	11.27	300	One 300-kw. G.E.
Mackinaw	9.64	500	One 500-kw. G.E.
Peoria	0.00	3,600	Two 1800-kw. G.E.
Morton	9.05	300	One 300-kw. G.E.
Mackinaw	7.63	...	...
Mindale	8.83	300	One 300-kw. G.E.
Union	9.50	300	One 300-kw. G.E.
Lincoln	10.52	300	One 300-kw. G.E.
Elkhart	10.58	300	One 300-kw. West.
Ridgely Junction	12.89	300	One 300-kw. G.E.
Springfield Belt	5.35	...	...
Average distance between substations.....			9.80 miles
Total number of substations.....			39
Total number of rotary converters.....			44
Total kilowatt capacity.....			22,600
Approximate kilowatts per mile of track.....			51

chart, but each case of trouble is numbered and a key prepared giving the actual duration or character of trouble and its cause when known. The date that each station is visited by the regular system inspector is also shown on this chart, indicated by an X opposite the station and under the proper date.

EFFECT OF METHODS ON COSTS

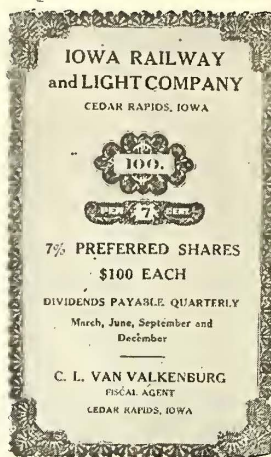
As a proof that the care exercised in substation maintenance is warranted and that the system of records has a value besides that of being a record alone, the cost of station maintenance has gradually decreased each year since this system was put into effect. This result was obtained in the face of more severe operating conditions, which included an increased loading and more frequent train service, and the natural depreciation of the equipment. A curve showing the monthly cost of maintenance for the system per station for the year 1915 is shown in one of the accompanying illustrations. Separate curves show the labor and material costs. For comparison purposes the per station cost for the previous year is shown graphically, and the detail costs for the two previous years noted. In addition to the very desirable result of reducing the actual cost maintenance, it has been found that because all cases of trouble are thoroughly investigated, both operators and maintainers are more careful about their work. This has reduced the number of cases of trouble, and when troubles do occur the quality of the repair work has been considerably improved.

An athletic association has been organized among the employees of the Kansas City (Mo.) Railways and the Kansas City Light & Power Company, with 250 members. C. F. Cole, auditor of the railways company, is president. Plans are being made for a ball park. A clubhouse will be established eventually.

Selling Stock Locally

Iowa Railway & Light Company Meets with Success in Marketing Major Portion of \$2,350,000 of Preferred Stock Among Customers

IN the ELECTRIC RAILWAY JOURNAL of Aug. 12, page 264, the editors described the extensive plans followed by various properties of H. M. Byllesby & Company, Chicago, Ill., in selling securities directly to patrons. This story, however, had to do almost entirely with lighting properties, and it may now be interesting to describe similar work of a company more closely connected with electric railway operation.



IOWA STOCK SALE—FRONT OF DOUBLE POST-CARD CIRCULAR GIVEN TO CUSTOMERS

The Iowa Railway & Light Company, Cedar Rapids, Iowa, which is an Iowa corporation, has largely marketed its preferred stock in cities and towns in which it renders service. The company is not a holding corporation, but owns all its properties outright. Thus the company's securities attach directly on the actual property.

The company owns and operates a 47-mile interurban railway on private right-of-way between Cedar Rapids and Iowa City and between Cedar Rapids and Mount Vernon. There are facilities for receiving and discharging freight over 2.2 miles on the average, as well as through traffic arrangements with the Chicago & Northwestern Railway, the Chicago, Milwaukee & St. Paul Railway, the Illinois Central Railroad, the Chicago, Rock Island & Pacific Railway and the Waterloo, Cedar Falls & Northern Railroad. The company also owns and operates local street railway systems in Marshalltown, Boone, Tama and Toledo, the total length of all its railway lines being 68.52 miles.

Besides the railway properties, the company owns eight steam plants, having a total generating capacity of 33,500 hp., with an increase of 2000 hp. upon the completion of the hydroelectric plant at Cedar Rapids. Moreover, three central stations are located in the cities of Cedar Rapids, Marshalltown and Boone. From these electricity is distributed through 355 miles of high-tension lines to intervening and adjacent communities. In all the company furnishes electric light and power service in more than 100 cities and towns, having a combined population of more than 200,000. The company is now serving 21,000 consumers with electric light and power.

A SEASONED INVESTMENT SECURITY

Iowa Railway and Light Company

7% Cumulative Preferred Stock

Dividends Payable Quarterly—March, June, September and December
Net Earnings over Two and One-Half Times the Annual Preferred Stock Dividend Requirements.

Shares, \$100 each

These Preferred Shares offer a safe investment where your funds will yield an assured 7% income, based on this successful, established Iowa Corporation.

For information, address or call on

C. L. VAN VALKENBURG, Fiscal Agent

Third Floor Dows Building Phone 1280 Cedar Rapids, Iowa

IOWA STOCK SALE—PLACARD FRAMED AND PLACED IN VARIOUS LOCAL OFFICES

Until 1913 the ownership of the securities of the Iowa Railway & Light Company was somewhat restricted, but with the acquisition of numerous properties and a demand for extensions, the company adopted the policy of giving local investors an opportunity to secure a share of the earnings in the form of dividends on its 7 per cent cumulative preferred stock. The preferred shares are in \$100 denomination, full paid and non-assessable, and preferred as to assets and dividends, subject to redemption at \$102.50, with dividends payable quarterly and cumulative.

At the present time there is outstanding \$2,350,000 of the preferred stock, the major portion of which has been sold locally and largely to the small investor. The company has now nearly 1500 local stockholders located in the various towns receiving electric light and power, street railway and interurban railway service. More than 600 in Cedar Rapids are owners of the securities. One town of 500 inhabitants has more than fifty stockholders, and all smaller communities are represented by stockholders for various amounts.

The sale of the securities has been handled by C. L. Van Valkenburg, fiscal agent of the company, who is located in one of the executive offices. In inaugurating a sales campaign the local papers were used, together with printed announcements which were attached to the

Double Routed Cars

Novel Schedule Satisfactorily Solves Difficult Routing Problem in Chattanooga, Tenn.

THE accompanying diagram shows the way in which the Chattanooga Railway & Light Company solved a routing problem. The schedule was devised by J. R. Anderson, superintendent of transportation. The company's Oak Street line is 3.83 miles long from the city to the end of the line. At a point known as Ridge Junction which is 0.58 mile from the end of the Oak Street line the Missionary Ridge cars leave the Oak Street line to the Ridge, which is 3.32 miles from Ridge Junction or 6.57 miles from the city terminus. The running time on the Oak Street line is fifty minutes for the round trip and on the Ridge line eighty minutes for the round trip. The headways are ten minutes on the Oak street line as far as the Junction, and the cars leaving the city on ten minutes and forty minutes after the hour go to Missionary Ridge, or a thirty-minute headway.

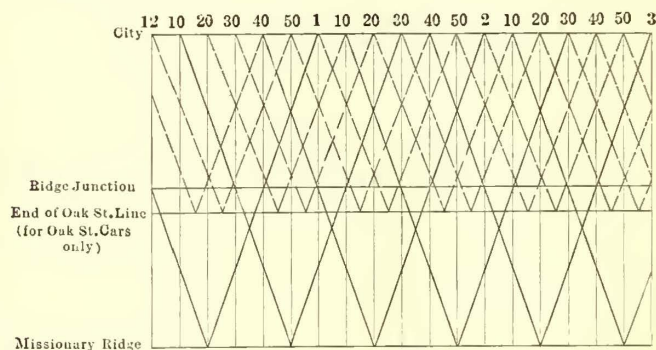
A complete cycle is as follows: A car marked "Missionary Ridge" leaves the city say at 12.10 p. m., goes to the Ridge (over the Oak Street line as far as Ridge Junction) and returns to the city at 1.30 p. m. The sign on the car is then changed to Oak Street by means of a simple tilting sign device, and it leaves the city at

7%	The \$100 PREFERRED SHARES OF	7%
The Iowa Railway and Light Co.		
offer a most attractive investment for small savings funds.		
7% DIVIDENDS PAID FOUR TIMES A YEAR		
Absolutely Safe		
An Iowa Company Owned and Managed by Iowa People		
Call or write for Booklet showing Company's properties.		
7%	C. L. Van Valkenburg, Fiscal Agent 305 DOWS BLOCK CEDAR RAPIDS, IOWA	7%

IOWA STOCK SALE—SPECIMEN ADVERTISING CIRCULAR (3 3/8 IN. X 6 IN.) USED IN WORK

light bills. Some of the advertising matter is shown in the accompanying illustrations. A systematic campaign of education was used on the 700 employees throughout the system. Special lists were circularized and literature was sent out from time to time about the advantages to be derived from being a stockholder in a strong local utility. A special effort was made to induce small investors to buy the stock; to this end a partial payment plan was adopted whereby an amount as small as \$5 could be invested. This carried no obligation on the part of the investor to make payments at any specified time, but interest at the rate of 7 per cent was paid annually and credited quarterly to the partial payment account. When partial payments and accrued interest amounted to \$100 a certificate for one share of stock was issued and sent to the investor. The price of the shares was the same, whether bought outright or not.

Investment in the preferred stock has enabled the company to pay back a portion of its profits to its customers, and it has paid the company substantial dividends in the increased interest and friendliness of the people living in the cities and towns served by it. The company believes that it is possible to build a closer relationship with the public through the sale of its securities than by any other way. The mailing of detailed financial reports with the dividend checks gives the public full information at first hand. This results in an intelligent understanding of what the company is doing and creates a strong local interest in its favor.



SCHEDULE DIAGRAM SHOWING DOUBLE-ROUTED CARS OF THE CHATTANOOGA RAILWAY & LIGHT COMPANY

1.30 p. m. for the Oak Street service. It then makes two round trips on the Oak Street line, leaving at 1.30 p. m. and 2.20 p. m. On the 2.20 trip the car is due in the city at 3.10, so the sign is changed on its return to the city to "Missionary Ridge," and on the 3.10 trip the car repeats the cycle.

As will be seen this schedule leaves a space of twenty minutes at the end of the Oak Street line when the car goes to the Ridge, but the end of the Oak Street line is a junction point with the East Lake line which leads to the city, and this is therefore not a serious drawback. It should be remembered that the end of the line is only 0.58 mile from the Junction to the end of the line.

The signs on these cars are double signs set at right angles to each other and pivoted so they can be tilted by the conductor from the inside of the car by a small lever which holds the sign in either position.

This schedule has been in operation for two years and has given satisfaction in every particular.

Approximately 600 employees of the light and power division of the Portland (Ore.) Railway, Light & Power Company, with their families, enjoyed the sixth annual picnic of the company at Estacada Park, near Portland, on July 15. The picnic was conducted under the auspices of the Employees' Beneficial Association. A special train of ten cars carried the pleasure seekers. In order to enable all who desired to attend the company declared a holiday for all light and power employees.

"Bob's wedding was to take place in Los Angeles on Thursday—"

"It was just one delay after another the day we were going to leave. Mother and I had scarcely finished dressing when the phone rang. It was Dad—speaking from La Salle street station. "You haven't another minute to lose," he said. "The Golden State Limited" pulls out at eight-five and it's oow seven-thirty-two. Don't wait for the taxi. Take the Elevated. It's your ooly chance."



In an emergency, when every minute counts, Elevated trains give gratifying service. No matter where you wish to go, in or about Chicago, use the Elevated to cover the distance quickly. Special Express service throughout the day and evening on the Northwest and South Side, also on the Logan Square branch of the Metropolitan, makes Elevated transportation even speedier and more convenient oow than ever.

City salesmen, messengers and others whose business requires considerable traveling about the city find that the Elevated brings them quickly to all the important business centers as well as to the residential districts.



SAFETY  SPEED
SERVICE  COURTESY

A Remarkable Record



Eight years without one fatal accident

One billion, two hundred millions of passengers—equivalent nearly to the entire population of the world—have been carried by the Chicago Elevated Railroads during the past eight years without a single fatal accident while on their trains.

Wins "honorable mention" for Chicago Elevated

In recognition of the results obtained from its safety work, the American Museum of Safety has recently awarded "Honorable Mention" to the Chicago Elevated Railroads in the Brady Medal contest among Electric Railroads.

Safety first, last and always

Every practicable mechanical improvement—of which the recent installation of 250 new all-steel cars is only one instance—as well as every possible human precaution has been adopted by the Elevated to insure and maintain safety.

Civic pride alone, aside from individual interest, should induce Elevated patrons to co-operate in the elimination and prevention even of minor accidents. A little caution of this nature will help not only to improve the already good service of the Elevated, but also to bring the coveted Brady Medal to Chicago this year.

SAFETY  SPEED
SERVICE  COURTESY

A dozen vacations in one for you right here in Chicago

Even if you are not going to leave the city for a Summer outing, you still can enjoy any number of delightful vacation pleasures. Whether it's bathing, boating or fishing—tennis, baseball or golf—or just day-dreaming on the lake shore or in the cool of shady trees—all these recreations are within quick and easy reach of your home on the Elevated.



There will be lots of sultry days and nights this Summer when you'll long to escape from the oppressive heat. Take a cool, airy, pleasant ride on the Elevated. Bring the little folks—all the family. There are scores of delightful places to go, in and about Chicago. You can travel twenty-one miles, in one direction, for only 5c—on the Elevated.



See where to go and what to do. Buy the "Chicago Elevated" Summer Guide Book. Express trains on the Northwestern and South Side throughout the day and evening, also on the Logan Square branch of the Metropolitan. Special service to and from the baseball and amusement parks.

SAFETY  SPEED
SERVICE  COURTESY

"Two strikes---the bases full---and then---"





Most of us simply can't help the baseball habit—it's bred in the bone. Of course you enjoy seeing a good game of baseball. But—with two high-class big league clubs within such quick and easy reach of everywhere in Chicago, via the Elevated—isn't it a wonder that you don't take in the ball game oftener than you do?

You may be a blooded plutocrat the day—but you're just a fan at the ball game—because baseball is our greatest humanizing institution. The open air puts pep and punch in faded nerves; the uncertainty is thrilling—the excitement a bracing tonic. It's a sport that's always keen and clean—a sport that's good for you.



ELEVATED SERVICE TO THE BASEBALL PARKS

American League	National League
Get off at 40th Street Station, the baseball game all express as well as local trains stop at this station. Express train through on the bus to 41st Street in the city center. Home to 41st Street, the south side express train to 41st Street, 10:00 P.M. Home to 41st Street, 10:00 P.M.	Get off at Addison Street, on West Side, 41st Street. The baseball field all express as well as local trains. Express train through on the bus to 41st Street in the city center. Home to 41st Street, the south side express train to 41st Street, 10:00 P.M. Home to 41st Street, 10:00 P.M.

SAFETY  SPEED
SERVICE  COURTESY


The Track-walker

Each of the four elevated tracks is under constant inspection by the Chicago Elevated Railroads. The track-walker constantly walks the tracks, so that any trouble is repaired immediately.

The Elevated Makes Distances Short

Chicago is 26 miles long from North to South—9 miles from East to West. Frequent, dependable Elevated Service spans these distances quickly. The Elevated is convenient to practically every section of the city.

Recently during the Holiday Shopping season, passengers making long trips with their families who were unable to find the Elevated the quick, convenient way to go to and from downtown and any part of the city found Street Station on the Metropolitan Elevated is only 15 blocks from Union Station—a hour every minute.

SAFETY  SPEED
SERVICE  COURTESY

Golf here—golf there—golf everywhere in Chicago


And, if you're a golf enthusiast, there's a different public course for you every weekday. The Elevated makes each of Chicago's six well-kept public golf courses easy to reach and worth reaching—brings even the most distant public golf course close to your home. It's like having a membership privilege in six different country clubs—without the expense—when you can get to these six different public courses, so easily and so quickly on the Elevated.



"Jackson Park" South Side "L" trains for the two famous golf courses in Jackson Park (now open)—Oak Park Elevated or "Garfield Park" trains on the Metropolitan for the Garfield Park course (open May 1)—"Englewood" trains on the South Side "L" for the course in Marquette Park (now open)—Northwestern trains to Diversey Station for the Lincoln Park course (open May 15)—Garfield Park Metropolitan trains for the Harlem Race Track course (now open).



For business, for pleasure, for shopping, the Elevated brings you near to everywhere in Chicago. Frequent, speedy express service throughout the day and evening.

SAFETY  SPEED
SERVICE  COURTESY

Chicago Elevated Service Advertised

Utilizing the Natural Interests of the Public Is the Basis of This Comprehensive Publicity Campaign

CONVINCED that its train service is superior even to that furnished by taxicabs, because it is faster and more dependable, Britton I. Budd, president of the Chicago Elevated Railroads, has well under way an advertising campaign which is reminding the Chicago

public of these advantages. As a matter of fact, this claim for superior service is based on the experience of the company's claim department. Some time ago this department was of the opinion that its claim adjusters could make more calls in a day if an automobile was substituted for transportation by the elevated lines. After about a year's experience with automobiles it was found that the adjusters could not make as many calls a



REPRODUCTION ON REDUCED SCALE OF LARGE COLORED POSTER

day as they had made when they used the elevated cars.

The advertising campaign is to take several forms, and includes one advertisement in the local newspapers each week, advertising signs and posters on the elevated structure and at points where they can be seen from the cars of the steam railroads. Bulletin boards have also been installed in every elevated station, and under a title "Where to Go, and What to See," are inserted a series of removable cards listing all points and attractions of interest. These cards are changed from time

to time to fit the seasons and the attractions. In addition to the general advertising, circular letters are being sent to the various wholesale houses having salesmen calling on the retail stores in the city. In connection with the latter, a form letter used by the elevated railroads for this purpose as well as a copy of a letter which accompanies it, and was written by a Chicago wholesale house, is reproduced herewith:

CHICAGO ELEVATED RAILROADS
CHICAGO, Aug. 19, 1916.
JOHN DOE, ESQ.,
Chicago, Ill.

Dear Sir:

The inclosed letter from the president of one of Chicago's well-known grocery specialty houses suggested to me that perhaps your company might be interested in obtaining a supply of the pocket maps of the Elevated System for your city salesmen's use.

I feel that if you look into the situation thoroughly you will find that the Elevated will save your salesmen's time and your money, as well as allowing them to do their work most efficiently and effectively.

Let me know just how many of these pocket maps you can use and I shall be glad to supply you. Either direct a letter to me, telephone Central 3280, and ask for my office, or send a messenger.

Very truly yours,
CHICAGO ELEVATED RAILROADS,
H. A. JOHNSON,
Chairman Publicity Committee.

CONDENSED BLUING COMPANY
CHICAGO, June 20, 1916.
B. I. BUDD, President,
Chicago Elevated Railroads,
Edison Building, Chicago.

Dear Sir:

For a long time I have been thinking that it would be a good plan for your company to supply sales managers who have men working different territories in Chicago with small pocket maps of Chicago and the Elevated System.

I say this because I know that whenever we have had salesmen working the city—and sometimes we have had more than a dozen covering different sections of the city—I have invariably instructed them to use the Elevated to reach the larger and more prosperous neighborhood business centers. In doing this they are able to get to and to cover one location quickly and immediately thereafter to take the Elevated and go to the next nearest neighborhood business center on the line.

Very truly yours,
CONDENSED BLUING COMPANY,
JOHN PUEHL,
President.

CHICAGO ELEVATED ADVERTISEMENTS—LETTERS SHOWING THE CO-OPERATIVE SPIRIT

In order to give some idea of the scope of the newspaper advertising, as well as the character of the posters employed by the Chicago Elevated Railroads, a number of the advertisements are reproduced, as well as one of the typical posters.

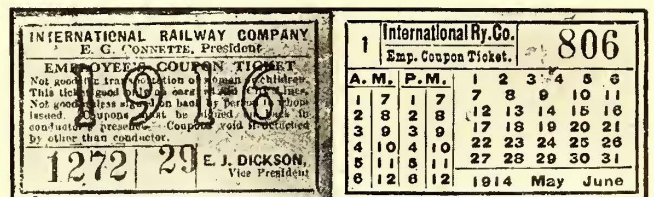
Employees Coupon Tickets in Buffalo, N. Y.

IN order to facilitate the collection of fares, especially during the rush hours, the International Railway, Buffalo, N. Y., is issuing a new ticket form for the use of employees. This form is shown in an accompanying illustration.

The form which has been in use for the last two years



CHICAGO ELEVATED ADVERTISEMENTS—A LESSON ON QUICK SERVICE



EMPLOYEES COUPON TICKETS USED ON THE INTERNATIONAL RAILWAY, BUFFALO, N. Y.

necessitated the punching by the conductor of the date and time on the ticket tendered by the employees, thus causing delay. Under the new system, employees' tickets are handled in the same manner as any other ticket. These are used almost exclusively by trainmen and carhousemen.

The officials of the Citizens' Street Railway, Clarksville, Tenn., are showing a commendable spirit which is gaining much good-will for the company. When the power failed one evening during a recent storm and tied up several cars, President Beech dispatched autos to take passengers to their destinations.

7 Per Cent Return—But Not for Railway Department

Illinois Commission in Jacksonville Rate Case Says Increase in Rates to Give Such Return Would Injure Both Company and Public

AS NOTED in a preliminary statement in the *ELECTRIC RAILWAY JOURNAL* of July 29, page 204, the Illinois Public Utilities Commission recently handed down a decision involving the gas, electric and street railway rates of the Jacksonville Railway & Light Company, Jacksonville, Ill. After taking into consideration all the elements of value, tangible and intangible, the commission found the fair value of the company's property to be \$200,000 for the gas department, \$190,000 for the electrical department and \$175,000 for the railway department, a total of \$565,000.

Taking into consideration the nature and inherent risks of public utility investment in general, the commission allowed 7 per cent as a fair rate of return upon the value of the gas and electric properties as stated above, and it fixed several schedules of gas and electric rates that would remove unreasonable features and still allow this rate of return. The commission did not reduce the electric railway rates, however, for it said that the 7 per cent rate of return would not be obtained on the value of the street railway property under the existing rates of fare. Nevertheless, to increase these rates would result very probably in depriving the street railway department of a large portion of its present business, and in the opinion of the commission such an increase consequently would work an injury upon both the company and the public instead of conferring a benefit on the company.

With regard to the separate operation of the gas, electric and street railway departments of the company, the commission said:

"In a case such as the one at bar, where two or more services are furnished under one general management, questions of the allocation of property and operating expenses frequently arise. Equity does not demand that the consumers of one service should be called upon to bolster up the revenues obtained from the users of another class of service. It is axiomatic that, in all fairness, a person should pay for only what he receives, and a user of water, for example, should no more be called upon to help in the upkeep of an electric light plant owned by the same company than he should be expected to contribute to the revenues of an independently owned electric company whose product he does not use. To hold otherwise would be to countenance a form of unfair discrimination. The principle applies to the distribution of property between the several departments of a combined utility. Since each service must stand upon its own feet, it must be permitted to earn a return upon all property that properly belongs to it. To assign the property of one department arbitrarily to the service of another might result in grave injustice, inasmuch as the department from which the property is subtracted may thereby be deprived of a return thereon, a result that is clearly confiscation."

On the subject of depreciation, the commission stated that the general tendency of utilities involved in rate-making procedure was to argue that either nothing or some merely nominal amount should be deducted from the cost-new figures to cover "past or accrued depreciation." Almost in the same breath, however, strenuous arguments would be advanced for a liberal allowance to cover the depreciation that would take place in the future. In general, the commission

could not hold that there could be one rate for depreciation in a property for the time that had passed, and another for the time that was to come, with the date of the rate proceeding as the dividing line. However, in its opinion, the statement that depreciation should be taken into account in the proper management of a public utility seemed to admit of little argument. Lack of consideration of the fundamentals involved had many times placed the affairs of such corporations in the hands of receivers.

The commission decided, therefore, that taking into consideration all elements of depreciation—both physical and functional, including obsolescence and inadequacy—it was desirable to protect the company's property by making regular and adequate provision for depreciation as it matured. It held that sufficient sums should be set aside from the gross earnings to provide reasonable depreciation funds, which should be carried in a separate account and drawn upon only to cover future accruing depreciation, both physical and functional. The depreciation funds should receive full credit for earnings that might accrue either from interest or otherwise, and they should be subject to an annual audit by the accounting staff of the commission. With the consent of the commission, a large portion of the funds from time to time might be invested either in readily marketable bonds or in extensions and betterments to existing property. In this particular case, to cover future accruing depreciation for the street railway department, the company is required to set aside on June 30, 1917, an allowance of \$9,000, and thereafter annually to increase this sum by an amount equivalent to the \$9,000 plus 4 per cent of the cost of all additions and betterments (exclusive of replacements) made after the date of the order.

Motor Horn for Use as Fog Signal

One of the most successful of the modifications of construction of the famous Klaxon motor horn is the adaptation of the horn as a fog or warning signal for use on electrically-operated railways. According to the *Electric Railway & Tramway Journal*, London, one such horn has recently been installed on the Charing Cross & Hampstead Railway near Golder's Green Station, and is working with entire satisfaction. The apparatus is put into, or out of, operation by the signalman near whose cabin the horn is fitted. The horn forms part of an electric circuit, which is completed by the wheels of a train passing over a treadle and so forming contact with a lever on the train. The completion of the circuit causes the horn to emit a powerful warning signal, the sound being produced by a self-contained electric motor, rapidly rotating a hardened cam wheel, the cams striking against the tempered center button of a chrome vanadium steel diaphragm, causing vibrations at the rate of 30,000 per minute. So loud is the noise thus created that it can be heard a distance of from 2 to 4 miles, according to conditions, and is, of course, amply powerful to warn the driver of a train. On one of the metropolitan suburban lines a similar horn is being used to serve as a warning to drivers to slow down before approaching an important junction. As a fog signal the invention offers striking advantages over the employment of detonators because, in the first place, it can be brought instantly into use by the signalman from his box; and, secondly, for the reason that the expense of detonators and a platelayer's time to affix them is saved, the initial outlay on installing the horn being the only expense incurred, no matter how frequently it is used.

1916 CONVENTION
ATLANTIC CITY
OCTOBER 9 TO 13

ASSOCIATION NEWS

1916 CONVENTION
ATLANTIC CITY
OCTOBER 9 TO 13

Nominations Committee Presents Choice of Officers for Coming Year—T. & T. Association Adopt Resolutions—Entertainment Committee Met August 18 to Outline a Program—Exhibit Space Engaged to Date Aggregates 50,000 Square Feet.

Convention Dates

Secretary Burritt is now engaged upon completing the program for association meetings at the Atlantic City convention. The detail program is not yet available, but it has been decided that the meetings of the affiliated associations will be held in the afternoons beginning with Monday, and that the sessions of the American Association will be held in the mornings, beginning with Tuesday.

Charles L. Henry, president of the American Electric Railway Association, spent several days in New York recently going over convention matters.

Reduced Rates to the Convention

The passenger department of the Trunk Line Association, which includes practically all the railroads of Pittsburgh, Pa., and Buffalo, N. Y., has granted a rate of 2 cents a mile in each direction with a minimum of \$1 for the round trip. These tickets will only be good going and returning by the same route, and will be sold and good going Oct. 7 to 9, and returning to reach the original starting point not later than Oct. 17.

Entertainment Committee Meets

The committee on entertainment met on Aug. 18 and outlined a program of entertainment which will, in general, be similar to that of previous years.

W. G. Kaylor was elected vice-chairman, after which a number of sub-committees were appointed to take charge of the various features of the program, which include a reception on Monday night, an informal dance on Tuesday night, a carnival on Wednesday night and the grand promenade, concert and ball on Thursday night.

Arrangements will be made to secure golf privileges for those interested.

The following members of the committee were present at the meeting: W. G. Kaylor, E. F. Wickwire, J. N. Shannahan, E. P. Waller, W. V. Dee, R. F. Hayes, C. G. Chamberlain, and F. J. Derge representing F. R. Coates.

Choice of Engineering Officers for Coming Year

The report of the committee on nominations of the Engineering Association for the year 1915-1916, which is made before the convention in accordance with the constitution and by-laws, has been presented, as follows: To the American Electric Railway Engineering Association:

Your committee on nominations begs leave to report as its selection the following names for officers for the coming year:

For president—F. R. Phillips, superintendent of equipment Pittsburgh (Pa.) Railways.

For first vice-president—G. W. Palmer, Jr., electrical engineer Bay State Street Railway, Boston, Mass.

For second vice-president—W. G. Gove, superintendent of equipment Brooklyn (N. Y.) Rapid Transit System.

For third vice-president—E. R. Hill, consulting engineer Norfolk & Western Railway Company, New York, N. Y.

For secretary-treasurer—E. B. Burritt, New York, N. Y.

For members of the executive committee—C. S. Kimball, engineer maintenance of way Washington Railway & Electric Company, Washington, D. C.; C. L. Cadle, electrical engineer New York State Railways, Rochester, N. Y.; C. F. Bedwell, assistant engineer Public Service Railway, Newark, N. J.; J. W. Welsh, electrical engineer and traffic agent Pittsburgh (Pa.) Railways.

Respectfully submitted,

E. O. ACKERMAN, WM. S. TWINING, A. T. CLARK,
S. L. FOSTER, PAUL WINSOR, Chairman.

Committee on Nominations.

New Company Members of Association

In the issues of this paper for June 3 and July 29, lists of the manufacturing company members which had joined the association were published. Since that time a number of companies have affiliated with the association, bringing the total membership of manufacturing companies up to 181. The names of the new companies follow:

Armstrong Cork Company, Pittsburgh, Pa.; Automatic Ventilator Company, New York, N. Y.; E. C. Atkins & Company, Inc., Indianapolis, Ind..

Bariett Changer Company, Chicago, Ill.; Bemis Car Truck Company, Springfield, Mass.; Berry Bros., Inc., Detroit, Mich.

W. H. Coe Mfg. Company, Providence, R. I.; Columbia Machine Works & Malleable Iron Company, Brooklyn, N. Y.; Corliss Carbon Company, Bradford, Pa.

Joseph Dixon Crucible Company, Jersey City, N. J.

Federal Motor Truck Company, Detroit, Mich.; David B. Flower, Philadelphia, Pa.

Gurney Ball Bearing Company, Jamestown, N. Y.; Macdonald Ticket & Ticket Box Company, Cleveland, Ohio; Miller Trolley Shoe Company, Boston, Mass.

Naugle Pole & Tie Company, Chicago, Ill.

Page Woven Wire Fence Company, Monessen, Pa.

Railway & Industrial Engineering Company, Pittsburgh, Pa.; Roller Lock Nut Company, New York, N. Y.

Safety Car Device Company, St. Louis, Mo.; Scranton Bolt & Nut Company, Scranton, Pa.; T. H. Symington Company, New York, N. Y.

Universal Trolley Wheel Company, Northampton, Mass.

Secretary Burritt of the association also announces that the following railways have become members since July 15, 1916; Bartlesville Interurban Railway; Frankford, Tacony & Holmesburg Street Railway; Jersey Shore Electric Street Railway; Northampton Traction Company; Rutland Railway, Light & Power Company; Shelburne Falls & Colerain Street Railway.

The total number of exhibitors is now 116, to whom have been assigned a total of 49,798 sq. ft. of space. The following companies have engaged space since the last list was printed on Aug. 12, 1916: Edward Alcott, Automatic Ventilator Company, Bemis Car Truck Company, Barron G. Collier, Inc., Differential Car Company, Inc., Federal Motor Truck Company, Gurney Ball Bearing Company, Macdonald Ticket & Ticket Box Company, Miller Trolley Shoe Company, National Pneumatic Company, Page Woven Wire Fence Company, Roller

Lock Nut Company, Root Spring Scraper Company, Union Switch & Signal Company and J. G. Wilson Corporation.

Changes in T. & T. Constitution

The executive committee of the Transportation & Traffic Association has adopted by letter ballot two resolutions which have a bearing on the organization of the association and the efficacy of its committee work. The plan outlined was suggested at the San Francisco convention in a report presented by Mr. Shannahan. The executive committee of the American Association failed, however, to give its approval to the proposed amendment for reasons which did not relate to the measures that are to be carried into effect by the adoption of the resolutions in question, and it was then discovered that the same result could be brought about through executive committee action.

Accordingly, these resolutions have been adopted:

"There shall be the following standing committees: Standards, rules, passenger traffic, express and freight traffic, training of transportation employees, schedules and time tables. In addition to the standing committees, there shall be joint committees with the Engineering Association on block signals and on transportation engineering; with the Accountants' Association on transportation accounting, and with the Claims' Association on claims transportation, together with such other committees as may be appointed from time to time.

"The committee on standards shall have eleven members, including a chairman and vice-chairman. The committee shall consist of the chairman of each of the standing committees of the association and an equal number of members at large of the association not members of any other Transportation & Traffic committee, representing severally, because of familiarity with the subject, each of the branches of electric railway operation covered by the standing committees, and a chairman at large.

"The committee on rules shall consist of seven members, including a chairman and vice-chairman, three representing city companies, three interurban companies, and one a city and interurban company.

"The other standing committees shall consist of six members, including a chairman and vice-chairman.

"Generally speaking, the vice-chairman shall succeed the chairman when the latter leaves a committee.

"Joint committees shall consist of three members of the Transportation & Traffic Association, including a co-chairman, with the exception of the committee on block signals, which shall consist of four members from the Transportation & Traffic Association.

"Where joint engineering and transportation and traffic subjects come up for consideration by the committees on standards, they shall usually be handled by the joint committee on transportation-engineering. If, however, at any time, because of the character of the subject, it appears wise or advisable, a special joint committee, composed of not less than three members from each association, may be appointed to consider and submit joint recommendations on the subject under discussion to the two committees on standards."

The other resolution deals with the duties of the first vice-president, and also outlines the work of the subjects committee and the time it shall submit its report. It follows:

"The first vice-president shall have the following duties: He will assist in committee appointments, and to this end will familiarize himself with the personnel of the transportation and traffic departments of member companies. He will keep in touch with committee

work, and the progress made, in order to aid the president in making committee reports as effective as possible. He will submit to the president on June 1 a recommended list of appointments for the new committee on subjects, which will, if approved by the president, be appointed not later than Aug. 1, and will report to the new executive committee ten days after the convention adjourns. He will prepare for submission to the last meeting of the executive committee at the convention a tentative list of recommended committee appointments for the ensuing year."

The purpose of this change is to permit the work by the new committees of each year to be begun promptly after each annual convention.

Buildings and Structures Committee

A meeting of the buildings and structures committee of the Engineering Association was held in New York on the morning of Aug. 26 to discuss some of the final work of the committee prior to the Atlantic City convention. Those in attendance were: C. F. Bedwell, Newark; R. C. Bird, New York; C. S. Kimball, Washington; William Roberts, Akron; H. E. Funk, Brooklyn, and F. F. Low, Boston.

The committee plans this year to submit to the association a suggested standard type of oil house and equipment, as well as a standard type of fence for parks and for carhouse, terminal and shop properties. The committee will also resubmit in its report a set of general specifications and form of contract, revised in accordance with criticisms and suggestions received from member companies in reply to a circular letter sent out by the committee.

Other Committee Events

President Nicholl of the Transportation & Traffic Association, acting under the authority of the executive committee, has appointed the following committee on subjects: H. C. Doneker, chairman; R. P. Stevens, James E. Gibson and F. W. Coen.

Prof. J. G. Swain, of Harvard having resigned from the committee on award for the A. N. Brady medal, which is given each year to the electric railway having done the most during the past twelve months to conserve the life and health of its employees and passengers, the Hon. Halford Erickson, formerly chairman of the Wisconsin Public Service Commission, has accepted the invitation of the American Museum of Safety, under whose auspices the contest is held, to serve in the place left vacant by this resignation.

The contest for this year closed on June 30 and the reports of those companies, intending to enter, must be submitted on or before Oct. 15. The committee on the conditions of the contest, appointed by this association and consisting for the present year Arthur W. Brady, chairman; Wilbur C. Fisk and C. S. Sergeant, has revised the rules in the interest of clearness. Copies may be obtained from the American Museum of Safety, 18 and 20 West Twenty-fourth Street, New York City.

The City Light & Traction Company, Sedalia, Mo., in a recent newspaper advertisement announced that May 31 would be known as "Street Car Riders' Subscription to Concert Day." Consequently every cash fare received on the cars was turned over to the Sedalia Park Board to assist in providing concerts during the coming summer. Heretofore the company has made a cash donation, as have the various progressive business houses of Sedalia, in order to furnish free band concerts at Liberty Park throughout the summer.

COMMUNICATION

Units for Comparing Costs for Track Upkeep

BROOKLYN RAPID TRANSIT SYSTEM

BROOKLYN, N. Y., Aug. 21, 1916.

To the Editor:

Your recent editorials on the subject of units for comparison of track upkeep costs are very timely. In one of them you ask whether a new unit for this purpose is desirable. It would seem to be perhaps more pertinent to state, as you do later, that some better unit than any one of several cited is necessary.

The reference to the wide use of the simple unit, "cost per mile of track," as being due to the lack of an adequate supply of clerical help in the way department covers one of the fundamental reasons for the failure to use other units of more usefulness. However, clerical help alone will not suffice. There must be careful accounting in the field as well as in the office, and efforts must be directed toward the securing of details which are properly classified to cover the several main parts of track structures which cause most of the maintenance expense.

There is but little question in the writer's mind that a unit for reasonably satisfactory comparison of maintenance costs may be found for any one system, but even then its use must be controlled by a knowledge of detail extending over the complete period during which it is applied, or very misleading conclusions will be drawn.

To attempt such comparisons with units similarly devised and applied on other railway systems would be out of the question, unless the person making the comparison is possessed of as complete a knowledge of the details of all the systems of track being compared as he is of his own.

I do not believe that the steam railroads attempt such comparison between themselves, and it is plain that they have a great many more construction and maintenance features in common as well as a much smaller number of variable factors affecting maintenance costs and more ability to control all of them.

Local conditions, even on one system, affect the track upkeep more than is usually realized, and in such a multiplicity of ways that, even with the most careful accounting, any unit of costs which the writer has seen is of little help if there is no one present during the analysis who is familiar with all the construction details, the various city paving projects which have extended over a number of years, or the excavations and disturbances made by foreign corporations. Any one of these factors may raise the maintenance unit unduly, but most records will not show the reason; hence, there will be no explanation for widely divergent costs, and if there be none, of what use is the comparison? You simply learn that one track costs more to maintain than another without knowing why.

The writer is inclined to believe that, within a very wide range, the conduct of transportation, or in other words the number of cars or wheels operated, does not have the important bearing on track maintenance costs usually ascribed to this factor. Its main influence is on actual costs of doing work under varying headways. Of course, the rails may wear out faster on one line than another, but this only advances the date of renewal and, given the same type of track under the extremes of light and heavy car traffic, there

is seemingly no good reason why the strictly maintenance charges under average conditions for one track should be more than for the other. For this reason, the car-mile or ton-mile may be omitted from consideration as a desirable unit of comparison for the present at least.

Let us first try to get some definite data on our own lines, comparing the same type of tracks on different streets, regardless of car traffic. Get information covering three principal factors, viz.: pavement maintenance, joint maintenance and costs due to corrugation of rails. Then compare these items individually, compare the totals, and base the comparisons on the simple cost per foot of track per year of service. Such a unit may be called the cost-per-foot-year.

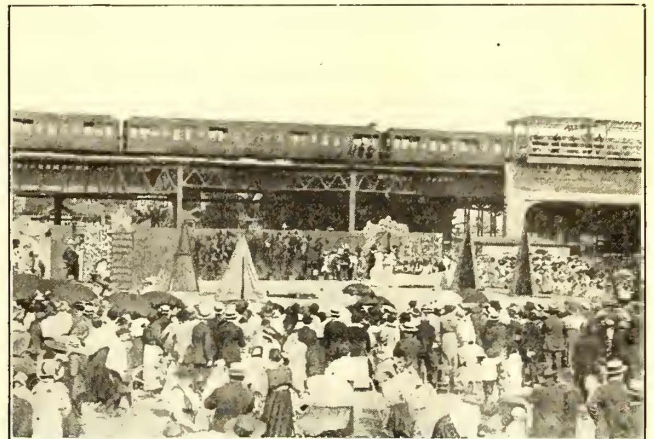
If such data are secured for a number of years, the influence of other variables will become more evident, and they may be included or discarded as may be found desirable. But it must also be borne in mind that the history of the maintenance charges and the reasons for their incurrence form a valuable adjunct to any data of this nature, if the correct analysis is to be made from the data obtained.

R. C. CRAM,
Assistant Engineer Way and
Structure Department.

Pageant Marks Opening of New Line

RARELY has a more elaborate or unique celebration marked the opening of an electric railway than the one staged at the recent opening of the New Utrecht Avenue Elevated Line of the New York Municipal Railway. The large crowd which gathered for the ceremonies witnessed the first official train which passed over the new elevated structure, the last train to be run on surface tracks in the street under the elevated line, and the beginning of trolley car service.

The accompanying illustration shows the arrival of the first train. In the foreground is the scene of the



PAGEANT AT OPENING OF NEW ELEVATED LINE IN
BROOKLYN, N. Y.

pageant which, with a civic parade, a baby parade and a banquet, completed the festive arrangements.

The striking events in the history of New Utrecht, the section of Brooklyn served by this line, were depicted by the pageant in which nearly a thousand children participated. Twenty-two scenes were enacted on a special stage constructed for the event, while the sloping land around the stake formed a natural amphitheater affording excellent accommodations for the crowd of nearly 5000 people. At the end of the pageant the Boy Scouts and the Navy Reserves were massed on the stage while the band played "The Star-Spangled Banner."

Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

Short Circuit Test—Set for Field Coils—Electric Water Heater for the Car Shop—An Ingenious One-Man Emergency Line-Truck—Special Cars for Summer Travel—Coiled Spring Holds Armature Bearing Tight—Solving the Double-Overhead Trolley Problem in Havana

A Home-Made Electric Heater

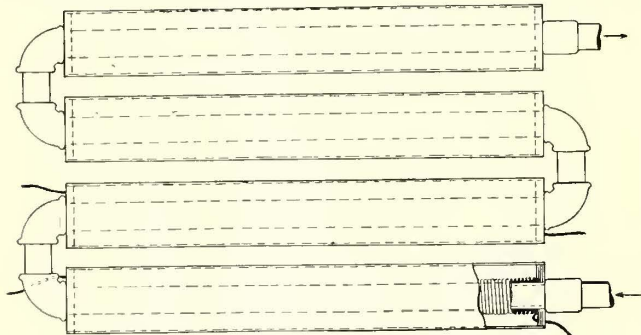
This Cheap Device Heats a 40-Gal. Boiler of Water in Forty Minutes

BY W. F. M. WERTH

Superintendent of Power, Detroit United Railway, Detroit, Mich.

On the British Columbia Electric Railway, with which the writer was formerly connected, the garage is equipped with a 40-gal. boiler which supplies hot water for washing cars. It has been found convenient to use electric current for heating the boiler, and after some experimenting a device was developed by which it was satisfactorily accomplished.

The 1-in. inlet pipe to the boiler includes four 24-in. lengths of pipe of the same diameter. Around these lengths are wrapped the heating elements, the lengths of pipe being set on a slight incline to facilitate circulation through the tank. Each of the four 2-ft. lengths of pipe are first wrapped with asbestos tape, given a half lap so as to give a double thickness, and over this are wound about 85 ft. of No. 22 soft iron wire with fourteen turns to the inch. Over this wire asbestos paper is wrapped, and plugs of the same material are placed at the coil ends so as to prevent as much radia-



DETAILS OF WATER HEATER USED BY BRITISH COLUMBIA ELECTRIC RAILWAY

tion as possible. The four coils around the pipe are connected up in parallel on a 220-volt lighting circuit.

This device will heat the 40-gal. tank as hot as the water can be conveniently used in forty minutes. The cost for material used in preparing the heating element was \$3.62 and the labor cost was \$2.76, making the total cost of the device about \$6.40.

A Coil-Testing Transformer

It Consists of Laminations and a Primary Winding, the Coil Under Test Forming the Secondary

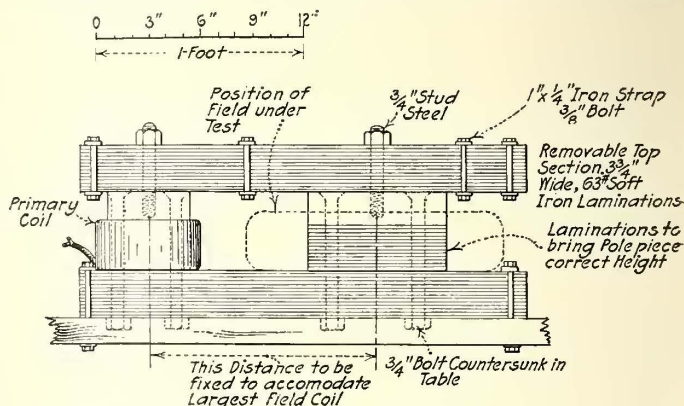
BY GEORGE F. FABER

Formerly General Superintendent Atlantic City & Shore Railroad

In response to a request for details of the testing transformer used in the Atlantic City & Shore Railroad shops, the testing corner of which was described in the *ELECTRIC RAILWAY JOURNAL* of July 3, 1915, page 24, I submit the following:

The transformer consists of a laminated iron core

with a primary winding, the coil under test forming the secondary. The top and bottom sections of the iron core are each built up of 63 lb. of soft iron lamina-



TRANSFORMER FOR TESTING FIELD COILS ON ATLANTIC CITY & SHORE RAILROAD

tions, varnished on one side before assembly to minimize eddy currents. The bottom section is bolted securely to a heavy wooden table, and as is shown in the sketch, each pole piece is fastened to it by two $\frac{3}{4}$ -in. machine bolts, countersunk and bolted, the table top being counterbored to receive the nuts. The top section of the core is bound together with four $\frac{3}{8}$ -in. machine bolts and $\frac{1}{4}$ -in. x 1-in. iron straps, the whole being held to the top of the pole pieces by two $\frac{3}{4}$ -in. steel studs, and is removable. The distance between the top and bottom sections and between pole pieces is governed by the size of the field coil to be tested.

The primary coil is wound with four layers of twenty-seven turns each of No. 11 double cotton-covered wire. This takes a current of 15.5 amp. at 110 volts with a closed magnetic circuit. The current increases in proportion to the number of turns or layers which are shorted in the field coil under test. As the current varies according to the type of field coil tested, it is necessary for the operator to interpret his reading and base his deductions on the results of experience.

Line Car for One-Man Operation

Automobile Emergency Rig Supersedes Horse-Drawn Wagon in Utica, N. Y.

BY H. G. THROOP

Superintendent of Line and Buildings, New York State Railways, Syracuse, N. Y.

A searchlight used at night in the location and repair of overhead line troubles is one of the many interesting features of an automobile emergency car which has just been placed in service by the New York State Railways (Utica Lines). The line car is an exceedingly light outfit capable of being operated by one man and is expected to be a very efficient piece of apparatus. Trolley and feeder trouble in this city has been handled up to a recent date by an ordinary horse-drawn line wagon with a crew of three men.

The device, which is shown in the accompanying illus-



EMERGENCY LINE CAR—LADDER AND PLATFORM IN FOLDED POSITION



EMERGENCY LINE CAR—PLATFORM IN OPERATING POSITION AND TAILBOARD LOWERED

trations, was built by the addition of a folding A-ladder and a toolbox body to an ordinary Ford runabout. The ladder and body are, however, applicable to almost any of the standard make automobiles. The A-ladder consists of three sections which fold up on a four-legged wooden tower which is in turn securely fastened to the automobile chassis sills by braces and U-bolts. The A-ladder is pivoted on a rod bolted to the top of the wooden tower and has attached to one end two spiral springs connected to the sides of the ladder and adjusted in such a manner that one man can easily raise the ladder to its maximum height. The height of the ladder in its raised position is 18 ft. above the ground, which is sufficient for reaching any trolley or span wire. The ladder is easily locked in its upright position by notches cut in the covers of the tool boxes along the side of the

body. When the ladder is raised these covers fold down over the sides, holding it securely in its upright position. The tailboard, unfolded, forms a step to reach the first rung of the ladder. When the ladder is raised the whole machine is stable enough to permit a man on top of the ladder to do the required repairs to overhead wires. Spuds which can be lowered under the rear of the car are provided, so that if it is necessary to make the ladder absolutely steady these can be dropped down onto the ground. These spuds are operated by a rack and pinion and are normally locked up.

When the ladder is folded a platform with a folding railing is available for repair of low wires, the cutting down of broken spans, etc. This platform is 9 ft. from the ground. The folding railing requires no hooks or locks as it locks automatically when raised. This plat-



EMERGENCY LINE CAR—SHOWING SEARCHLIGHT, GONG, CLOSED TAILBOARD, AND LOWERED SPUDS



EMERGENCY LINE CAR—VIEW SHOWING LADDER IN RAISED POSITION

form is reached by two folding steps on one of the standards of the tower.

The whole apparatus is well built and thoroughly braced. An 11-in. gong is located on the driver's side of the car and a searchlight is provided on the left forward standard of the tower for use in lighting the road, hunting wire trouble or making repairs. This light operates from a storage battery.

The body in the rear provides plenty of room for tools and supplies. The additional weight applied to the Ford chassis is not over 250 lb. and the guaranteed load for the chassis is 800-lb. The whole layout is designed as a one-man emergency rig which can be built and maintained at a low cost, at the same time making it possible to get to trouble quicker than can be done with a heavy truck.

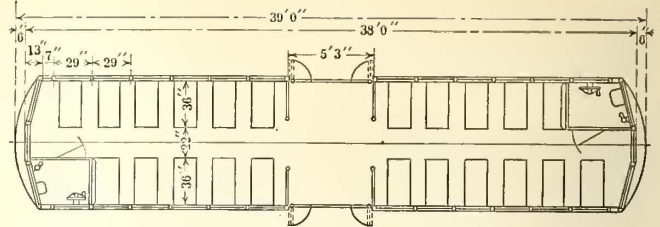
The device was designed by C. M. Gray, chief draftsman and the writer. A patent on this equipment has been applied for.

Center-Door Cars for Benton Harbor, Mich.

Reasonable Weight with Ample Strength for Service Conditions Are Features of the Design

Double-truck, double-end, straight-sided, center-door cars have recently been put in the street railway service operated by the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich. In addition to operating an interurban service in the rich fruit-belt district around these cities, this company also furnishes a street railway service between the two towns above mentioned and thereby serves a total population of about 16,000 people. Although there is an all the year around street railway traffic, it reaches its height during the summer months when the resorters visit this section from all parts of the Central West. These cars were purchased from the American Car Company, St. Louis, Mo. and are primarily for the purpose of handling this summer traffic.

These cars are arranged with a center drop platform, with entrance and exit doors on each side, and the two motorman's cabs in the diagonal left-hand corners of the body. Six transverse reversible seats and one stationary seat on each side of the center entrance furnish accommodations for forty-four passengers. The general dimensions of the cars are as shown in the following table:



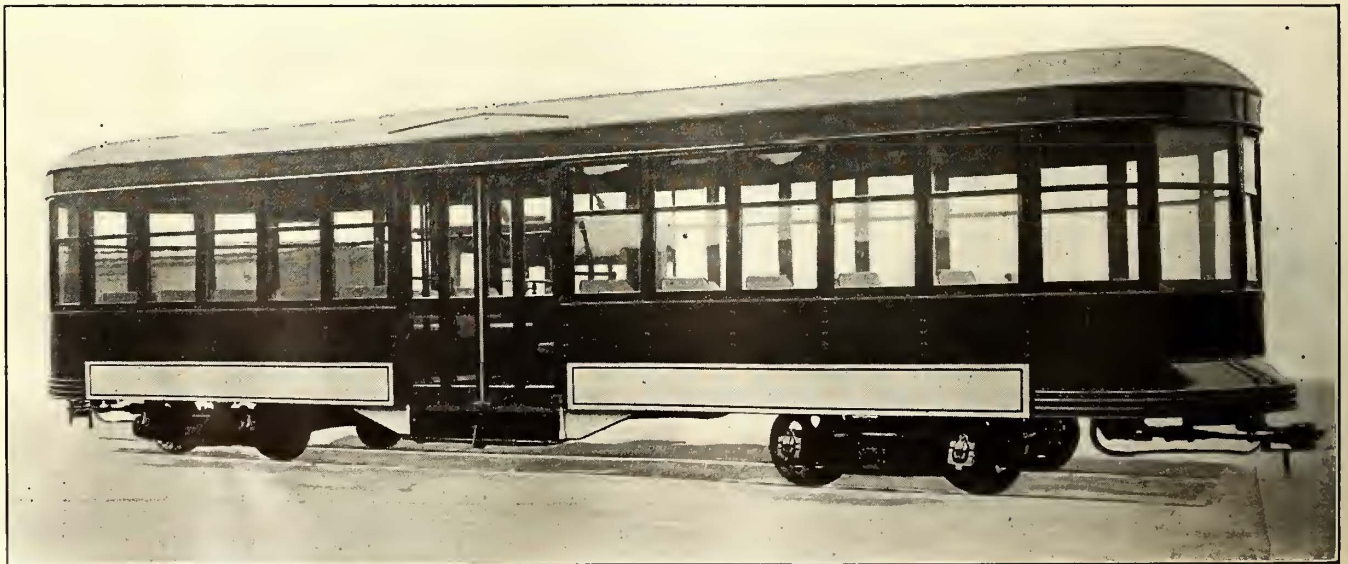
FLOOR PLAN OF BENTON HARBOR CENTER DOOR CAR

Length over buffers.....	39 ft.	0 in.
Length over vestibules.....	38 ft.	0 in.
Length of center platforms.....	4 ft.	6 in.
Width over outside sheathing.....	8 ft.	2 in.
Width of aisle.....	22 in.	
Distance from center to center of side posts.....	2 ft.	5 in.
Seat centers.....	2 ft.	5 in.

CONSTRUCTION DETAILS

Underframe members were selected with a view to providing a light weight car which would be amply strong to meet the service conditions. The side sills are formed of 5/16-in. x 2 1/2-in. x 2 1/2-in. angles with 4-in., 5.25-lb. channels for the cross sills. The center platform knees are made of plates reinforced with angles and securely fastened to the side sills. The tongued and grooved 13/16-in. yellow pine floor is secured to nailing strips bolted to the underframe members. Over this, 3/8-in. hard-maple floor strips are fastened down with screws to form the aisles and passageways. The body corner posts are 1/4-in. x 1 1/2-in. x 1 1/2-in. angles extending from the side sills to the side plates. The intermediate posts are of 3/16-in. x 1 1/2-in. x 1 1/2-in. T-iron sections also extending from the side sills to the side plates. The 5/16-in. x 1 1/2-in. carlines are securely riveted to the tops of the side posts. The side sheathing, below the belt rail, is made of 3/32-in. steel plates riveted to the sill angles, the window posts and the seat rests, which are formed of 1/8-in. x 1 1/4-in. x 1 1/4-in. angles. The vestibules are sheathed on the outside with wood, and the letter boards are formed of No. 16-gage sheet steel. The roof and the vestibule hoods are sheathed with 3/8-in. tongued and grooved poplar covered with a No. 8 cotton-duck weatherproofing. The side-sill angles are reinforced at the car ends with 6-in. channel-iron bumpers and anti-climbers are securely riveted to these.

There are twelve windows on each side of the car with square stationary top sashes made continuous from the vestibule corner posts to the center door-posts. The lower sashes are fitted with O. M. Edwards locks and com-



SIDE VIEW OF BENTON HARBOR CENTER DOOR CAR

pression rollers. Each window is provided with a pantasote curtain mounted on a spring roller and fitted with Acme Supply Company's protected groove fixture without a pinch handle. Other inside finish includes an agasote headlining, cherry panels, molding, doors and sashes, and eight Railway Utility ventilators. The center doors open outwardly and are of the double folding type. They are equipped with operating mechanisms under the control of the conductor. The steps on each side of the center drop platform extend the full length, and they raise and lower with the opening and closing of the door. As a safety measure they are covered full length with Feralun step treads.

The car body is mounted on Brill 39-E trucks having a 4-ft. 10-in. wheelbase and equipped with 33-in. driving and 21-in. pony wheels of the Griffin FCS type. These wheels have 3-in. treads and 3/4-in. flanges and they are mounted on 4 1/2-in. driving axles requiring 3 3/4-in. x 7-in. MCB journals. Other car specialties include Brill-Hovey type radiating drawbars, Little Giant hand brakes, General Electric motors with split gears, Brill Dumpit sand boxes and International Register Company's type C-21 combined transfer and coin registers. A plan and elevation of one of these cars is shown in the accompanying illustrations.

Overhead Line Problems in Havana

Narrow Streets in the Cuban Metropolis Make Overhead Construction Difficult

By the terms of its concession, the Havana Electric Railway is obliged to use the double overhead trolley system with two wires completely insulated from ground, and under the extraordinary conditions which have had to be met the company's overhead system is probably more complicated, costly and difficult of maintenance than any to be found in America. Streets in all but the outlying districts are so narrow that the curves at intersections have to be of very short radius. The density of traffic, especially in the central districts, and the diverse development of different sections, made

it desirable to operate direct lines between all of the principal districts into which the city is divided. This method of car routing has made a complicated network of curves necessary at the track intersections.

The accompanying illustrations will give an idea of some of the practical problems encountered. Not only are the streets so narrow that in many cases the fenders project over the sidewalk when the cars are passing around a curve, as shown in one of the views, but during the past five years the public streets of substantially the entire city, including all of the streets containing railway tracks, have been repaved and provided with new sewers, storm drains, water pipes, gas pipes and connections between the mains and the buildings, as well as new curbs and sidewalks.

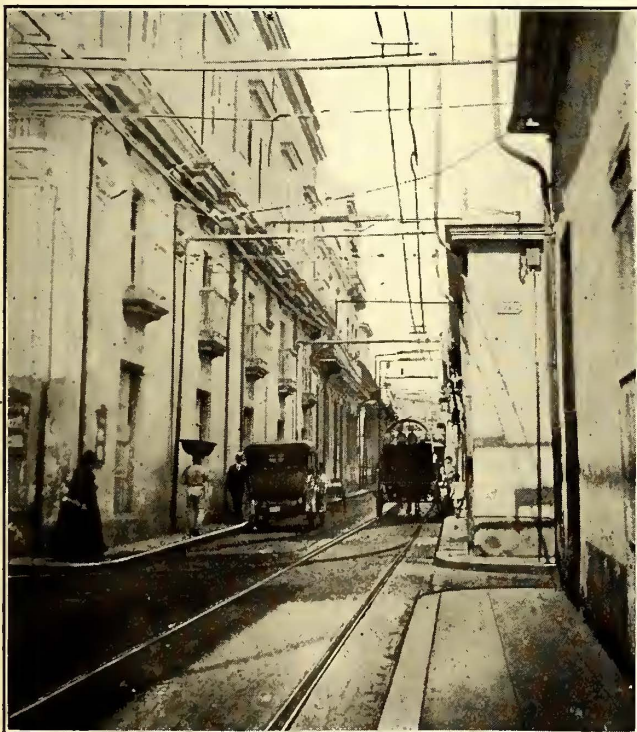
The railway feeder cables were originally underground, but during this general reconstruction it was found absolutely necessary to take them out of the ducts and carry them overhead on messenger cables supported from the tubular steel poles of the trolley structure. The same lead-covered cables which were used underground have been thus transferred. To appreciate fully the complication and excessive weight of this feeder construction, it must be remembered that a double trolley system requires about three times as much feeder cable as is usually installed for a single trolley system.

The last annual report of the company, from which most of the facts already mentioned have been taken, also gives data on the cost of maintenance of the railway overhead construction as shown in the following table:

	Miles Single Track	Total Cost of Maintenance	Maintenance Per Mile
1911.....	64.17	\$35,866	\$558.92
1912.....	65.70	34,154	519.86
1913.....	71.82	28,533	397.57
1914.....	80.10	24,164	301.68
1915.....	86.35	22,955	265.84

1915 OVER 1911

Increase of mileage.....	34.6 per cent
Decrease, total maintenance.....	36.0 per cent
Decrease, maintenance per mile.....	52.4 per cent



HAVANA—NARROW STREET WITH OVERHEAD FEEDERS SUPPORTED ON BRACES



HAVANA—NARROW STREET SHOWING HOW FENDERS PROJECT OVER SIDEWALK WHEN CAR IS ON CURVE

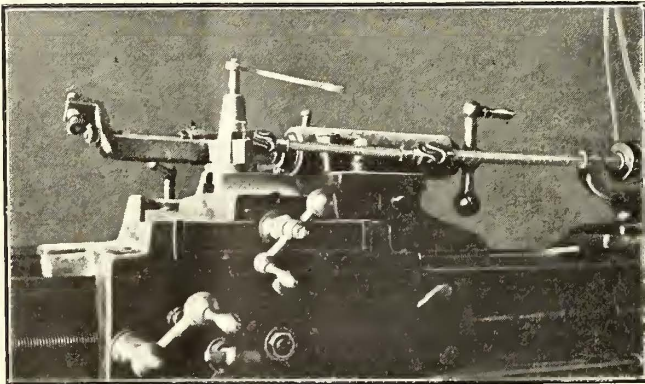
In this work of reconstruction, double overhead trolley wires were installed over all new track, and existing lines were maintained and reconstructed as necessary. Round No. 000 hard-drawn copper wire is used for all main lines, and hard-bronzed wire of the same form and size at places of especially severe wear. When partly-worn trolley wire is replaced because of too many weak spots, all the best parts are culled out and used provisionally over track in construction or else installed in the yards and the branches of lighter traffic.

One improvement made in the double overhead system since its installation is the use of a single-pole roller-bearing trolley base for the old-fashioned double-pole type. This improvement was begun in 1913, and at the end of 1915 only fifty-seven of the old bases remained in use. While it is still too early to determine the full effect of these changes, the average life of the trolley wheels during 1915 was 48.1 per cent greater than in 1913 and 29.9 per cent greater than in 1914. The company believes that it is probably impossible to get as long life from either trolley wheels or trolley wires in a double trolley system as in the ordinary system because it is impracticable to align the trolley wires accurately. This is especially true in Havana, owing to the severe local conditions.

The company has in all 401 motor cars, of which 378 are closed passenger cars, one is an open car, two are parlor cars, one is a sightseeing car, thirteen are electric locomotives and the remaining eighteen are freight or service cars.

A Unique Home-Made Slotting Device

A home-made slotting device, of simple construction yet effective as a tool, has been invented by C. C. West, master mechanic of the Galesburg Railway, Lighting & Power Company, Galesburg, Ill. The design of this tool is such that it may be mounted, with slight changes, on any machine lathe in order to provide for the power

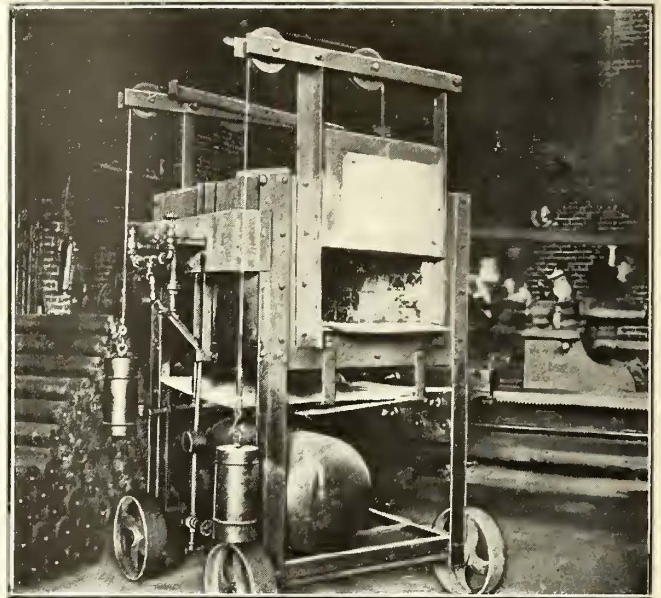


VIEW OF UNIQUE HOME-MADE SLOTTING DEVICE

end of the equipment. The saw frame is arranged to fit into the lathe tool post, and it is as readily put into position as any lathe cutting tool. The power is transmitted from the line shaft by a bell cord belt to a small pulley, which may be clamped or bolted to the lathe bed base. This pulley is mounted on a slotted shaft in order to give free longitudinal movement to the slotting saw. Two universal joints in the shaft permit free angular movement of the tool post. As shown in the accompanying illustration, a pair of small beveled gears transmit the power to the slotting saw, and the slotting operation is performed with the armature fixed between the lathe centers. The longitudinal movement of the slotting saw is obtained through means of the tool post control.

Portable Furnace Reduces Labor

A portable fuel-oil furnace for heating steel bolsters and platform knees preliminary to bending them in a bulldozer has greatly reduced the labor of handling these pieces in the repair shops of the Omaha & Council Bluffs Street Railway, Omaha, Neb. This portable fuel-oil furnace is shown in the accompanying illustration. Heavy bends are made in this shop by equipping the wheel press with dies, and whenever work of this nature is undertaken the oil furnace is moved to a point beside

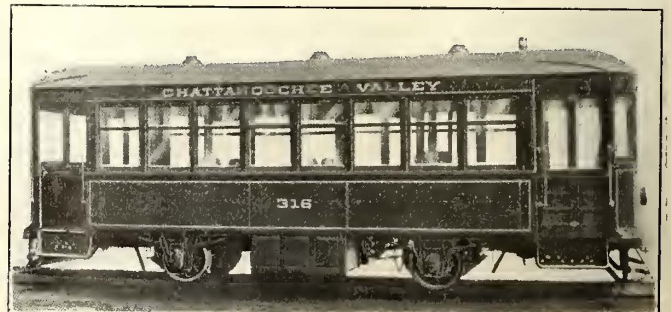


PORTABLE FUEL-OIL FURNACE IN THE SHOP OF OMAHA & COUNCIL BLUFFS STREET RAILWAY

the press, the work of handling thus being reduced to a minimum. The dimensions of the interior of the furnace are 12 in. x 18 in. x 36 in. It is provided with counterbalanced doors at both ends so that long sections of steel may be heated. The furnace is mounted on a substantial angle-iron frame which in turn is supported on 14-in. steel wheels. The oil is carried in a storage tank mounted beneath the furnace and air is supplied through hose connections to the shop compressed-air system. The complete furnace weighs approximately 3000 lb., and it may be moved about the shop without difficulty by three men.

Storage-Battery Car, West Point, Ga.

The illustrations herewith show a 22-ft. combination passenger and smoking car of the storage-battery type that has recently been put into service by the Chattahoochee Valley Railway, a steam road which operates between Standing Rock, Ala., and West Point, Ga., a distance of 17 miles.

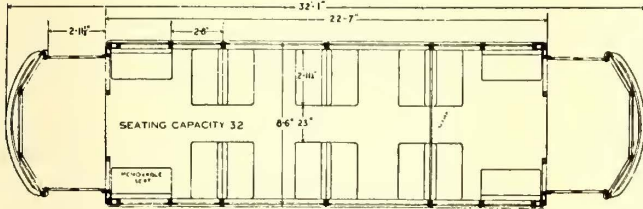


STORAGE-BATTERY CAR FOR CHATTAHOOCHEE VALLEY RAILWAY

The 6400-lb. battery load necessitated a steel under-frame of rugged construction. Accordingly, sills of 2½-in. angle, end ills of 8-in. channel and stringers and crossings of 5-in. channel are used. The floor is a single thickness of maple. In the body frame, which is constructed of ash and yellow pine throughout, the corner posts are 3⅞ in. thick, the side post 2¼ in. thick, and the posts are built with a sweep of 1⅞ in. The platforms are inclosed with stationary round-end vestibules, sheathed on the outside with sheet steel. At each platform opening there is a double folding door, and a partition door separates the white passengers

bearings and recessed to receive the springs, which will give about 250 lb. pressure per ¼-in. compression. These springs are 1 in. long and made of ¼-in. spring steel. It requires 250 lb. to compress these springs 3/16 in., and the coils become solid when the spring is compressed 5/16 in.

In the GE-57 and GE-67 motors two springs set in recesses in the axle cap hold the armature bearing in place. In the GE-80 motors, however, on account of the waste packing the design had to be changed and four ¾-in. x 1-in. springs made of ⅛-in. wire were substituted. In connection with the use of these springs all-bronze bearings have been adopted and the thickness of the babbitt has been reduced from ⅜ in. to 1/8 in. Cast-steel shells have been abandoned and the bronze bearing substituted, so that when the babbitt wears through the wear will be within the clearance allowed between the armature and the pole pieces.



PLAN VIEW OF STORAGE-BATTERY CAR

from the colored. The inside of the car is finished in ash, stained cherry and mahogany. The roof is of the plain arch type strengthened with concealed rafters. The covering is of cotton duck laid over a poplar sheathing. Three exhaust ventilators, located along the roof center line, are used. This car, which has a seating capacity of thirty-two, was purchased from The J. G. Brill Company through the Railway Storage Battery Company of New York.

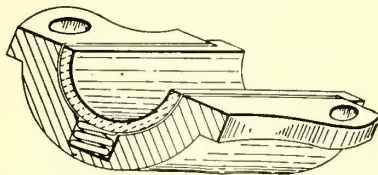
A Recent Air-Cooled Choke Coil

The illustration herewith is of an air-cooled choke coil which recently has been placed on the market by the Westinghouse Electric & Manufacturing Company of East Pittsburgh, Pa. This choke coil, of which there are two types D-9 and D-15, is made in two sizes, 9 in. and 15 in. in diameter, and both sizes are listed for outdoor or indoor mounting up to 130,000 volts. A separate line of 9-in. coils for indoor mounting up to 49,000 volts is also available.

These coils are made up of a helix of aluminum rod in the 200 and 400 amp. and of copper in capacities of

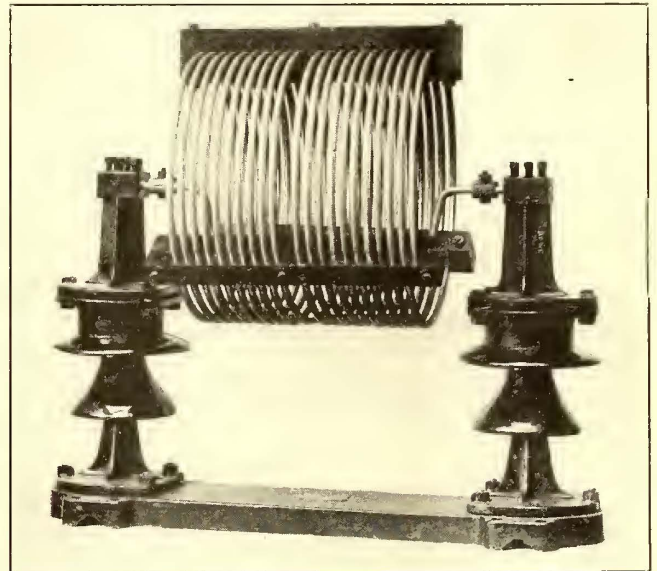
Eliminating the Loose Armature Bearing

A device that is claimed to be a panacea for loose armature bearings has just been perfected by George J. Smith, superintendent of rolling stock and shops of the Kansas City (Mo.) Railway. This device takes the form of two coil springs set in recesses in the axle



ASSEMBLY OF MOTOR AXLE BEARING, SHOWING LOCATION OF SPRINGS

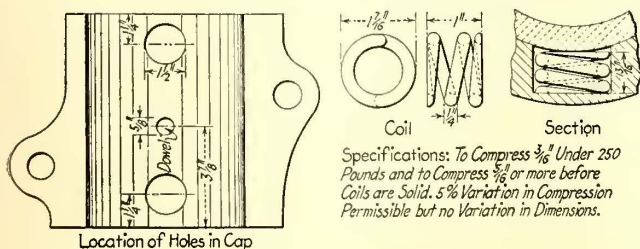
cap as shown in the accompanying illustration. Experience has demonstrated that dowel-pin wear is eliminated by these spring clamps because the bearing is held tight in the axle cap. Inasmuch as armatures are now lubricated with oiled waste, it is unnecessary to provide oil reservoirs, and the motor axle caps are made solid. They are afterward bored out on jigs to fit the



RECENT DESIGN OF AN AIR-COOLED CHOKE COIL

600 amp. and above. A feature of their design is the thorough bracing of each turn of the coils, making it unnecessary to reduce the diameter of the center of the coil and thus sacrifice much of the inductance in order to prevent sagging. The construction of the insulator supports is such that (except in the case of the 9-in. outdoor coils below 49,000 volts) the insulators may be inverted so that the coils can be mounted either upright or suspended from the ceiling.

The type D-9 indoor coils are mounted on porcelain pillar insulators which in the standard form are bolted to sheet steel bases. They can be adapted to mounting on pipe up to 1¼ in. size by the omission of the sheet steel base and the substitution of special pipe clamp castings.



PLAN, SECTION AND ELEVATION OF MOTOR AXLE-BEARING SPRINGS AND PLAN OF BEARING

Specifications: To Compress 3/8" Under 250 Pounds and to Compress 1/8" or more before Coils are Solid. 5% Variation in Compression Permissible but no Variation in Dimensions.

NEWS OF ELECTRIC RAILWAYS

VALUATION DEADLOCK IN DALLAS

In Spite of Concessions by Utilities the Mayor Contends for Valuation Below Option Cost of Properties

Notwithstanding the fact that the traction interests of Dallas, Tex., have made numerous concessions in an attempt to reach a settlement of the traction and lighting controversy, the deadlock remains unbroken. The valuation of the traction and lighting properties is the point in dispute, the city officials holding out for the valuation of \$7,100,000 as fixed by E. W. Bemis, while the traction officials remain steadfast in their determination to fix a valuation of \$8,500,000. Agreement has been reached on practically all other points, and the traction interests have offered to put the new interurban terminal building, recently erected in Dallas at a cost exceeding \$750,000, in with the Dallas properties at a valuation of \$8,500,000.

J. F. Strickland and C. W. Hobson, heads of the interests that hold options on the Stone & Webster properties in Dallas, have just issued a long statement to the public of Dallas in which the position of the traction interests and their offers to make certain improvements are fully set forth. The proposals of the traction interests include the expenditure of not less than \$2,000,000 in street railway extensions and improvements and lighting equipment; the construction of at least one interurban line into Dallas; a reduction of 2 cents in the light rate and the expenditure of \$5,000,000 in and around Dallas within the next three years. Mr. Strickland said that he and his associates were ready to give bond for at least \$500,000 to guarantee the fulfilment of the agreement for these improvements if the city would agree to the valuation figures of \$8,500,000.

After reviewing the various stages of negotiations up to the present deadlock the statement issued by Mr. Strickland and Mr. Hobson to the people of Dallas is in part as follows:

"We have done all that we possibly can do toward effecting a settlement. The vital point of difference with the Mayor, who represented the city in our conferences, was upon the valuation of these properties. The Mayor has all along contended for a valuation of \$7,100,000, but has recently, in view of the many valuable concessions we have agreed to, offered to recommend to the people a settlement on some figure between \$7,100,000 and \$8,500,000, but we are not in a position to settle upon a lower valuation than \$8,500,000. If we and our associates purchase these properties under the option given they will cost us \$8,500,000.

"The property is here and can be seen and inventoried, and we believe there is no substantial difference as to the inventoried items, but Professor Jackson says the property is worth more than \$10,000,000, while Professor Bemis says it is worth only \$7,100,000. We certainly do not know which is right. The whole thing seems to be largely a matter of individual opinion upon a subject concerning which learned men can and frequently do most earnestly disagree. The only definite information we have been able to obtain is that the owners have paid \$9,700,000 in cash for the properties in question, and that we have been unable to negotiate for clear titles for less than \$8,500,000.

"The vital questions for all to consider, it seems, are:

"1. What is the fair value of these properties when rearranged, improved, extended and operated under the direction of our Mayor and the City Commissioners, managed and largely owned by Dallas people with a view of giving the best possible service at the lowest possible cost?

"2. Will the immediate and permanent reduction in rates, large expenditures for improvement and extensions, the plan for two additional interurbans into Dallas, together with new local companies incorporated under our Texas laws and under control of our City Commission and home directors, and the final and satisfactory settlement of the street railway and electric lighting problems overbalance the difference in the value of these properties?

"The difference between Professor Jackson's appraisal and Professor Bemis' appraisal is approximately \$2,900,000. We understand that the owners of the property at one time offered to do a little better than split the difference by compromising on a valuation of \$8,500,000. This compromise plus the great advantages since obtained by the Mayor are still available in effect, because the owners have given a short option on the property for \$8,500,000 cash, which will be exercised if a fair agreement can be reached regarding new franchises."

MAYOR MITCHEL SECURES COMPROMISE

New York Lines Reinstate Employees Convicted of Misdemeanors—Other Dismissals Subject to Arbitration

Once again the dove of peace has settled over New York City traction affairs, and the possibility of a second strike on the city lines has passed for the present at least. On Monday, Aug. 21, Mayor Mitchel settled the dispute between the New York Railways and the Amalgamated Association of Street and Electric Railway Employees of America. The company consented, "at the personal request of the Mayor," to reinstate all employees who had been convicted of misdemeanors in the recent strike, and to submit the other discharges in question to arbitration. The union, also in deference to Mr. Mitchel's persuasive powers, agreed not to raise an issue about the "within-the-family brotherhood" organized by the non-union employees of the green-car system at the suggestion of President Theodore P. Shonts and General Manager Frank Hedley.

It took four conferences with the representatives of the company and the union to smooth out the differences, but the Mayor was able to accomplish the task without waiting for Chairman Oscar S. Straus of the Public Service Commission, who was rushing from Maine, where he went recently for a vacation. As soon as the peace agreement had been signed a telegram was sent to Mr. Straus en route, and he returned to Maine.

At a meeting on Friday, Aug. 18, the board of directors of the New York Railways, after receiving a committee representing employees of the company, authorized a statement which follows in part:

"Reports of the managing officials show that the only failures to reinstate employees since the agreement of settlement was made were in the case of fourteen men who had been tried and convicted of crime in the courts of justice. There were during the strike thirty-seven arrests of employees for violence, but every man accused was reinstated upon being acquitted.

"This board does not understand that the agreement of Aug. 7 constituted any undertaking to reinstate employees who had violated the criminal law of the State. It is, and has for many years been the firmly established policy of the company, in the interest of public safety, not to employ men who have been convicted of crime as conductors or motormen, or in any positions in which they come in contact with the public. We do not feel free to deviate from that policy.

"The board is willing, however, under the last clause of the settlement agreement, to submit to arbitration the question at issue as regards the re-employment of the fourteen men found guilty of crime. The committee of the men claim that the question is not properly a matter for arbitration on the ground that Clause V required the company to reinstate all employees, no matter what offences any of them had committed.

"The board recognizes that this difference of opinion involves interpretation of a document submitted to this company by the Mayor and Mr. Straus and underwritten by them. This company, therefore, is quite willing to submit to Mayor Mitchel and Chairman Straus the determination as to whether or not under the terms of this agreement,

the question at issue is properly one for arbitration. It must be understood that this shall not be regarded as a precedent in dealing with questions of efficiency in the future."

This communication called Mayor Mitchel back from his military work at Plattsburg and resulted in conferences throughout Monday with the disputing parties. At the end Mayor Mitchel authorized the following statement:

"1. At the personal request of the mayor, the New York Railways will reinstate in their former positions the four-teen men held and convicted of offenses committed in connection with the strike.

"2. The discharge of the twenty-eight men accused of stealing fares, of the two men accused of insubordination, of the two men accused of drunkenness and of the two men failing to report, will be submitted to arbitration to determine whether or not these cases were in fact discharges for the causes named or for activities in the strike or in connection with the union. The above cases submitted to arbitration, having arisen during the strike or immediately thereafter, are to be considered in a class by themselves, and not to be taken as precedents in dealing with similar cases hereafter."

On Tuesday, Aug. 22, a joint investigation of the dismissals of the thirty-four employees by the company, which were left to arbitration by Mayor Mitchel, was begun by representatives of the company and the union. Preliminary discussion between General Manager Hedley and Attorney James L. Quackenbush for the company, and Organizer William B. Fitzgerald and Louis Fridiger and others representing the union, indicated that the cases might be disposed of without going to a board of arbitration. Both sides seemed willing to make as many concessions as possible, and there were many indications that they would be able to dispose of the controversy without appeal. Although up to Friday morning none of the thirty-four employees had been reinstated, the interval had been profitably spent in examining all papers and available data in each case.

Mayor Mitchel's peace efforts were instrumental on Wednesday, Aug. 23, in leading the Third Avenue Railway to promise to re-employ twenty motormen and conductors recently dismissed by it upon conviction of misdemeanors during the strike. Several cases still remain to be settled, either by mutual agreement or by arbitration.

LEGISLATION SUGGESTED TO SECURE NEEDED EXTENSIONS IN SEATTLE

In a recent communication to the City Council, Assistant Corporation Counsel Walter F. Meier stated the best method of procedure for the city to employ to force extensions of existing street railway lines in Seattle would be to appeal to the next Legislature to enact a law empowering the City Council to compel reasonable work along that line. The communication was directed to the Council in response to a resolution recently adopted by that body, calling upon the legal department for a report on litigation instituted to compel extensions; the status of such litigation and the best method of procedure to obtain extensions. In his statement to the Council Mr. Meier suggests that the City Council prepare and obtain the passage of a statute authorizing either the city or the Public Service Commission to compel extensions of railway lines when the public necessity and convenience require.

The communication said in part: "The state constitution expressly reserves to the Legislature the power to alter, amend or repeal all laws relating to corporations. Under similar constitutional provisions the courts of other jurisdictions have held that such reserved power authorized the Legislature to make all reasonable regulations necessary to require corporations to carry out the objects for which they were formed. In addition, our constitution further provides that all common carriers—and street railways are such—are subject to legislative control. Under these reserved powers the Legislature may, in our opinion, enact laws which would empower the city to compel reasonable extensions."

The lines in Seattle which the City Council desires to have extended are owned and operated by the Puget Sound Traction, Light & Power Company.

EMPLOYEES ORGANIZE LOCALLY

New York Plans for Having Employees Deal Directly with Companies Without Outside Interference

In keeping with the promise made by T. P. Shonts, president of both the New York Railways and the Interborough Rapid Transit Company, that employees would have an opportunity to deal directly with the companies without interference, the companies invited the men on Aug. 13 to choose their own representatives to take up direct with the management questions of better wages and working conditions. Circulars distributed by the companies announced that elections to select representatives would be held by all classes of operatives as well as motormen and conductors, and that joint meetings of representatives of the men and of the companies would be called at once thereafter. The circulars to the men on the New York Railways said in part:

"The purpose of such joint meetings will be to discuss and act upon matters of mutual interest, and to consider and adopt measures for further promoting co-operation between the company and its employees. For the purpose of voting the company will be divided into departments, each of which will be entitled to representatives as follows:

Chief engineer's department.....	4
Car equipment department.....	4
Motive power department.....	1
Transportation department:	
Motormen	7
Conductors	7
All other transportation employees.....	2
Grand total all employees' representatives.....	25

"The unit of representation shall be each department, as above mentioned, and each department's employees may choose one representative for every 250 men employed. Ten names signed to a nominating petition shall be sufficient to place any employee's name on the official ballot as a representative of the class of employment in which he is engaged. It should be clearly understood that any ten employees may nominate any one of their fellow employees that they see fit, but no employee shall be permitted to sign any more than one nominating blank."

The plan of the Interborough Rapid Transit Company is practically the same as that proposed for the New York Railways, with the exception of classes of employees growing out of the different kinds of service, so that the grand total of representatives is fifty-four. It is provided in both plans that no officer of the company, or anyone in authority over other employees, shall be eligible for election as a representative.

At an election held on Aug. 17, 9710 employees of the Interborough Rapid Transit Company out of 11,000 eligible men elected their fifty-four representatives from 199 candidates. At a similar election on Aug. 18, employees of the New York Railways chose their twenty-five representatives out of eighty-five nominees. A total of 1846 votes was cast out of 5400 eligible votes. The representatives in each case are now organizing the general committee.

A similar plan of the New York & Queens County Railway, announced on Aug. 14, provides for five departments, each of which is entitled to representatives, as follows:

Car equipment department.....	3
Power department	1
Line department	1
Track department	2
Transportation department:	
Motormen	3
Conductors	3
Grand total	13

Representatives as planned were elected on Aug. 18 by the employees of this company, and an informal conference with company officials was held on Aug. 19. The men expressed a desire to take up matters through the heads of departments, and on Aug. 21 they presented certain suggestions as to wages and working conditions which are now under consideration.

The New York Railways has distributed to employees copies of a pamphlet which presents the company's side of the controversy leading up to the strike of Aug. 4, and its attitude toward the employees since the agreement was reached. The paper voices the company's desire to meet committees of the men at any time. The New York & Queens County Railway has issued a similar pamphlet.

HARRISBURG STRIKERS SEEK JITNEY AID

Are Circulating Petition for Referendum to Remove or Vitate Present Jitney Regulations

The striking employees of the Harrisburg (Pa.) Railways during the last week have centered their efforts on the procuring of signers to a referendum petition to compel the City Council to amend the present jitney regulations. The licensed jitneys operating in Harrisburg are few because of stringent regulations passed last year. To protect the public the Council then provided that jitneys must pay a license fee of \$50 a year and file a \$2,000 bond to cover indemnities in damage cases.

As the striking employees have been unable to prevent the Harrisburg Railways from operating its cars, and as the city officials have ordered all unlicensed jitneys off the streets since normal street-car service has been resumed, the strikers are bending every effort to force the Council to change the jitney regulations so that more buses can run and the company's revenues be thus cut. The petition was opened for signers on Aug. 21, and before ten days the signatures of 20 per cent of the qualified voters must be procured for the referendum to go before the Council for consideration. If Council refuses to amend, then the people will decide at the November election whether the present ordinance shall stand or fall. By the evening of Aug. 23 more than 1300 signers had been secured, and it is practically conceded that the 1754 names necessary will be procured by Aug. 31. Whether the council will amend as petitioned, none of the five city commissioners will discuss.

On Aug. 17, Supt. F. M. Davis announced that the receipts of the railway are now 65 per cent of normal. A number of union organizations have announced that any member who rides on the cars will be fined \$5. Most of the union men have to walk to their work as a result. The company has announced that Paxtang Park, an amusement resort operated during the summer, will not be opened any more this year. Traffic to this park is one of the big sources of the company's revenue during the summer.

On Aug. 21, three owners of unlicensed jitneys petitioned Judge Charles V. Henry for an injunction to prevent the city officials from enforcing the present jitney regulations. Argument was heard on the injunction proceedings on Aug. 22, and judgment was reserved.

CONSTRUCTION PROGRESS IN CLEVELAND

Track Relocation Question Not Settled—Labor Shortage Cuts Track Replacement Program in Half

The Commissioners of Cuyahoga County, Ohio, are planning to award the contract for the construction of the subway approaches to the Superior-Detroit Avenue bridge at an early date, notwithstanding the fact that no agreement has yet been reached as to the expense of relocating the tracks of the Cleveland Railway in order to allow the work to proceed. The commissioners declined to enter an agreement by which the county, the city and the company would each pay one-third of the expense, on the ground that the city had agreed to see that this work was done when the original arrangement was made. They still adhere to that stand. The commissioners say that the subways will be completed in 175 working days from the date of beginning the work. The company has been officially notified to relocate its tracks, but this seems to be a form only. President Stanley said the company cannot proceed with this work without knowing that the funds will be forthcoming at once.

Appraisers have completed their work on the property that will have to be appropriated along Detroit Avenue and West Twenty-fifth Street to be used by the county for subway approaches to the new bridge from the west side. It is estimated that about \$500,000 will be expended for this property, and appropriation proceedings will be necessary in some cases.

Street Railway Commissioner Fielder Sanders has notified Mayor Davis that, on account of inability to secure laborers, the Cleveland Railway will spend only about half the sum it had planned in replacing tracks in various parts of the city this year. The company had appropriated \$1,000,000 for this purpose.

Commissioner Sanders recently stated that the next lot of cars made for local use will be of steel. He recently inspected a number of steel cars in Cincinnati and is much pleased with them. The cars will be made in the company's shops, he said, and work on them will be begun as soon as details in regard to the entrance are decided. He favors cars with entrance and exit both in the center, similar to the trailers now in use in Cleveland.

Mayor Davis has promised to use his influence in having arrangements made for seats for conductors. Failing in this, he said he would aid in having a state law passed requiring seats for the men.

A peculiar ticket selling scheme was recently discovered in Cleveland. A man had prepared books containing three coupons each, which he was selling for \$1. The purchaser was to sell the three coupons at 25 cents each and would then receive forty 3-cent street car tickets. The persons to whom the coupons were sold could present the coupons and 75 cents and get other books of coupons with receipts entitling them to forty tickets when the coupons were sold. Assistant County Prosecutor Doerfler ordered the man to return all money and close up his business.

GRIEVANCE COMMITTEE APPOINTED IN TOLEDO

The employees of the Toledo Railways & Light Company, Toledo, Ohio, on Aug. 18 chose a grievance committee to consult with President Coates regarding a few matters which the men do not consider satisfactory. One of them is that the company is employing non-union men in preference to members of the union. Several other minor grievances will be presented.

President Coates said the report that the company is trying to get rid of its union employees is ridiculous. The company has a good set of men and wants to keep them. The men are all receiving two weeks' vacations with pay, and the company is endeavoring to treat them right. If they have any grievances, however, he was willing, he said, to meet the committee and use his best efforts to adjust them.

John Quinlivan, business agent of the Central Labor Union, said the men will not ask for a closed shop. They have a three-year contract under the open-shop plan and will not break it. He expressed the opinion that the men have no grievances that cannot be quickly and easily adjusted. Harry Power, business agent of the local branch of the Amalgamated Association of Street and Electric Railway Employees of America, expressed the same opinion.

NIGHT SERVICE OFF IN CHATTANOOGA

All street cars of the Chattanooga Railway & Light Company, Chattanooga, Tenn., ceased operation at 10 o'clock on Tuesday night, Aug. 22, on the order of General Superintendent E. D. Reed, who said it was a precaution against threatened violence by strike sympathizers to passengers and operators. The order was issued after a rock had been thrown through a car window, injuring a woman, and after windows in another car had been broken by pistol shots. Hundreds were compelled to walk home from the business districts.

Trouble in Chattanooga has been brewing since the middle of July, when it is alleged some employees of the company called in outside men to assist them in organizing. C. Cline, an organizer of the Amalgamated Association of Street Car and Electric Railway Employees of America, has come to Chattanooga to try to bring about a recognition of the union and the reinstatement of some men who it is claimed were discharged because they expressed a desire to organize.

The company has issued a statement signed by 190 employees, stating that they do not desire organization. According to Mr. Reed, since the trouble with the labor organizers has arisen, about twenty of the employees have joined the strike. On Monday morning seven or eight failed to show up for duty, and five or six dropped out during the day. The others were among the number that were induced to leave their cars during a riot on Market Street on Monday night.

Fearing further attempts at violence with the coming of darkness, the company on Wednesday night ordered all cars except those on the Oak Street line to the carhouses at 6.30 p. m. Oak Street cars stopped running at 8 p. m. M. J. Horan, claim agent of the company, stated that if stoning of the cars and the use of firearms had not been resorted to the

company would have been able to maintain its schedule. The cars were not taken off for lack of men.

Although a few more employees left the service on Wednesday, there were many applicants for places with the company. It was said that there would be little trouble filling vacancies with men on the waiting list as soon as the scattered disorders growing out of the strike agitation had ceased. During the day and up until the time the cars were run in no single instance of trouble had been reported. Telephone calls threatening the officers of the company, however, had been received in the general offices.

Superintendent Reed and General Manager F. W. Hoover conferred with Mayor Littleton on Wednesday afternoon concerning the stopping of car service. According to report, Mayor Littleton did not believe the franchise of the company would be endangered by taking cars out of service in the evening, and he agreed that it was for the protection of the public and probably the best thing that could be done.

Cleburne Strike Settled.—The differences of the Cleburne (Tex.) Traction Company with its employees, which have tied up street railway traffic for nearly two weeks, have been satisfactorily settled.

Annual Outing of Cincinnati Street Railway Men.—Beginning on Aug. 17 the employees of the Cincinnati (Ohio) Street Railway held a three-day outing at Coney Island. Handsome prizes were awarded in the different contests.

Patrons Try to End Strike.—A committee made up of patrons of the Buffalo (N. Y.) Southern Railway residing in Lackawanna, Orchard Park and Hamburg is attempting to adjust the differences between the management of the line and its employees. A strike on this railway has been in existence for almost four months.

Strike Averted by Employees.—A threatened strike of the motormen and conductors of the Dallas (Tex.) Consolidated Electric Street Railway, said to have been brought to a climax by the reported discharge of a veteran conductor who had been with the company for twenty-five years, has been averted. About 200 trainmen, in a meeting at the carhouses, voted unanimously to leave the matter in the hands of Richard Meriwether, superintendent of the line.

Arkansas Association Appoints Executive Committee.—President O'Brien of the Arkansas Association of Public Utility Operators has appointed an executive committee consisting of the following members: C. J. Griffith, Little Rock, chairman; H. C. Couch, Arkadelphia; J. F. Christie, Jonesboro; S. E. Dillon, Hot Springs; S. C. Dowell, Walnut Ridge; B. C. Fowles, Pine Bluff; H. C. Hoagland, Fort Smith; A. E. Main, Mammoth Spring, and J. A. Wells, Warren.

San Francisco Municipal Railway Employees Disciplined.—Four employees of the San Francisco Municipal Railways have been discharged and two have been suspended for a period of thirty days for interfering with municipal railway equipment on the evening of July 14, when an attempt was made by strike sympathizers to cause a strike of employees of the United Railroads of San Francisco. As noted in the *ELECTRIC RAILWAY JOURNAL* of July 29, several cars of the municipal line were stalled across the United Railroads' tracks at Geary and Market Streets, thereby tying up the entire Market Street line of the latter company. This was done by throwing the emergency brakes on the municipal cars just as they crossed the private company's tracks.

Trustees Manage New Dallas Terminal.—Management through a board of trustees has been decided on by the Dallas Interurban Terminal Association for the new interurban terminal. Edward T. Moore, administration official of the Stone & Webster street railway and electric-lighting properties in Dallas, has been chosen as a member of the board of trustees, and has been charged with the duties of active head of the terminal association. Mr. Moore succeeds Oliver M. Chadwick, Boston, now with the Massachusetts National Guard on the Mexican border. The two other members of the board of trustees are Fred H. Farnham and Charles W. W. Wetterer, both of Boston. Mr. Wetterer formerly lived in Dallas.

Cleveland Officials Deny Purchase by Nickel Plate.—Officials of the Lake Shore Electric Railway and the Cleveland, Southwestern & Columbus Railway, both of Cleve-

land, Ohio, have denied the newspaper reports that their properties are to be purchased by the Nickel Plate Railway to complete its proposed rapid transit plan. Plans for the entrance of these roads to Cleveland over the Van Sweringen lines have been discussed, they said, but that did not mean amalgamation. The auditors of these companies denied that any investigations or appraisals of any kind had been made to that end. The Nickel Plate line recently purchased a tract of land 50 ft. by 400 ft. near Rocky River on the west side of Cleveland, only a short distance from its present station. It is said that a new suburban station will be built on this land, and some profess to see a feature of the proposed rapid transit service in the move.

New Steps in Cincinnati Loop Work.—The Cincinnati (Ohio) Rapid Transit Commission, on Aug. 18, asked Frederick L. Spiegel, its legal counsel, for an opinion on its procedure in awarding contracts for the proposed rapid transit loop. Advertisements for bids for making the borings will be published as soon as this opinion is received. Chief Engineer Krug reported the completion of the location of the entire line. Levels have been completed and a pencil profile made. The Beechwood subdivision is considered by Mr. Krug as a very difficult section, and five different lines, with profiles, have been located for the consideration of the commission. Traffic surveys on the cars of the Cincinnati & Columbus Traction Company, the Cincinnati, Georgetown & Portsmouth Railroad and the eastern and suburban divisions of the Interurban Railway & Terminal Company have been completed, and the work on the other lines will be finished within a few days.

Wages Increased in Bangor.—Announcement has been made by Edward M. Graham, vice-president and general manager Bangor Railway & Electric Company, Bangor, Me., of a general increase in the wages of conductors, motormen and carhouse employees of the company. All the men mentioned are to receive 2 cents an hour additional. This follows an advance in wages of 1 cent an hour made on Jan. 1 of this year. Under the new scale of wages men will receive 23.5 cents an hour during the first and second years, 24.5 cents an hour the third year, and 25.5 cents an hour the fourth year and thereafter. All employees who have been with the company at least eleven years, and reach the age of sixty-five, are entitled to a pension. At seventy years they must accept a pension. The company also maintains a life insurance policy for all employees, without cost to them. The company is paying \$40 a month to dependents of its married men who are with the militia on the Mexican border, and \$20 a month to dependents of single men. To the married men in its employ who have more than four children to support the company pays 50 cents a week extra for each child beyond the fourth. There is also a loan fund, under which the employees are permitted to borrow in time of need, only nominal rates of interest being charged.

PROGRAM OF ASSOCIATION MEETING

New England Street Railway Club

Plans have been completed for a men's outing of the New England Street Railway Club at Springfield and Holyoke, Mass., on Sept. 21 and 22. The outing will begin at noon on Sept. 21, with a general gathering of members and friends at Springfield. The first event on the program will be a buffet luncheon at the rooms of the Springfield Board of Trade. Following this, the buildings of the celebrated municipal group on Court Square will be inspected, and then special cars will be taken for the Eastern States Industrial and Agricultural Exposition grounds, where a coliseum larger than Madison Square Garden, New York, will be seen under construction. The party will then take special cars for Riverside Park, and a clambake dinner will be served late in the afternoon, followed by a display of fireworks. On the morning of Sept. 22 the members and guests will be taken in special cars to the site of the Hooker Street carhouses and shops in Springfield, where an extensive new plant is under construction. The party will then be taken to Holyoke, where the recently completed shops of the Holyoke Street Railway will be visited. After this there will be a trip to the summit of Mount Tom for luncheon, the party returning in the afternoon to Springfield.

Financial and Corporate

ANNUAL REPORTS

Augusta-Aiken Railway & Electric Corporation

A comparative statement of income, profit and loss of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., and its subsidiaries for the calendar years 1914 and 1915 follow:

Gross earnings from all sources.....	1915 \$732,990	1914 \$738,372
Operating expenses, including taxes....	381,255	393,886
Net earnings from operation.....	\$351,735	\$344,486
Interest charges	348,568	276,422
Surplus	\$3,167	\$68,064
Dividends on preferred stock.....	.....	45,000
Net surplus for year.....	\$3,167	\$23,064

The company in 1915 secured an increase of \$33,710 or 10.9 per cent in gross electric earnings, which failed, however, to offset the decreases of \$29,343 or 8.0 per cent in gross railway earnings and \$9,750 or 15.4 per cent in gross earnings from other departments. The operating expenses in the electric division decreased \$5,429 or 5.2 per cent, in the railway division \$19,748 or 9.8 per cent, and in the other departments \$9,564 or 25 per cent. The taxes were greater by \$11,250 principally on account of a large assessment on the hydroelectric development, which was in operation for a full year as compared to only six months in 1914.

As a result of the saving in operating expenses, the net earnings from operation showed an increase of \$7,249 or 2.1 per cent. On account of an increase in bond interest and interest on floating debt, however, the surplus at the end of 1915 was only \$3,167 as compared to \$68,064 at the end of the preceding year, so that dividends could not be declared. The dividend payment on the company's preferred stock was \$45,000 in 1914 and \$90,000 in the two preceding years.

Owing to the depressed business conditions on account of the war, the railway earnings continued unsatisfactory until Oct. 1, at which date they were more than \$50,000 less than for the twelve months immediately preceding. A decided improvement was evident after that date, however, and at the present time the receipts are in excess of those in 1913.

Kansas City Railways

The comparative income statement of the Kansas City (Mo.) Railways for the years ended May 31, 1915 and 1916, the first two years of operation under the new franchise, follows:

Operating revenues	1916 \$7,065,940	1915 \$6,757,175
Operating expenses	\$4,186,561	\$4,114,004
Taxes	413,006	445,749
Total	\$4,599,567	\$4,559,753
Operating income	\$2,466,373	\$2,197,422
Miscellaneous income	629	582
Gross income	\$2,467,002	\$2,198,004
6 per cent on investment.....	1,953,747	1,858,513
City's surplus	\$513,255	\$339,491

The operating revenues of the company for the year ended June 30, 1916, showed a gain of \$308,765, or 4.57 per cent, over those of the preceding year. The operating expenses increased \$72,557, or 1.76 per cent, while taxes fell off \$32,743, or 7.35 per cent, so that the total expenses increased only \$39,814, or 0.87 per cent. The operating income, therefore, showed an increase of \$268,951, or 12.23 per cent.

After the deduction of 6 per cent on the investment, the city's share for the two years was approximately \$850,000. It is not yet known what portions of this belong to Kansas City, Kan., and Kansas City, Mo., but it is estimated that

about \$50,000 will go to the Kansas side and \$800,000 to the Missouri side. Of the latter amount, approximately \$113,000 has been given to the Missouri city in cash. The city was short of funds in 1915, and instead of investing this sum in improvements for the company took it and put it in the city treasury. It was some time after the reorganization before the new railway took active control of the finances, and in the meanwhile money was being earned. The city claimed its share of this in cash, according to the agreement of July, 1914, and the claim was allowed.

The \$113,000 and the total left of the \$800,000 have been placed to the credit of the city on the books of the company toward the \$6,300,000 agreed upon under the new franchise, as the intangible value of the property. After this amount has been reached the city and the company will divide the surplus, the city taking two-thirds and the company one-third.

At the annual meeting of the company the following directors were elected to represent the city: William T. Kemper, Davis M. Pinkerton, John W. Wagner and John Wiles. Frank C. Niles was not re-elected, but is still acting. His successor will be appointed by the Kansas City Court of Appeals during its next session, which will probably be in October. For his place three men have been suggested by Mayor George Edwards.

Directors representing the company were elected as follows: Robert J. Dunham, chairman; C. W. Armour, George S. Hovey, Philip J. Kealy, James E. Gibson and Clyde Taylor. Mr. Hovey succeeds Edward F. Swinney, a local banker. Mr. Swinney construed the plan of reorganization, which provides for the complete separation of the traction company from the electric light company, to prevent him from acting both as individual trustee under the Kansas City Light & Power Company first mortgage and as a director of the Kansas City Railways.

1915 RETURNS FOR GEORGIA LINES

All Electric Railways in State Except Two Show a Surplus from Operation

The report of the Railroad Commission of Georgia for the calendar year 1915 contains a summary of the financial operations of electric railways within the State during the year, as reproduced herewith. The gross earnings for the seventeen railways noted amounted to \$8,507,133, with operating expenses of \$4,342,562, so that the net for the combined lines totaled \$4,164,571. Two of the lines, however, showed slight deficits, so that the combined net of \$4,165,350 for fifteen companies was reduced by a combined deficit of \$779 for two lines. The report of the commission contains comparative figures for the last three years for different groups of utilities, but the inclusion of street railway, power, gas and electric light companies in one group makes the individual progress of these industries undeterminable.

EARNINGS OF GEORGIA ELECTRIC RAILWAYS FOR YEAR ENDED DEC. 31, 1915

	Gross earnings	Operating expenses	Net earnings	Deficits
Albany Transit Company...	\$16,834	\$14,656	\$2,178	....
Athens Railway & Electric Company	213,742	79,777	133,964	....
Atlanta Northern Railway..	122,633	95,356	27,276	....
Augusta-Aiken Railway & Electric Corporation	574,955	230,139	344,816	....
Chattanooga Railway & Light Company	17,165	12,882	4,282	....
City & Suburban Railway..	22,523	19,172	3,350	....
Clarksville Railway	1,037	1,057	.....	20
Columbus Railroad	333,992	198,778	135,214	....
Covington & Oxford Street Railway	6,991	6,207	783	....
Fairburn & Atlanta Railway & Electric Company	24,428	20,966	3,462	....
Gainesville Railway & Power Company	33,601	19,334	14,266	....
Georgia Railway & Power Company	5,708,707	2,751,483	2,957,223	....
Macon Railway & Light Company	430,869	297,225	133,644	....
Rome Railway & Light Company	179,448	108,031	71,416	....
Savannah Electric Company	794,213	462,623	331,590	....
Valdosta Street Railway..	10,931	9,052	1,879	....
Waycross Street & Suburban Railway	15,057	15,817	.....	759
	\$8,507,133	\$4,342,562	\$4,165,350	\$779

MAY RETURNS POORER THAN APRIL'S
Comparison of Electric Railway Earnings for May, 1915 and
1916, Shows Improvement in East and South,
but Depression in West

A comparison of electric railway statistics for May, 1916, with figures for the corresponding month of 1915, made by the information bureau of the American Electric Railway Association, indicates an improvement in the traction business of the East and the South, together with a depression in the West. Returns for May, representing 6659.27 miles of line of companies scattered throughout the country, show an increase in operating revenues of 8.69 per cent, in operating expenses of 6.43 per cent and in net earnings of 12.14 per cent, while returns representing 5025.58 miles of line show an increase in taxes of 11.87 per cent and in operating income of 9.09 per cent. As a whole the returns make a poorer showing than a similar comparison for the previous month, though, of course, they are not strictly comparable because of the difference in the miles of line represented.

Of the three groups shown in the accompanying table, the Eastern, represented by 4047.25 miles of line, or about 60 per cent of the total mileage, shows an increase in operating revenues of 10.08 per cent, in operating expenses of 5.77 per cent and in net earnings of 16.49 per cent. Returns representing about 68 per cent of this mileage show an increase in the amount of taxes paid of 13.96 per cent, and in operating income of 14.18 per cent.

The Southern group, represented by 689.36 miles of line, shows an increase in operating revenue of 10.50 per cent, in operating expenses of 6.54 per cent and in net earnings of 16.22 per cent. Returns for 70 per cent of this mileage indicate an increase in taxes of 10.43 per cent and in operating income of 13.74 per cent.

The Western group, represented by 1922.66 miles of line or about 30 per cent of the total mileage shown, has gained 4.51 per cent in operating revenue and 8.16 per cent in operating expenses. Its loss in net earnings is 1.45 per cent. Moreover, returns for about 95 per cent of this mileage indicate an increase in the amount of taxes of 8.02 per cent and a loss in operating income of 3.52 per cent.

REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR MAY, 1916

	Companies Not Reporting Taxes		Companies Reporting Taxes	
	Amount	Per Cent Increase	Amount	Per Cent Increase
<i>United States*</i>				
Operating revenues.....	\$16,306,162	8.69	\$13,082,307	7.51
Operating expenses.....	\$9,631,314	6.43	\$7,825,380	6.17
Net earnings.....	\$6,674,848	12.14	\$5,256,927	9.56
Taxes.....	.....	.....	\$899,230	11.87
Operating income.....	.....	.....	\$4,357,697	9.09
Operating ratio, per cent:				
1915.....	60.32	...	60.56	...
1916.....	59.06	...	59.81	...
Miles of line represented..	6,659.27	...	5,025.58	...
<i>Eastern District*</i>				
Operating revenues.....	\$11,525,227	10.08	\$8,670,744	8.85
Operating expenses.....	\$6,624,615	5.77	\$5,054,680	5.36
Net earnings.....	\$4,900,612	16.49	\$3,616,164	14.14
Taxes.....	.....	.....	\$576,701	13.96
Operating income.....	.....	.....	\$3,039,463	14.18
Operating ratio, per cent:				
1915.....	59.82	...	60.22	...
1916.....	57.47	...	58.29	...
Miles of line represented..	4,047.25	...	2,748.58	...
<i>Southern District*</i>				
Operating revenues.....	\$833,379	10.50	\$563,240	7.19
Operating expenses.....	\$474,902	6.54	\$306,452	2.64
Net earnings.....	\$358,477	16.22	\$256,788	13.18
Taxes.....	.....	.....	\$41,983	10.43
Operating income.....	.....	.....	\$214,805	13.74
Operating ratio, per cent:				
1915.....	59.10	...	56.82	...
1916.....	56.98	...	54.41	...
Miles of line represented..	689.36	...	478.78	...
<i>Western District*</i>				
Operating revenues.....	\$3,947,556	4.51	\$3,848,323	4.64
Operating expenses.....	\$2,531,797	8.16	\$2,464,348	8.36
Net earnings.....	\$1,415,759	d1.45	\$1,383,975	d1.38
Taxes.....	.....	.....	\$280,546	8.02
Operating income.....	.....	.....	\$1,103,429	d3.52
Operating ratio, per cent:				
1915.....	61.96	...	61.83	...
1916.....	64.13	...	64.03	...
Miles of line represented..	1,922.66	...	1,798.22	...

NOTE—Letter d denotes a decrease.
 *Groupings are as follows: *Eastern District*—East of the Mississippi River and north of the Ohio River, exclusive of Greater New York. *Southern District*—South of the Ohio River and east of the Mississippi River. *Western District*—West of the Mississippi River.

The operating ratio of all of the districts, except the Western, has somewhat decreased, the United States as a whole showing a falling off from 60.32 per cent in 1915 to 59.06 per cent in 1916. The operating ratio of the Western district has increased from 61.96 per cent in 1915 to 64.13 per cent in 1916.

Illinois Northern Utilities Company, Dixon, Ill.—The Illinois Public Utilities Commission recently approved the consolidation of the Illinois Northern Utilities Company, the Freeport Railway & Light Company and the Tri-County Light & Power Company under the name of the first corporation. These companies are engaged in furnishing electricity, gas, heat, and street car transportation in the northwestern portion of Illinois, and have outstanding capital stock issues that are divided as follows: Illinois Northern Utilities Company, \$7,000,000; Tri-County Light & Power Company, \$340,000, and Freeport Railway & Light Company, \$851,300—total, \$8,191,300. In addition to the bonded indebtedness, which it is not proposed to change, the constituent companies have a floating indebtedness of \$560,331, which under the plan of the consolidation is to be cancelled and extinguished, without the issuance of additional bonds or other liens upon the property and without drawing on the treasury of the companies. The capital stock authorized for the consolidated company is the total of the outstanding issues for the constituent utilities.

Kanawha Traction & Electric Company, Parkersburg, W. Va.—Attorneys for the Kanawha Traction & Electric Company have filed a mortgage, dated Aug. 1, with the court at Parkersburg to the Fidelity Trust Company and Van Lear Black, trustees, to secure \$5,000,000 of bonds which will be in serial issues of such amounts as the needs of the company require. Series A will be of an amount sufficient to refund the \$1,100,000 of two-year 5 per cent notes which will soon become due, and \$150,000 of bonds of the Marietta Traction Company, which mature early in 1917. Provision will be made to refund the \$150,000 of bonds on the street railway lines in Parkersburg, issued by the Parkersburg Gas, Electric & Railway Company. Payment for these bonds will be made either at their redemption date, in 1918, or at their maturity. Bonds will also be provided to care for the \$550,000 of bonds of the Parkersburg, Marietta & Interurban Railway, maturing in 1942.

Lake Erie, Bowling Green & Napoleon Railway, Bowling Green, Ohio.—Theodore Luce, Detroit, Mich., representing the bondholders' committee, was the purchaser of the plant of the Lake Erie, Bowling Green & Napoleon Railway, which was offered at receiver's sale on Aug. 5. The sale price was \$140,000. There were no other bidders.

Lancaster & Southern Street Railway, Millersville, Pa.—Henry A. Hitner's Sons Company, Philadelphia, Pa., on Aug. 15 purchased at public auction the property of the Lancaster & Southern Street Railway, including rails, cars, etc., for \$20,575. It is the intention of the buyers to dismantle the property and start work during the next thirty days, selling the rails, which are all 60 lb. to the yard, for relaying purposes, possibly for export. References to the receivership and proposed sale of this company's property were made in the ELECTRIC RAILWAY JOURNAL of March 4 and July 29.

National Properties Company, Philadelphia, Pa.—Holders of 6 per cent preferred stock of the National Properties Company have received notice that the company will exchange the 7 per cent preferred stock of the American Railways now held in the treasury for National Properties preferred, on the basis of ten shares of the latter for nine shares of the former, accrued dividends on the stock being adjusted in cash. Offer to exchange will be open until Sept. 1 to holders of record on Aug. 14.

Northern Texas Traction Company, Fort Worth, Tex.—The application of the Northern Texas Traction Company to the board of equalization has resulted in a refusal to grant a reduction in the \$9,600 tax levied on the franchise valuation of the company. George H. Clifford, general manager of the company, presented the application on the ground that the franchise valuation, while equitable in former years, had become discriminatory through the operation of motor buses, which had cut deeply into the earnings of the traction company. Figures presented disclosed a reduction of more than

\$225,000 in the company's revenue for 1915, and it was asserted that the seventy jitneys now in operation in Fort Worth would cut the earnings for 1916 by at least \$150,000.

Public Service Corporation of New Jersey, Newark, N. J.—A financial report just issued by the Public Service Corporation of New Jersey shows that during the month of July the gross business of the company increased \$383,795 or 12.4 per cent over the corresponding month last year. The balance available—after payment of operating expenses, fixed charges, sinking fund requirements, etc.—for amortization, dividends and surplus was \$438,421, and the increase in surplus available for dividends was \$90,172. For the seven months ended July 31, 1916, the gross increase in total business was \$2,771,097, an increase of 13.2 per cent. The balance available for amortization, dividends and surplus totaled \$2,972,189, while the increase in surplus available for dividends amounted to \$700,336.

Sapulpa & Interurban Railway, Sapulpa, Okla.—The Midland Valley Railroad, Franklin Bank Building, Philadelphia, Pa., operating 365 miles of steam railroad, is reported to be considering the purchase of the Sapulpa & Interurban Railway, which is to be sold at public auction soon under foreclosure. The Midland Valley Railroad is said to be planning the extension of its line from Glen Pool to a point north of Kiefer, coming into Sapulpa over the interurban tracks.

Sheboygan (Wis.) Electric Company.—Kelsey, Brewer & Company, Grand Rapids, Mich., representing the American Public Utilities Company, have purchased the Sheboygan Railway & Electric Company. The Sheboygan Electric Company, the successor corporation, will hereafter be operated as a subsidiary of the American Public Utilities Company. The Wisconsin Railroad Commission has authorized the Sheboygan Electric Company, all the common stock of which will be owned by the American Public Utilities Company, to issue \$1,500,000 of first mortgage bonds, \$350,000 of preferred and \$200,000 of common stock to refund all outstanding securities and to provide funds for extensions and improvements. On June 30, 1916, the Sheboygan Railway & Electric Company had outstanding \$605,000 of stock and \$1,205,000 of bonds.

Shore Line Electric Railway, Norwich, Conn.—The Connecticut Public Utilities Commission on Aug. 18 authorized the sale of the Norwich & Westerly Traction Company, the Groton & Stonington Street Railway and the New London & East Lyme Street Railway to the Shore Line Electric Railway. The property of the Norwich & Westerly Traction Company sold for \$1,600,000; that of the Groton & Stonington Street Railway for \$525,000 and that of the New London & East Lyme Street Railway for \$700,000. The purpose of the sale, it is said, is to enable the three merged lines to pay off their indebtedness. As a result of the transaction all the properties formerly operated from the office of the Shore Line Electric Railway will be owned and operated by it.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—A special meeting of the stockholders of the St. Joseph Railway, Light, Heat & Power Company will be held on Sept. 28 to authorize the company to issue not to exceed \$15,000,000 of its first and refunding mortgage sinking-fund 5 per cent thirty-year gold bonds for the purpose of retiring \$5,000,000 of its first mortgage bonds and \$326,000 of first mortgage bonds on St. Joseph & Savannah Interurban Railway now outstanding, and for the further purpose of providing funds for acquiring other properties, for making betterments, extensions and improvements, and for other corporate purposes. The stockholders will also vote upon a proposition to authorize the company to join with the St. Joseph & Savannah Interurban Railway in the execution of a mortgage upon all the properties securing the payment of the principal and interest on the \$15,000,000 of bonds.

Tennessee Railway, Light & Power Company, Chattanooga, Tenn.—E. W. Clark & Company, Philadelphia, Pa., are offering at 99 and interest \$2,500,000 of two-year 5 per cent secured notes of the Tennessee Railway, Light & Power Company, which replace the \$2,500,000 of one-year 6 per cent secured-note participating receipts due on June 22, 1916. The new notes are dated June 1, 1916, and are due on June 1, 1918, but subject to redemption at 100 and inter-

est on any interest date upon thirty days' notice. The denomination is \$1,000. These notes are the direct obligation of the company, and are secured by pledge of \$2,500,000 of Tennessee Power Company first-mortgage 5 per cent gold bonds and \$2,500,000 of Nashville Railway, Light & Power Company stock. Pro rata amounts of stock and bonds must be deposited with the trustee to secure such additional notes as may be issued.

DIVIDENDS DECLARED

Cities Service Company, New York, N. Y., monthly, 1½ per cent, preferred and common.

Northern Ohio Traction & Light Company, Akron, Ohio, quarterly, 1¼ per cent, common.

Northern Texas Electric Company, Fort Worth, Tex., 3 per cent, preferred; quarterly, 1 per cent, common.

Terre Haute Traction & Light Company, Terre Haute, Ind., 3 per cent, preferred.

Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis., quarterly, 1¼ per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

ATLANTIC SHORE ELECTRIC RAILWAY, SANFORD, ME.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., July, '16	\$44,761	*\$29,906	\$14,855	.....	.....
1 " " '15	44,197	*35,661	8,536	.....	.....
AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						
1m., June, '16	\$177,844	\$106,556	\$71,288	\$43,205	\$28,083	
1 " " '15	163,745	123,865	39,880	33,625	6,255	
12 " " '16	1,971,153	1,259,356	711,797	492,746	219,051	
12 " " '15	1,982,599	1,299,352	683,247	472,112	211,135	
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.						
1m., June, '16	\$64,368	*\$39,263	\$25,105	\$17,586	\$7,519	
1 " " '15	60,968	*34,019	26,949	19,160	7,789	
12 " " '16	800,890	*431,849	369,041	211,409	157,632	
12 " " '15	780,504	*375,107	405,397	211,518	193,879	
BATON ROUGE ELECTRIC COMPANY, BATON ROUGE, LA.						
1m., June, '16	\$17,551	*\$8,303	\$9,248	\$3,492	\$5,756	
1 " " '15	15,409	*8,967	6,442	2,168	4,274	
12 " " '16	203,811	*105,018	98,793	34,933	63,860	
12 " " '15	180,954	*110,822	70,132	25,227	44,905	
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1m., June, '16	\$10,733	*\$9,388	\$1,345	\$1,104	\$241	
1 " " '15	10,420	*7,960	2,460	1,123	1,337	
12 " " '16	118,880	*101,051	17,829	13,320	4,509	
12 " " '15	118,966	*98,844	20,122	13,463	6,659	
CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.						
1m., June, '16	\$30,946	*\$19,045	\$11,901	\$6,552	\$5,349	
1 " " '15	27,832	*17,856	9,976	6,595	3,381	
12 " " '16	381,701	*223,402	158,299	78,611	77,688	
12 " " '15	338,169	*208,227	129,942	78,608	51,334	
CITIES SERVICE COMPANY, NEW YORK, N. Y.						
1m., July, '16	\$672,190	\$20,033	\$652,157	\$10,470	\$641,687	
1 " " '15	297,625	14,370	283,255	40,834	242,421	
12 " " '16	6,833,862	209,504	6,624,358	461,115	6,163,243	
12 " " '15	4,003,721	153,578	3,850,143	490,000	3,360,143	
COLUMBUS (GA.) ELECTRIC COMPANY						
1m., June, '16	\$67,952	*\$27,808	\$40,144	\$28,649	\$11,495	
1 " " '15	56,285	*27,079	29,206	28,678	528	
12 " " '16	782,754	*332,320	450,434	344,143	106,291	
12 " " '15	696,498	*318,141	378,357	346,031	32,326	
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.						
1m., June, '16	\$242,379	*\$147,443	\$94,936	\$66,736	\$28,200	
1 " " '15	218,658	*123,237	95,421	71,027	24,394	
12 " " '16	2,759,843	*1,634,506	1,125,337	789,862	335,475	
12 " " '15	2,551,263	*1,444,742	1,106,521	777,210	329,311	
DALLAS (TEX.) ELECTRIC COMPANY						
1m., June, '16	\$146,620	*\$98,196	\$48,424	\$36,470	\$13,954	
1 " " '15	133,276	*87,913	45,363	33,395	11,968	
12 " " '16	1,901,135	*1,177,150	723,985	424,032	313,153	
12 " " '15	1,968,303	*1,145,474	822,829	401,072	421,757	
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.						
1m., June, '16	\$68,127	*\$37,077	\$31,050	\$8,864	\$22,186	
1 " " '15	58,584	*31,325	27,259	8,714	18,545	
12 " " '16	790,638	*413,726	376,912	106,073	270,839	
12 " " '15	672,517	*385,290	287,227	104,567	182,660	
EL PASO (TEX.) ELECTRIC COMPANY						
1m., June, '16	\$83,157	*\$43,454	\$39,703	\$4,760	\$34,943	
1 " " '15	72,931	*40,496	32,435	4,194	28,241	
12 " " '16	1,046,570	*537,643	508,927	53,478	455,449	
12 " " '15	997,414	*540,820	456,594	50,329	406,265	

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

Traffic and Transportation

COMPANY ASKS JITNEY REGULATION

Puget Sound Traction, Light & Power Company Circulates Petitions to Be Presented to City Council of Seattle

The Puget Sound Traction, Light & Power Company, Seattle, Wash., recently began to publish in the regular advertising space of the daily newspapers a form of petition to the City Council of Seattle, asking for the regulation of jitney transportation in that city. Printed forms of the same petition were distributed by many individual citizens, improvement clubs and other organizations. A great many of these petitions have been signed and forwarded to the offices of the company, and will be duly presented to the City Council.

The petition, which was addressed to the City Council, read as follows:

"The undersigned, a resident of Seattle, believes that reliable and adequate transportation is essential to the welfare and growth of the community. To insure such transportation service requires organization, systematic operation and proper public regulation.

"We have one system of transportation operating under public regulation as to routes, frequency of service and rate of fare. Another form of transportation, the so-called jitney buses, is being operated through the streets without such regulation. It is my belief that such vehicles should be placed under the control of the city as to routes, frequency of service and rate of fare, and that the operators of such buses should be held to the same strict observance of regulations in these particulars as is the case with street car companies.

"I respectfully urge that the following requirement be included in such regulation as the city may see fit to enact: All jitney buses must operate continuously over fixed routes, between fixed termini, between 6 a. m. and 12 o'clock midnight, at a regular rate of fare."

In *The Electrogram* of Aug. 17 the company explained to the public that it was only a part of its civic duty and plain honesty in its public dealings for it to come out frankly on the subject of jitneys, 260 of which are now operating in Seattle. Prior to the demand of the company for jitney regulation, efforts had been undertaken by the improvement clubs from many sections of the city. The part taken by the company helped to give more general expression to the widespread opinion of the members of these clubs and other Seattle citizens who think that the transportation facilities of the city should be orderly, dependable, responsible and properly regulated by the city.

The company emphasized the fact that its suggestion for jitney regulation was very simple, asking only for the jitneys to be required to give real service to the public if they are allowed to use the streets for profit. No question of taxes, payment for improvements, etc., was raised.

SEATTLE LOW-FARE MOVES FUTILE

In a recent communication to the City Council, Assistant Corporation Counsel Walter F. Meier stated that a new application to the Public Service Commission for an order to compel the Puget Sound Traction, Light & Power Company to sell six tickets for a quarter would be necessary in order to get a final determination of the question. He further advised the Council that the reason why the Superior Court had refused to permit the enforcement of the commission's previous order to sell the tickets, was that no valuation of the company's properties had been made. Until such valuation was made, the court declared, it would be unable to determine whether the forced reduction of the company's gross revenues by reason of the sale of tickets would be just and equitable. An appeal to the Supreme Court from this decision of the Superior Court was begun but not perfected. For this reason, Mr. Meier held, a new

application would be necessary to get the matter before the courts. In concluding his statement to the council, Mr. Meier said: "There is not now pending in the courts any proceedings that would offer the city an opportunity to determine whether or not an order such as that made by the Public Service Commission would be sustained by the Supreme Court."

An effort to compel the sale of 4-cent tickets without transfer privileges on street cars was begun in October, 1911, when the City Council, over the Mayor's veto, passed an ordinance to compel such sale. Judge Rudkin of the Federal Court granted a temporary injunction upon the application of the company, and made it permanent Aug. 15, 1913. He held that the Public Service Commission law superseded the city's power in the matter. No appeal from this opinion was ever taken by the city. On Sept. 15, 1913, the Council asked the legal department of the city to make application to the Public Service Commission to obtain the sale of tickets. An order was made, but on Jan. 23, 1914, the superior court, upon application of the company, held it void. It was shown that \$5,000 a month reduction in earnings had been suffered by the company during the time it obeyed the city's ordinance. The court decided the city could not alter the franchise granted the company. The Public Service Commission and city both gave notice of appeal from the court's decision, but no appeal was perfected. An attempt to obtain a stipulation from the company's attorneys permitting the perfecting of such an appeal also failed.

Company Aids Highway Development.—In order to facilitate work on the improvements of the highways south of Tacoma, Wash., the Tacoma Railway & Power Company recently reduced the freight charge on sand and gravel from 50 cents to 20 cents. The new rate became effective on Aug. 14.

Street-Traffic Rules to Be Enforced.—Following a harrowing collision in New Albany, Ind., between an automobile and a hearse, the city administration has determined on a policy of strict enforcement of the city traffic regulations. One patrolman has been detailed by the police department as city traffic officer, and will devote his attention to keeping the street-railway lines clear and the other traffic operating in accordance with the rules.

Jitneys in Tulsa to Be Consolidated.—After two years of unsatisfactory service and indifferent success, the various jitney lines in Tulsa, Okla., are to be consolidated. A thorough system will be maintained covering every part of the city, and transfers will be given from one line to another. As an inducement to grant a franchise including all streets not covered by traction lines, the city will receive a certain per cent of the gross earnings secured from the operation of the combined lines.

Washington Jitney Act Upheld.—The Supreme Court of Washington recently upheld the act of the 1915 Legislature providing for the bonding of jitneys, by affirming the decision of the lower court of Spokane County in the case of E. Bankson against Joseph Laflam, a jitney driver, and his bonding company, the Pacific Coast Casualty Company. The Superior Court had awarded the plaintiff the full amount of the bond, \$2,500, for the injuries he had sustained while riding in the Laflam jitney.

Birmingham Line Asks Increase in Freight Rates.—Hugh Morrow, attorney Birmingham Railway, Light & Power Company, Birmingham, Ala., recently told the Alabama Public Service Commission that the company had been operating its freight department at a loss, and that its petition for permission to establish a minimum charge of 25 cents for the transportation of packages between points in Birmingham was intended only to place the street railway on a parity with steam railroads and express companies. The minimum charge of the street railway has been 15 cents.

Jitney Permits in Los Angeles.—The Police Commission of Los Angeles on Aug. 15 granted a permit to the Motor Bus Union to operate a line of buses between Los Angeles and Hollywood, a distance of more than 8 miles. Fifteen vehicles, each carrying more than ten persons, were put in commission on the new line. It was announced by the jitney

bus interests that these cars would tentatively be operated on a five-minute schedule. The Police Commission also adopted a resolution urging the City Council to pass as soon as possible an ordinance transferring jurisdiction over motor buses from the police body to the Board of Public Utilities of the city.

Bus Line Operation Said to Be Satisfactory.—The success of the auto bus line operated by the Joliet & Eastern Traction Company between Chicago Heights, Ill., and Hammond, Ind., is said to be entirely satisfactory. This line was established to take care of Joliet and Gary patronage. With only two buses making six round trips daily, 4615 passengers were carried in July, an average of almost 149 daily. The gross receipts from this branch of the service were \$836. During July of this year there were 700 more tickets sold in Joliet for Chicago Heights than in July, 1915, and the bus line is given the credit for most of the increase.

United Railroads Files Amended Traffic Complaint.—The United Railroads of San Francisco, in an amended complaint filed on Aug. 17 in the United States District Court, predicts chaotic traffic conditions on Market Street if the city is permitted to parallel the tracks of the private company from Twin Peaks Tunnel to Third and Market Streets. During the rush hours at the present time, it is pointed out, as a result of the number of cars operated per hour by the United Railroads and the municipal line, the streets are almost impassable from Geary Street to the ferry. Cars are strung along in a slow-moving, almost impenetrable line, and the jitneys and regular automobile traffic add to the jam. This complaint was used in the argument which opened on Aug. 22 before Judge Van Fleet upon the application of the United Railroads for a permanent injunction preventing the city from constructing parallel tracks on Market Street.

Jitneys Still Running on Market Street.—A demurrer by the city of San Francisco to the petition for a permanent injunction by the Jitney Bus Association to prevent the enforcement of the recently enacted jitney ordinance was argued before Judge Crothers on Aug. 19 and taken under submission. The judge announced he would render a decision the following week. Meantime a temporary injunction remains in force, and the jitneys continue to operate on Market Street at all hours of the day. Attorney Daniel A. Ryan, representing the jitney drivers, in support of his motion for a permanent injunction contended that the ordinance was in the nature of a franchise. This being the case, he argued, the ordinance cannot be enforced for sixty days. Alexander O'Grady, assistant district attorney, declared the ordinance is supplemental and restrictive of the ordinance already in effect, and therefore is not a franchise. As noted in the *ELECTRIC RAILWAY JOURNAL* of Aug. 19, Mayor Rolph on Aug. 4 signed an ordinance prohibiting the use of Market Street, between Sixth and Fremont Streets, by jitneys between 10.30 a. m. and 4 p. m.

Safety Council Organized in Kansas City.—The Kansas City Railways was largely instrumental in the organization in Kansas City, Mo., on Aug. 22, of a local council of the National Safety Council. The welfare department of the company, through E. B. Atchley and Julien H. Harvey, held several conferences with John Woodhead, chairman of the division of public and industrial safety of the Federation to Protect Life and Property, and W. T. Grant, chairman of the civic committee of the Commercial Club. The result of these conferences was a meeting on Aug. 22, at which eleven of the seventeen local members of the National Safety Council were represented. E. G. Trimble, a member of the executive committee of the National Safety Council, acted as temporary chairman, and B. S. Brown, secretary of the Federation to Protect Life and Property, as temporary secretary. Mr. Harvey was elected president, his nomination being the occasion for many appreciative remarks on the safety work of the railway company. The other officers are all representatives of manufacturers who have shown an active interest in their membership in the National Safety Council. Besides Mr. Harvey and Mr. Atchley, G. J. Smith, superintendent of rolling stock and shops, and R. D. Allison, chief clerk to A. E. Harvey, superintendent of way and structures, were among the men who attended the organization meeting of the local council.

Personal Mention

L. D. Gray has been appointed superintendent of the Freeport Railway & Light Company, Freeport, Ill., to succeed F. E. Kruesi.

Ralph Pierce has succeeded Charles E. Caster as electrical engineer of the Burlington Railway & Light Company, Burlington, Iowa.

William Peoples has succeeded P. McDonough as master mechanic of the Norwood, Canton & Sharon Street Railway, Canton, Mass.

William Perrine has been appointed superintendent of the Central Illinois Public Service Company, Anna, Ill., to succeed Harry Grooms.

J. A. Basnier has been appointed master mechanic of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill., to succeed William E. Jones.

W. C. Miller has been appointed general manager and purchasing agent of the Fox & Illinois Union Railway, Yorkville, Ill., to succeed F. M. Zimmerman.

R. W. Lamar has succeeded T. A. Elder as vice-president of the Central Indiana Lighting Company, Columbus, Ind., a subsidiary of the Middle West Utilities Company.

H. K. Relf, claim agent Spokane, Portland & Seattle Railway, Portland, Ore., who was elected president of the Pacific Claims Agents' Association at the meeting in Tacoma on Aug. 9, 10 and 11, was born at Superior, Wis., in 1871. He entered railway service in 1887, and after a varied experience both in railroad work and in outside business he became in 1898 district claim agent of the Northern Pacific Railroad at St. Paul. He left this position in 1903 to become clerk to the general superintendent of the coast lines of the Atchison, Topeka & Santa Fé Railroad at Los Angeles, Cal. In 1905 he returned to claim-agent work with the Northern Pacific Railway, at Tacoma, and stayed in this position until 1909, when he became claim agent of the Spokane, Portland & Seattle Railway at Portland. In 1910 he also became claim agent of the Oregon Electric Railway, which is controlled by the Spokane, Portland & Seattle Railway, and in 1911 claim agent of the Spokane & Inland Empire Railroad.

William McClellan, consulting engineer, New York, N. Y., has been appointed dean of the Wharton School of Finance and Commerce of the University of Pennsylvania. Mr. McClellan, who was born in Philadelphia, was graduated from the Arts Department of the University of Pennsylvania in 1900. In 1903 he obtained the degree of doctor of philosophy, and in 1914 the university presented to him the degree of electrical engineer. For a time after 1903 he was an engineer in charge of construction for the Philadelphia Rapid Transit Company. In 1905 he became a supervising engineer with Westinghouse, Church, Kerr & Company, New York. In 1907 his present association with H. T. Campion of Philadelphia in the engineering business commenced. In 1911 he was appointed electrical engineer and chief of the division of light, heat and power of the Public Service Commission for the Second District of New York, resigning this position in 1913. Mr. McClellan is vice-president of the American Institute of Electrical Engineers and one of the two representatives of this institute on the joint conference committee of engineering societies. He is also president of the joint Pan-American engineering committee. He has always been interested in steam railroad electrification and was for a number of years chairman of the electrification committee of the New York Railroad Club.

OBITUARY

George Lakey Lord, for the last ten years sales manager of the railway department of the West Disinfecting Company, died of heart disease on Aug. 17. He was sixty-nine years of age. Prior to his work with the West Disinfecting Company, he was connected with newspapers in the Middle West.

Construction News

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

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

RECENT INCORPORATIONS

West Coast Electric Railway, Sarasota, Fla.—Application for a charter has been made by this company to construct a line from Tampa to Venice, via Palmetto, Bradentown, Sarasota and Bee Ridge. Capital stock nominal, but may be increased to \$1,000,000 with an equal amount of bonds. Officers: P. D. Lacey, president and treasurer; T. Z. B. Everton, vice-president and secretary, and A. E. Townsend, general manager. [July 22, '16.]

Lakeland, Bartow & Winter Haven Interurban Railroad, Winter Haven, Fla.—Chartered to construct a line from Lakeland to Bartow and Winter Haven, twenty-five miles. Capital stock, \$750,000. J. L. Wilson, Altoona, Pa., president. [July 8, '16.]

***Toxaway-Western Railway, Toxaway, N. C.**—Incorporated to construct a line from Toxaway to Sapphire. Capital stock, \$75,000. Directors: James Moltz and E. S. Moltz, Williamsport, Pa., and J. S. Adams, J. G. Adams and H. C. Jarvis, Asheville, N. C.

FRANCHISES

Peoria, Ill.—The Peoria & Chillicothe Interurban Company has petitioned the Council of Peoria to enter the city over the tracks of the Peoria Railway. [March 25, '16.]

Lawrence, Kan.—The Kansas City, Kaw Valley & Western Railway has received a thirty-year franchise from the City Commissioners of Lawrence.

Cumberland, Md.—The Cumberland Electric Railway has asked the Council for a franchise to construct an extension on Green Street from Brooke Avenue westward to the city limits.

Blackwell, Okla.—An election will be held in Blackwell on Sept. 12 on the proposal to grant a franchise to the Oklahoma Railway.

Roanoke, Va.—The Roanoke Railway & Electric Company has received a franchise from the Council of Roanoke to construct an extension in the southeastern part of the city.

TRACK AND ROADWAY

***Broomfield, Ark.**—Plans are being made for the construction of an electric railway between Lamar and Broomfield. M. L. Powers, Broomfield, is interested.

Northern Electric Railway, Chico, Cal.—Plans are being considered by this company for the extension of its tracks out J Street to Twelfth Street, Marysville, connecting their line with the Yuba construction shops.

Tidewater Southern Railway, Stockton, Cal.—It is reported that the proposed branch of the Tidewater Southern Railway from Hatch Junction to Irwin will be completed by Jan. 1.

Central Florida Interurban Railway, St. Cloud, Fla.—It is reported that this company expects to begin construction of its proposed line from Hopkins to St. Cloud about Sept. 1. Wylie & Reynolds, St. Cloud, engineers. [July 29, '16.]

West Coast Electric Railway, Sarasota, Fla.—It is reported that construction on this company's proposed line from Tampa to Venice, via Palmetto, Bradentown, Sarasota and Bee Ridge, will be begun about Sept. 1. A. E. Townsend, Sarasota, general manager. [July 22, '16.]

Tampa (Fla.) Electric Company.—Preliminary to the paving of Michigan Avenue from Twenty-second Street to Campabella Avenue and of Campabella Avenue north to the city limits, the Tampa Electric Company is reconstructing the track, using a heavier rail.

***Bloomington, Ill.**—A new interurban line to connect Bloomington and Chicago is being proposed. L. E. Fischer, formerly general superintendent of the Illinois Traction System, is interested.

Bloomington & Normal Railway & Light Company, Bloomington, Ill.—This company has a force of men tearing up the track on North Center Street, Bloomington, preparatory to the laying of new rails and ties.

Peoria (Ill.) Railway.—This company has begun a survey, preparatory to asking for a franchise to extend its East Peoria line from Main Street to Bloomington Street and to build an extension on Cole Street, 1½ miles. The tracks on East Washington Street, East Peoria, will be moved to the center of the street, following the widening of the street, which is now in progress. The main line from Peoria to East Peoria will be double-tracked, although the proposed extension to Bloomington Street will be single track.

Urbana & Champaign Railway, Gas & Electric Company, Urbana, Ill.—This company is relaying its track on Main Street, Champaign, Ill.

Arkansas Valley Interurban Railway, Wichita, Kan.—This company is considering the construction of an extension northward from Newton to Gossel.

Owensboro (Ky.) Traction Company.—This company has completed the survey for the extension of the Breckenridge Street line to the Elmwood Cemetery and construction will begin shortly. Construction of the Rose Hill Cemetery extension is under way.

***Williamsport, Md.**—It is reported that surveys are being made for an electric railway from the Potomac River, near Williamsport, Md., to Millville and Harpers Ferry, W. Va., and Leesburg, Va. Martin & Seibert, attorneys-at-law, Martinsburg, W. Va., may give information.

Vicksburg Light & Traction Company, Vicksburg, Miss.—This company will construct new tracks on Farmer and South Washington Streets.

Great Falls (Mont.) Street Railway.—It is reported that during September this company will connect its lines on Central Avenue and First Avenue North, through Fourth Street, eliminating handling the South Side line by operating the cars down Central Avenue to Park Drive.

Missoula (Mont.) Street Railway.—According to reports, the Missoula Street Railway will begin work immediately on the extension of its lines to the factory of the Great Western Sugar Company. The cost of the extension is estimated at \$25,000.

Salem & Pennsgrove Traction Company, Salem, N. J.—Operation has been begun on the first section of this company's line from the ferry landing at Pennsgrove, N. J., past the Du Pont Works and on toward Pennsville. The line when completed will extend from Pennsgrove to Salem. [March 11, '16.]

New York Consolidated Railway, Brooklyn, N. Y.—Bids will be received by the Public Service Commission for the First District of New York until Aug. 30 for the supply of special work (order No. 9), frogs and switches for use in the construction of the Culver line in Brooklyn.

Northern Ohio Traction & Light Company, Akron, Ohio.—At a special meeting on Aug. 15, stockholders authorized the issue of \$14,075,000 first lien and refunding bonds, of which \$4,000,000 will be used for immediate improvements. Plans for improvements include the double-tracking from East Akron to Springfield Lake.

Youngstown & Niles Railway, Youngstown, Ohio.—Surveys have been completed and right-of-way obtained by this company for its proposed line from Steelton to Niles, via McDonald. Double-track will be laid and automatic block signals installed. All rails have been ordered. [May 20, '16.]

Sapulpa & Interurban Railway, Sapulpa, Okla.—The Midland Valley Railroad, Franklin Bank Building, Philadelphia, Pa., operating 365 miles of steam railroad, is reported to be considering the purchase of the Sapulpa & Interurban Railway, which is to be sold at public auction soon under foreclosure. The Midland Valley Railroad is said to be plan-

ning the extension of its line from Glenn Pool to a point north of Kiefer, coming into Sapulpa over the interurban tracks.

London & Port Stanley Railway, London, Ont.—The improvements planned by this company are still in the hands of the engineers, who are figuring the cost of building the 30 miles of new track which will double-track the road from London to Port Stanley, the number of cars needed and other details, with a view of submitting a by-law to the people of London next January. If the plans are approved the new cars will be similar to the all-steel double-truck cars now in use.

Johnstown (Pa.) Traction Company.—This company contemplates the construction of an extension to Seward, about 7 miles.

Dallas, Tex.—Notwithstanding the concessions made by the traction interests in Dallas, Tex., the deadlock in regard to a new franchise still continues. J. F. Strickland and C. W. Hobson, heads of the interests that hold options on the Stone & Webster interests in Dallas, have issued a statement to the public, given in greater detail on page 370, in which the position of the utilities is fully explained. The proposals of the traction interests include the expenditure of not less than \$2,000,000 in railway extensions and improvements and lighting equipment within eighteen months from the time a new franchise goes into effect, and the expenditure of \$5,000,000 in and around Dallas within three years, including the construction of at least one interurban line into Dallas. In regard to the latter point the offer is that two interurban railways having a mileage of not less than 30 miles each will be built out of Dallas, the construction of the one to begin within six months after the franchise became operative, and that of the second to begin within six months after the gross receipts per mile of track within Dallas reach the mark set in 1913, the year preceding the European war, it being estimated that this condition will exist at the time the first interurban line is completed. It is further stated that each interurban line would be completed within eighteen months from the date of commencing the work. At the present time an agreement has been reached on practically all points involved in the Dallas case except the matter of valuation. The city officials are holding out for a valuation of \$7,100,000, while the traction officials remain steadfast in their determination to fix a valuation of \$8,500,000.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway, the consolidated Strickland lines, plans a number of extensions as soon as the consolidation, as recently arranged, is perfected. One of the first lines to be built will be that from Cleburne to Hillsboro. Another extension will be southward from Waco to Temple, Austin, Houston and Galveston. In connection with this extension it is reported that negotiations are under way for the purchase of the Trinity & Brazos Valley Railway, extending from Cleburne via Hillsboro, Teague, Jewett, Houston, to Galveston. The Trinity & Brazos Valley Railway will be electrified and connection will be made with the present interurban line from Fort Worth to Cleburne, thus giving an electric line from Fort Worth to the Gulf.

Houston (Tex.) Electric Company.—This company is re-constructing its track along the Houston Heights Boulevard from Thirteenth Street to Nineteenth Street, using an 80-lb. T-rail in place of the lighter rail formerly in use.

Marlin-Temple Interurban Company, Marlin, Tex.—Officers of this company have closed a contract with S. D. Hanna, Marlin, as chief engineer of the line, and work of running final surveys, elevations, profiles and securing right-of-way will be rushed to completion. It is said that actual construction work will begin in a short time and the line will be in operation by Jan. 1. [July 29, '16.]

Ogden, Logan & Idaho Railway, Ogden, Utah.—It is reported that the Plain City branch of the Ogden, Logan & Idaho Railway will be electrified in the near future. It is also stated that the line will be extended about 2½ miles west of Plain City into the sugar beet fields of Warren.

Petersburg & Appomattox Railway, Petersburg, Va.—This company, which operates a line between Petersburg and Hopewell, reports that it contemplates the construction of an extension to City Point, about 2½ miles.

Seattle & Rainier Valley Railway, Seattle, Wash.—This company which, according to reports, will succeed the Seattle, Renton & Southern Railway Company, will take immediate steps to re-establish the old line on Dearborn Street, Seattle, abandoned about six years ago, when Dearborn Street and intersecting thoroughfares in that district were regraded. The new construction proposed will consist of tracks on Dearborn Street from Fifth Avenue South to Rainier Avenue, and on Fifth Avenue South from King Street to Dearborn Street. By this construction the company will avoid the Weller Street grade. It is claimed by officials of the company that its power bill will thereby be reduced \$1,700 per month. The Seattle & Rainier Valley Railway is incorporated under the laws of the State of Delaware, with Marshall Sampson, Chicago, as president, and Walter M. Brown, Chicago, general manager.

Charleston (W. Va.) Interurban Railroad.—This company will construct an extension of the Cabin Creek Junction line to Montgomery, 10 miles, and also to a string of coal mines south of the Junction.

SHOPS AND BUILDINGS

Pacific Gas & Electric Company, Oakland, Cal.—This company will construct an office building at Sixteenth and Clay Streets, Oakland, at a cost of \$200,000, for the use of the company's Oakland departments.

Joliet & Eastern Traction Company, Joliet, Ill.—This company has made extensive improvements at the station which it recently leased from the Elgin, Joliet & Eastern Railroad to provide for the better handling of freight.

Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa.—This company will construct a new passenger and freight terminal at Fourth Street and Court Avenue, Des Moines.

United Traction Company of Pittsburgh, Pittsburgh, Pa.—This company's one-story carhouse at Braddock Avenue and Thirteenth Street, Braddock, has been sold for \$8,500 to George Matta, Braddock.

Port Arthur (Tex.) Traction Company.—This company has purchased a half block of property near the center of the city and will construct carhouses and offices.

POWER HOUSES AND SUBSTATIONS

Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill.—The installation of two large boilers, each capable of generating 500 hp., will form part of the important changes which are being conducted at the power plant of this company. Ten carloads of machinery have arrived for this work. A 1500-kw. turbo-generator will be installed after Sept. 1 and two more boilers, each having a capacity of 500 hp., will be installed within the next few weeks.

Bay State Street Railway, Boston, Mass.—Plans have been filed with the Quincy department of building inspection by the Bay State Street Railway for the structure that will enlarge the company's power plant at Quincy Point to twice its present size. It will be constructed of brick and stone, at an estimated cost of \$70,000.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—This company will install a 5000-kw. General Electric turbine in its powerhouse before winter.

New York Municipal Railway Corporation, Brooklyn, N. Y.—Bids will be received by the Public Service Commission for the First District of New York until Sept. 13 for the construction of station finish for stations at Twenty-third Street, at Twenty-eighth Street and at Canal Street on the Broadway subway.

Northern Ohio Traction & Light Company, Akron, Ohio.—Among the improvements planned by this company is the construction of a new substation at Canton.

Ohio Electric Railway, Cincinnati, Ohio.—This company is arranging to install new apparatus in its powerhouse at Lima that will entail an expense of about \$75,000.

Mansfield Railway, Light & Power Company, Mansfield, Ohio.—Ground has been broken for the new power station of the Mansfield Railway, Light & Power Company. The initial installation will provide for a generating capacity of 7000 kw. and transmission lines will be erected to Mansfield and Ashland.

Manufactures and Supplies

TRACK SPECIAL WORK BUYING ACTIVE

Large Amount of Reconstruction and Maintenance Work Being Done in Middle West

Seventy-five to 100 per cent more special track work material has been purchased by electric railways for installation this year than was purchased last year. This estimate is based on statements from the sales departments of several manufacturers. One company reports that its 1916 orders from electric railways total twice those for 1915.

Most of the special track work material, of course, is for city properties, and maintenance and reconstruction work rather than extensions have required the new material. In several cities of the Central States comparatively large programs are being carried out. Des Moines is reconstructing practically all the track in its entire business district, Kansas City has done a large amount of reconstruction work, Indianapolis has been rearranging its tracks to permit routing traffic in the retail store districts, Minneapolis, St. Paul, Detroit and Davenport are making extensions, St. Louis has been doing reconstruction work, and in Chicago the track department has more than 2000 men at work on construction and maintenance work.

On most properties track work progress has been hampered by lack of men at any wage near that ordinarily paid. One company which has been paying \$2.25 per day for labor has had to compete for men with other local utilities that have been paying as high as \$3 for day labor. Such conditions of course mean instability of forces and difficulty in carrying out any definite construction program.

The girder rail situation, with no large quantities, unless previously ordered, available until after next July, has put a damper on track work construction progress. Consequently the amount of special track work ordered, even though large as compared with 1915, is nowhere near as large as might have been expected had rail deliveries and labor conditions been better.

While special track work deliveries are quoted generally for ten to twelve weeks the manufacturers state that some rush orders can be accepted. This of course means that a road in the northern states can order special track work now and receive it in time for installation before winter closes the construction season.

Contracts for their 1917 rail and special track work requirements have been made by a number of electric railways. Some steam roads, it is stated, that have contracts for 1917 rail deliveries have tried to have these deliveries anticipated but have been unsuccessful, the rail makers replying with statements of their embarrassment in fulfilling orders for 1916 delivery. The southern steam railroads lately have made comparatively large purchases of special track work for 1917 delivery.

Manufacturers are urging electric railways to buy now because they cannot see any possibility of being able to quote lower prices within a year. High prices, of course, are accounted for by war demands for steel, high labor costs and high costs of raw material. Roughly, the costs of labor and material for special track work manufacture are one-third higher than they were a year ago. Stories are related of how green men in the special track work plants have been broken in to do certain rough work and then after five or six weeks' work these men have left to go into plants manufacturing shrapnel. Here they get \$5 to \$6 a day as machinists. Thus while the price of labor is higher than ever before, the work performed per man is even of less value than it was before the present wage scale went into effect.

Another reason for the increased selling price of special track work is the great increase in the price of manganese ore. Its price formerly was around \$40 per ton, and during the war period this price has touched \$400 per ton. The price is now about \$200 per ton. Manganese steel finished products, such as small special work castings, are now quoted at about \$400 per ton.

LUMBER PRICES FOR 1915-1916

"Lumber prices have gone up somewhat in 1916 as compared with prices in 1915, but the increase is far below the percentage of increase in the cost of almost any other article in the world of commerce," declares R. S. Kellogg, secretary of the National Lumber Manufacturers' Association. Here is the average f.o.b. mill value per 1000 ft. of the principal kinds of lumber:

Average values per M			Average values per M		
Softwoods			Hardwoods		
	1915	1916		1915	1916
Yellow pine	\$12.50	\$15.02	Oak	\$19.00	\$21.76
Douglas fir	10.50	14.20	Maple	15.00	15.53
White pine	18.00	18.32	Chestnut	16.00	17.49
Western pine	14.50	14.01	Birch	16.50	17.24
Cypress	20.00	21.94	Basswood	19.00	18.66
Redwood	13.50	16.64	Hickory	23.50	30.42
Cedar	15.50	18.12	Elm	17.00	18.08
White fir	11.00	12.91	Ash	22.50	24.35

TO STUDY INDUSTRIAL SITUATION IN FRANCE

Industrial Commission Investigation to Determine How to Meet Conditions After War

The American Industrial Commission, formed under the auspices of the American Manufacturers' Export Association and composed of fifteen representatives of various prominent commercial industries of the United States, sailed to-day for France aboard the steamship Lafayette. This commission has the official sanction of France and the United States in its mission, which is to make a scientific study of industrial conditions in France and to determine the most advantageous method whereby resources in this country may be made to cooperate in the rehabilitation that will follow the war.

The project was suggested by the French Trade Commission which visited this country during the winter of 1915-16. Literature dealing with the visit of the commission has already been circulated throughout France.

William Wallace Nichols, assistant chairman of the Allis-Chalmers Manufacturing Company, Inc., is chairman of the commission. Mr. Nichols said that the commission is made up of exporters, importers, factory architects, engineers and others, all members of the various branches of commercial industry. The idea of the commission has been fostered by the American Manufacturers' Export Association, he said, following the suggestions of the French industrial commissioners while here.

A list of members of the commission follows:

William Wallace Nichols, chairman, assistant chairman Allis-Chalmers Manufacturing Company, Inc., 50 Church Street, New York; E. V. Douglass, general secretary, secretary American Manufacturers' Export Association, New York; A. B. Farquhar, president A. B. Farquhar Company, Ltd., York, Pa.; James E. Sague, formerly vice-president American Locomotive Company, New York, and Public Service Commissioner, Poughkeepsie, N. Y.; F. J. Le Maistre, E. I. du Pont de Nemours & Co., Wilmington, Del.; Curt G. Pfeiffer, vice-president George Borgfeldt & Co., New York; John R. MacArthur, MacArthur Brothers, New York; Dr. C. O. Mailloux, consulting engineer, New York; E. A. Warren, vice-president University Winding Company, Boston, Mass.; Samuel W. Fairchild, vice-president Fairchild Bros. & Foster, New York; Noble Foster Hoggson, president Hoggson Brothers, Inc., New York; J. G. Butler, Jr., director Commercial National Bank, Youngstown, Ohio, and vice-president Brier Hill Steel Company; E. E. Russell, J. I. Case Threshing Machine Company, Racine, Wis.; A. Swasey, president Warner & Swasey, Cleveland, Ohio, and George Burdett Ford, of George B. Post & Sons, New York.

The American Manufacturers' Export Association, which is mainly responsible for the forming of the American Industrial Commission to France, was incorporated in 1911 and includes 500 of the leading American organizations engaged in manufacturing every class of products in the United States.

The association is co-operative in character and exists to promote and foster commercial relations between American manufacturers and foreign nations. Regarding the commission the association says:

"When the French Trade Commission was in America, during the winter of 1915-16, it was suggested that a similar commission might be organized to make a reciprocal visit to France.

"As the feasibility of the project was studied its impor-

tance became increasingly manifest, and despite serious obstacles imposed by unprecedented conditions resulting from the heavy burdens incident to the European war, with all their enormous responsibilities, the American Manufacturers Export Association has finally succeeded in organizing such a commission of men well known in their respective lines of industry and eminently able to render the great service expected of them."

MARKETS FOR AMERICAN MATERIAL IN FAR EASTERN COUNTRIES

Bureau of Foreign and Domestic Commerce to Investigate Markets for American Electrical Goods and Railway Equipment and Supplies

Continued interest in markets of the Far East, Australia and South Africa has led the Bureau of Foreign and Domestic Commerce, Department of Commerce, to undertake an investigation of the field for American railway equipment and supplies in that section of the world. Frank Rhea, of the division of valuations of the Interstate Commerce Commission, has been appointed special agent to make the investigation and is already engaged in making arrangements for conferences with manufacturers, contractors and selling agents, which will be held during a preliminary trip to the principal manufacturing centers in this country. This preliminary trip will be made in September.

When Mr. Rhea has learned what information the manufacturers in this country want concerning railway conditions across the Pacific, he will go abroad and make careful study on the ground of the conditions as they affect railway construction, equipment, traffic, the probable extension or reconstruction of railways, tramways, etc. While all specific opportunities for securing orders will be promptly reported, the real purpose of the investigation is to gather together the fundamental facts and conditions that will enable the American manufacturer to consider intelligently the different fields and to determine whether or not it is to his advantage to begin an active campaign there to create new markets for his goods.

Manufacturers and others who wish to get in touch with Mr. Rhea before he leaves this country should address the division of commercial agents, Bureau of Foreign and Domestic Commerce, Custom House, New York. This is the new office opened in New York by the bureau to keep in closer touch with business houses interested in foreign trade.

There was a time when American electrical goods met with considerable competition in the Far East, but the war has greatly handicapped the principal European competitors and American manufacturers are making a serious effort to take advantage of the situation and get possession of the market. In order to accomplish a great deal of preliminary study that is still needed, the Bureau of Foreign and Domestic Commerce, Department of Commerce, has selected R. A. Lundquist, consulting engineer of Minneapolis, to study the market for electrical goods in China, India, Australia, South Africa and a number of other countries in the Far East.

Special Agent Lundquist's part in the campaign will be to ascertain the type, qualities and cost of electrical apparatus with which American goods come into competition, as well as to look into the general opportunities for the sale of certain goods. Before leaving on the trip Mr. Lundquist will spend some weeks in the principal business and manufacturing centers conferring with manufacturers, exporters and business houses generally on the scope of the investigation.

Mr. Lundquist was graduated from the University of Minnesota in 1905 with the degree of electrical engineer, following which he was associated for six years with prominent electrical houses. Since 1911 he has been in business for himself in Minneapolis, specializing in hydroelectric and transmission line work. He is the author of "Transmission Line Construction—Methods and Costs," and has contributed numerous articles to the technical press. He is chairman of the Minnesota section of the American Institute of Electrical Engineers.

ROLLING STOCK

Pekin (Ill.) Railway is in the market for two steel cars costing about \$3,500 each and seating twenty-eight people.

Cumberland County Power & Light Company, Portland, Me., is contemplating the purchase of four express and locomotive cars for freight service.

TRADE NOTES

Westinghouse Traction Brake Company, Wilmerding, Pa., has received an order for magnetic brakes for the two cars recently ordered by the Fonda, Johnstown & Gloversville Railroad.

National Pneumatic Company, New York and Chicago, announces the receipt of orders from the Boston Elevated Railway for forty-two pneumatic door and step-control equipments for elevated cars and 152 equipments for Lindall articulated cars.

Samuel H. Powell has been appointed manager of the buying department of Wm. P. Bonbright & Company, Inc., 14 Wall Street, New York, to take effect Sept. 1. Mr. Powell has been associated with N. W. Halsey & Company in a similar capacity for ten years.

Smith-Ward Brake Company, New York, N. Y., reports the receipt of orders for brake adjusters for thirteen cars of the Worcester (Mass.) Consolidated Street Railway, and ten cars of the Springfield (Mass.) Street Railway. This company has also received orders for brake lever struts from the Connecticut Company and the Springfield Street Railway.

National Safety Device & Manufacturing Company, Chicago, Ill., has appointed the Lord Manufacturing Company, New York, N. Y., as exclusive Eastern electric railway agent for the New England States, New York, Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia for the sale of air rectifiers designed to eliminate frost in air systems.

The National City Company, New York, N. Y., has purchased the business of N. W. Halsey & Company, dealers in investment securities, and has also absorbed the bond-selling department hitherto conducted by the National City Bank. This new company will immediately take over all of the assets and liabilities of N. W. Halsey & Company, and the large amount of securities owned by this house will be marketed by the new owners. The headquarters of the new company will be in the National City Bank Building, 55 Wall Street, New York. Halsey, Stuart & Company, Chicago, are not affected by this change.

Heywood Brothers & Wakefield Company, Wakefield, Mass., report the receipt of the following orders for seats: Northern Texas Traction Company, ten cars being built by the American Car Company; Keokuk Electric Company, Keokuk, Iowa, one car being built by the St. Louis Car Company; Binghamton Railway, sixteen city cars being built by the Cincinnati Car Company; Boston Elevated Railway, forty-two elevated cars being built by the Pressed Steel Car Company; New York Central Railroad, twelve multiple unit cars being built by the Standard Steel Car Company; Northern New York Development Company, ten electric cars being built by the Laconia Car Company.

Root Spring Scraper Company, Kalamazoo, Mich., reports the recent receipt of the following orders for snow scrapers: Binghamton Railway, thirty-two No. 2 air operated; Muskegon Railway & Light Company, two No. 2 hand operated; New York State Railways, Rochester Lines, four No. 6, hand operated; Syracuse Lines, one No. 6, hand operated, and twelve No. 3, air operated; Utica Lines, ten No. 2, air operated; Schenectady Railway, ten No. 2, air operated, and twelve No. 3, air operated, for interurban cars; Bay State Street Railway, ten No. 2, hand operated, and fourteen No. 2, air operated; Illinois Traction System, two No. 5, air operated; Laconia Car Company, six No. 2, hand operated; Kelley-Powell, Ltd., Winnipeg, two No. 3; Massachusetts-Northeastern Street Railway, twenty-four No. 2, hand operated; Michigan Railway, twenty No. 2, air operated, and twenty Root life guards; Newport News & Hampton Railway, Gas & Electric Company, two No. 6; Ottawa Car Company, three No. 2, and Saginaw-Bay City Railway, two No. 6.