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EVILS OF UNION DOMINATION

We are publishing this week an interview with a prominent railway manager upon the evils of union domination. The interview was obtained before the crisis in the New York labor situation was reached, but the present New York strike affords an excellent example of the excesses to which labor goes after its unionization. Carried away by the seeming success which followed their efforts to establish a union on the surface lines about a month ago, the same labor leaders atempted to annex the elevated and subway lines of the Interborough Rapid Transit Company and to dictate what kind of a contract that company should and should not make with its employees. We are glad that the company has accepted the challenge thus presented. It realizes that it is paying its men liberal wages and under the individual form of contract is offering them continuous employment with better working hours for the next two years. The company also realizes that the great majority of its employees are satisfied with their rates of pay and working conditions and do not desire to be molested by labor agitators. Under these conditions the duty of the company to itself, to its loyal employees and to the public was plain. This duty was performed when it declared "Hands Off!"

THE NEW YORK STRIKE

Less than five weeks ago a similar agitation on the surface lines belonging to the New York Railways was settled by the intervention of the Mayor and the chairman of the Public Service Commission for the First District. Under the agreement then reached all points of difference were to be submitted to arbitration, but this fact has not prevented the men of the New York Railways from declaring a strike a few hours after the one on the Interborough was called. If the union leaders had any grievances against the New York Railways Company about individual contracts or the discharge of employees, they should certainly have requested arbitration as required under the agreement. Is it any wonder that the managers of the Interborough company are unwilling to submit themselves and their properties to the perils of such domination? In view of the condemnation throughout the country of the unconditional surrender exacted by the Brotherhoods at Washington last Sunday, we believe that the people of New York will support the transportation companies in their attempt to control their own properties. It may mean some inconvenience for a few days, but this inconvenience will be well worth its cost. Surrender now would mean surrender in the future to every demand, no matter how unreasonable, which might be made. New York City has a financial interest—or will have as soon as the new subways are completed—in the profits of the Interborough company. Its citizens, therefore, have a greater concern in the result than that of mere spectators. They are part owners in the enterprise and closely concerned with any changes in conducting the business likely to affect adversely the financial position of the company. We believe they will support it in its efforts to operate its property without outside dictation.

ASSISTANCE FROM THE BUSINESS MEN

The business men of a community in past years have usually been keenly interested in the primary development of a local utility, but too often with the first signs of paying operation they have become indifferent to the further success of the enterprise. Such an ostrich-like attitude in regard to utility progress, however, is now becoming less frequent, and numerous examples are not wanting to show how business interests are actively co-operating with public service corporations in the solution of problems affecting the maintenance of successful operation. For instance, this week we are noting elsewhere a charter amendment which has been drafted by the Chamber of Commerce, Oakland, Cal., in an effort to help solve the financial and operating difficulties of the San Francisco-Oakland Terminal Railways. On still another page there is an announcement that the Chamber of Commerce of the United States is soon to hold a nation-wide referendum on the federal regulation of railroads. While it will undoubtedly be some time before business interests at large will seriously consider all the deeper questions of utility operation like regulation, business men in particular communities are coming more thoroughly to understand the simple points of their relationship with local utilities and to cultivate a broadness of vision that enables them more fairly to judge utility practices and utility needs. The commercial men of a community are the ones best able to understand the business problems and pitfalls that may confront public service corporations. They are also peculiarly the ones among the citizens to realize the important part which an electric railway plays in the business prosperity of every town. Hence, every effort should be made by electric railway companies to merit the support of this class of citizen and legitimately to secure it.

TEACHING "SAFETY FIRST" THROUGH PLAY

As an intensive development of school safety work along sound educational lines, the Tacoma "school safety scout" plan described this week by T. N. Henry has much to commend it to the serious consideration of electric railway officials. Safety work in schools is not new, of course, but the Tacoma system is unusual in that it gives so much recognition to the educational significance of "play." Believing that safety lectures and illustrations are soon forgotten by a majority of school children unless there is some follow-up scheme to induce activity on the part of the children themselves, Mr. Henry has inaugurated a system similar to that of the boy scouts but emphasizing the point of safety. In so doing he has simply followed the fundamental pedagogical principles that play gives to children a pleasurable feeling which is educational and that the best way to reach both the intellect and the emotions of children is through fostering their play instinct. The safety-scout plan may seem too complex in its play features to appeal to the younger school children, as it is a step beyond the individual play and later the social play to which they are accustomed. Nevertheless, it gives full opportunities for the two more advanced types of recreative activity, competitive play and team play, which through the years of adolescence inculcate the various principles of right conduct between individuals. In general, therefore, the safety-scout plan is one into which all the children will gradually grow, and it is worthy of emulation as a well-thought-out combination of educational theory and utility safety work.

THE BAY STATE FARE DECISION

The decision of the Massachusetts Public Service Commission in the Bay State Street Railway fare case, abstracted elsewhere in this issue, is naturally disappointing in the light of the board's finding in the Middlesex & Boston proceeding some two years ago. In the latter instance, it appeared that a new lease of life had been granted to struggling companies endeavoring to pay a fair return upon their investments in the face of the shrinking purchasing power of the 5-cent fare unit. The findings of the board in the subsequent Blue Hill and New Bedford & Onset cases seemed the logical outcome of the Middlesex & Boston decision, and it was the common opinion in New England street railway circles that the demonstrated needs of the Bay State company would meet the same kind of encouragement. Consequently the refusal of the commission to permit the Bay State to try out its basic 6-cent fare schedule comes as a heavy blow to the company.

Looking below the superficial aspects of the finding, it is clear that the board is not wholly without sympathy for the company's position and that it has no desire permanently to withhold a return from the investor in this property, although the drastic prescription of turning back dividends into the system to improve its physical condition is written for the company's immediate observance. The problem of the company now is to obtain the additional revenue of $588,816 to which the commission rules it is entitled. Perhaps the most interesting feature of the decision is its discussion of remedies for the company's present financial and physical situation. The commission has a large faith in the possibilities of increasing net revenue through various improvements in operation and by better co-operation on the part of the public than the company has hitherto enjoyed. Experience must show whether the commission's hopes can be realized. Doubtless some of them can be, if the board will back up the company in its endeavors to improve its service along lines demanding public support for realization. These include such matters as the sweeping reduction of pole stops, improved traffic regulation by local police departments, the abandonment of petty, provincial, obstructive policies in respect to the location of loops and other trackage, and active co-operation in all cases affecting the speed of cars. Other sources of increased net revenue in which the commission believes are the gradual elimination of open cars, the investment in new shops, the retirement of old rolling stock, the rehabilitation of present cars, the lengthening of headway on interurban lines and on over-served lines generally, the use of fare boxes, one-man cars and trailers, the development of electric freight service on the lines north of Boston, intensive traffic promotion on interurban lines, admission charges to parks, the installation of additional feeder capacity, the reduction of taxation burdens, especially in connection with paving, improvements in general organization and increase of fares on the rural lines.

The commission can assist the company materially in securing the larger co-operation of the public along the above lines. The financial value of such co-operation cannot easily be estimated, but it is certainly considerable. According to the evidence at the hearings, the company questions the feasibility of many of the foregoing remedies from the standpoint of producing adequate additional revenue, but if the public does its share, it may be that a substantial increase in net can be realized. The board will entertain an increase in the fare unit from 5 to 6 cents on the rural lines, but emphatically refuses to permit any increase in the cities, where the traffic would naturally yield larger gains. The fears of the commission that jitney competition would thrive in the face of a slight increase in the city fare hardly seem a basic ground for refusing the company the right to try out the program.

Whatever may be the reader's opinion of the decision and its reasoning, there is no question that it throws an exceedingly heavy burden upon the company, and that the future of this property depends in no small degree upon the willingness of the public to co-operate with the management in a large-minded way. And if the remedies proposed by the commission fail after a year's trial, the way is fortunately open for a further consideration of the company's problems and their possible or impossible solution by the 5-cent fare unit.

POWER TRACK TOOLS SUPPLANTING LABOR

The scarcity and the increasingly higher prices which must be paid for ordinary track labor have compelled electric railway way departments to substitute power tools wherever they prove economical and will displace labor. In fact, the track labor situation has become so critical during the present construction season that it is only because of these power track tools that any considerable amount of rehabilitation and extension has been undertaken by many companies. In the handling and delivering of track material in the store yards the quantity must be exceedingly small when a company does not find it economical to employ a crane car or stationary derrick for loading and unloading. For this work the self-propelled crane or derrick car is the more popular because the ease with which it can be moved from one point to another greatly increases its usefulness.

In construction and rehabilitation work, the concrete mixing machine has almost entirely replaced the old method of hand mixing, as by it a gang of a half dozen men can mix and place more concrete in a work day than was formerly possible by a gang of four or five times that size. This tendency toward the substitution of machines for hand labor in track work is conspicuous also in trench excavation. A great many of the electric railway properties do this work either with a steam or electric shovels of their own or with one supplied by a contractor. In connection with the removal of the excavated material, as well as the delivery of sand, gravel, crushed stone, brick, cement and such material to the work, dump cars and other special utility equipment are being used almost exclusively. There was a time when most companies utilized for this service the ordinary 6-cu. yd. or 8-cu. yd. side-dump cars usually employed in heavy excavation and embankment work on steam and electric railroads built on a private right-of-way. This type of car, however, is being rapidly replaced by equipment especially designed for the loading and delivery of material on a public street.

While the center-dump car is being used to some extent, the side-dump type is more popular, and the one which will place the material on the pavement outside of the track trench has been found to be the most economical. Perhaps the latest substitution of a power tool for hand labor has been afforded by the pneumatic and magnetic ballast tampers. Experience has demonstrated that with one of these tools one man will do practically the work of six men with shovels or tamping bars. The electric railway offers a particularly attractive field for this equipment because power is available at any point on the line.

In summing up this evolution which is taking place in track tools, it may be said broadly that labor conditions have forced the change, and that the economy and independence resulting from these tools have made them an absolute necessity when the way department desires to accomplish its usual construction season's program. An excellent illustration of the principles outlined above is furnished in the leading article this week.

CREDITABLE AND DISCREDITABLE ENERGY LOSSES

There has been of late a great deal of discussion in the technical press and before gatherings of railway men on the subject of reducing energy losses in car operation. The attention given to the subject shows that those responsible are determined to reduce energy consumption if this can be done without causing proportional increased expenses elsewhere. In considering the subject, it must be borne in mind that in one sense all energy put into a car is lost. Some of this loss is, however, commercially inevitable and, therefore, necessary. Such loss may well be called a creditable one, for it is creditable to permit a waste which could not be economically prevented. Those who have followed the development of the steam engine will recall that there was at one time a tendency to use a great many frills for the purpose of reducing steam consumption per horsepower-hour developed. Steam jacketing of cylinders, high degrees of superheat, excessive expansion of steam, etc., were sometimes used without regard to the fact that these might cause more expense than they would save. A well-known engineer once reversed the saying "The best is good enough" to "good enough is best," with the remark that some electric railways and other properties have been built with sole regard to technical perfection, thereby impairing their values as investments. The same reasoning will apply to car operation, in which it is always possible to reduce energy consumption below the economic limit. It is our belief that a great deal of energy is being discreditably wasted in electric car operation, but also that savings should be made strictly on an economic basis.

Without attempting a complete roster of these two kinds of losses, between which there is not a hard and fast line drawn, a few may be mentioned by way of illustration. A discreditable energy loss is one involved in carrying around useless dead weight in car body, trucks and equipment. Another is that which is due to the use of equipment not adapted to the work it is called upon to perform. Energy wasted at the brakeshoes due to running too long with power on comes in the same category. On the other hand, all brakeshoe loss is not discreditable, because cars must be brought to rest more quickly than their own friction will bring them. Some rheostatic losses are also necessary, because at starting the motor resistance and counter emf. are not enough to limit the current to the value necessary to produce the desired rate of acceleration. There must always, of course, be some friction in the best lubricated bearings and against the air through which the cars move.

Our purpose in directing attention to this division of losses is twofold. In the first place, it emphasizes the difficulty of comparing energy consumptions per car-mile or even per ton-mile under different operating conditions. It also indicates the importance of having on every railway property one or more men who are qualified and willing to make a special study of the economics of energy consumption in the cars on that property.

Methods of Handling Track Work in Kansas City

The Construction and Maintenance Methods Employed by the Kansas City Railways Company to Keep Down Costs, and a Centralized System of Distributing Hand and Machine Tools Which Has Greatly Increased Efficiency Are Described.

KANSAS CITY TRACK CONSTRUCTION—VIEW OF TRACK READY FOR PAVING

MAINTENANCE methods which make certain prompt attention to all necessary track repairs, the elimination of lost motion in handling track materials, and a tool system which insures a full quota in first-class condition on all jobs, epitomizes the outstanding features of the methods employed by the roadway department of the Kansas City (Mo.) Railway. These results are obtained by an organization composed of the superintendent of way and structures, A. E. Harvey, to whom five roadmasters, a supervisor of tools, a supervisor of work trains and an office clerical and engineering force report. The territories assigned to the roadmasters are largely divided on a basis of convenience in handling. One roadmaster is assigned to the business district in Kansas City and four to the territory in the outlying districts.

Organization Methods

Each roadmaster is responsible for all construction and repair work in his district and has reporting to him a general foreman and an assistant foreman in charge of large construction jobs, and a number of foremen in charge of the small repair gangs. In addition to these a staff of switch cleaners and emergency men report to the roadmasters. The emergency men ordinarily engage in light repair work and are required to report to the office of superintendent of roadway every hour. The purpose of this is to keep the office in touch with their movements so that they may be sent promptly to take care of any emergency repairs. During the night these emergency men are subject to the call and orders of the train dispatcher.

One of the clerks in the office is detailed to receive all reports requiring emergency repairs. As a rule these reports originate in the operating department, hence notices of emergency track trouble are received from that department. All cases of trouble are noted in the trouble record book in red ink and an emergency man is promptly dispatched to remedy the difficulty. An entry in red ink indicates the time that the report of

KANSAS CITY TRACK CONSTRUCTION—VIEW OF BUSINESS STREET ABANDONED FOR TRACK WORK

trouble was received, and as soon as the difficulty has been remedied the emergency man reports it to the general office, where a record in blue ink shows the time the job is cleared.

ROADMASTERS MEET TWICE DAILY

In order that the superintendent of roadway may be advised of the progress of the work over the entire system, the roadmasters from the various districts meet at the general office at the noon hour and in the evening of each day. At this time they are advised of all the emergency trouble in their districts, and they in turn make all requests, on proper forms, for work that must be performed by other departments. For instance, all taps to the city fire hydrants for necessary construction or maintenance work are requested at this time, and requisitions are made on the proper city authorities. Jobs requiring bonding are also reported and requisitions made on the electrical department to have this work done.

In case sections of track under operation are to be taken out of service temporarily, the roadmaster files a request at the general office, in the morning prior to the night when track is to be abandoned. The superintendent's chief clerk then arranges with the train dispatcher for rerouting or detouring the cars which will be affected, and also notifies the roadmaster that all arrangements have been made. Following this verbal arrangement, the chief clerk writes a form letter to the operating department confirming the understanding. A copy of this letter is also given to the roadmaster and all others concerned in the change.

ORDERING AND DELIVERING MATERIALS

All requisitions for construction work originate in the office of the superintendent of roadway and are based on the estimates made for each job. These requisitions are sent to the storehouse, where they are held on open file and the material is drawn subject to the will of the roadmasters. At noon each day the roadmasters make known their material requirements for the following day on proper forms, and these are immediately written on an order form and sent to the storehouse. On receipt of these orders the storekeeper sets the material aside and it is loaded for delivery at night or the following day. In connection with the delivery of material, the supervisor of work trains has full charge of all the work trains and is authorized to deliver any material requested by a roadmaster when a requisition has been made to cover it. The supervisor of work trains arranges for their loading and dispatches them to various points on the system. Experience has demonstrated that this is a very efficient way of handling company material.

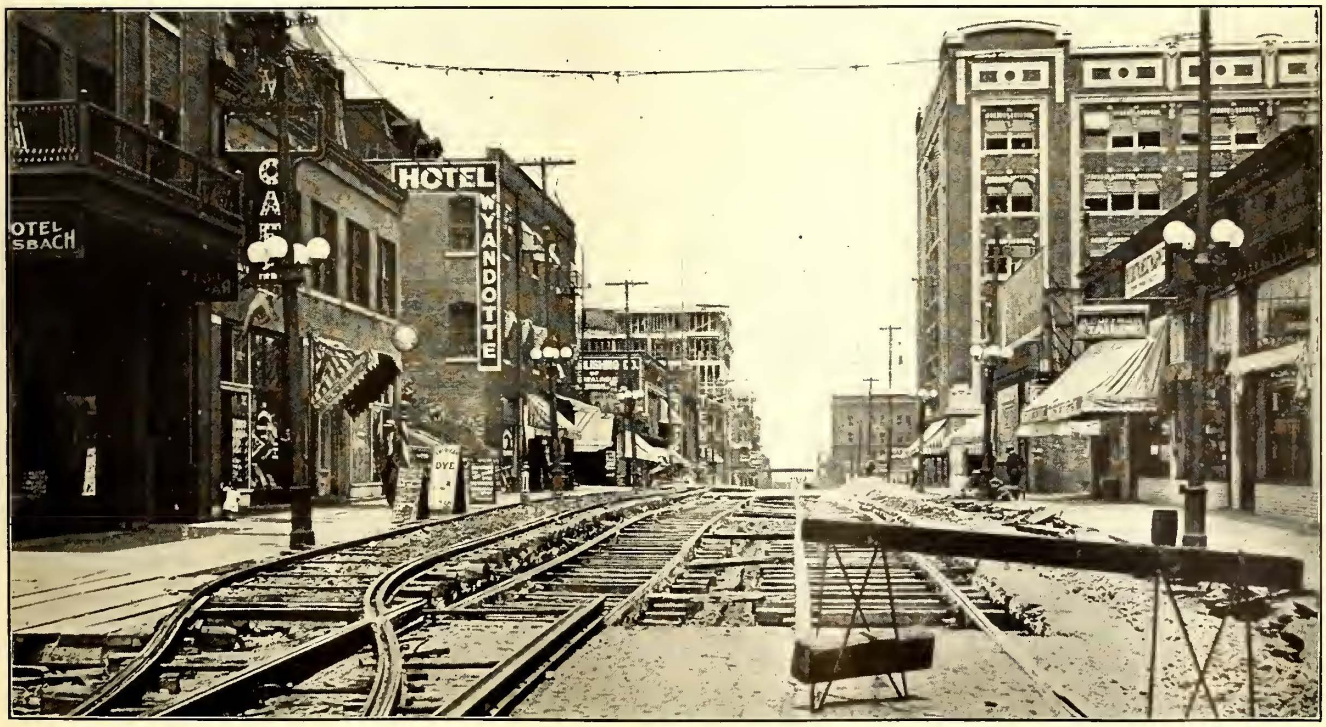
A great deal of duplication in mileage of work trains is avoided by organizing the transportation work in this way, instead of assigning one or two work trains to each roadmaster as may be required. The supervisor of work trains can consolidate the work in such a way that one train may answer the purposes of two or three different roadmasters on some particular trip. It also tends to develop efficiency, for if a train is assigned to a roadmaster regularly, there is a tendency for him to make work for it during slack periods in order to retain it. The method used has reduced the cost of work train service very materially, the average costs being as follows:

Asphalt, per square yard of paving	2.3 cents
Sand, per yard-mile	0.95 cent
Granite block, per yard-mile	0.16 cent
Cement, per barrel-mile	0.21 cent
Paving brick, per thousand per mile	2.04 cents

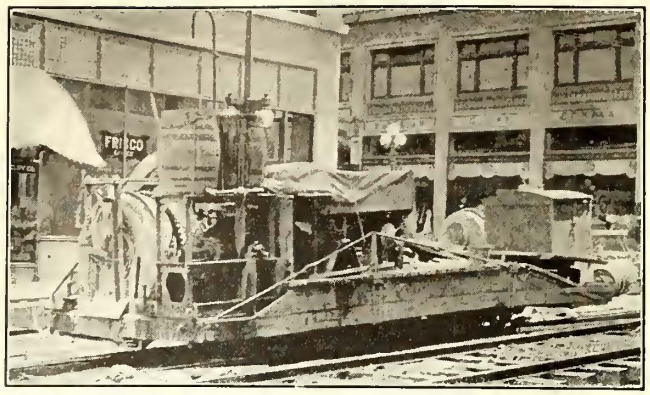
The cost of handling rail, including loading and unloading, is considerably more than for the other commodities and amounts to about 1.53 cents per ton-mile. All of these figures include the cost of the return trip.

HANDLING MATERIAL IN LIMITED STORE YARDS

As the track-material storeyards are limited in capacity, more than 75 per cent of the carload shipments to the track department are transferred directly from the steam railroad cars to those of the street railway. This saves one handling of the material, but necessitates much closer figuring upon the requirements and working closer to a program than some railways find to be practicable. By careful attention to the progress of the work, however, this plan operates very



KANSAS CITY TRACK CONSTRUCTION—TEMPORARY TRACKS ON ABANDONED STREET



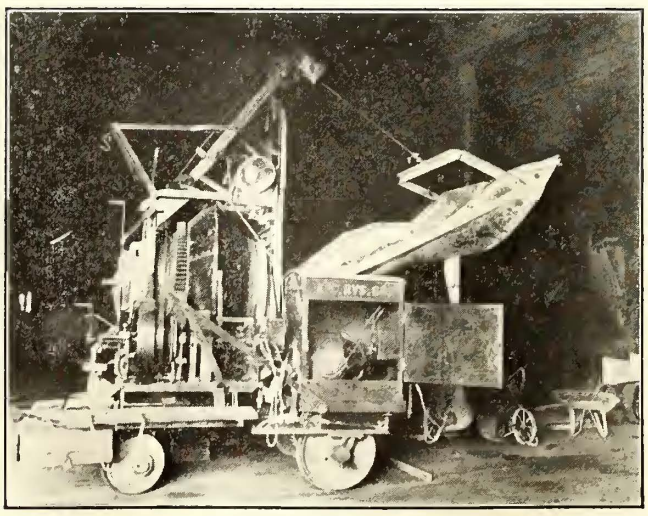
KANSAS CITY TRACK CONSTRUCTION—ONE OF THE OLD STYLE CONCRETE MIXERS

nicely. No serious delays have occurred due to failure to secure material, and it is very seldom that any demurrage accrues on the cars.

There are two principal storage yards, one for all special work used in making repairs and extensions, and the general storeyard where all classes of track materials are stored. In addition to these the company has an asphalt plant situated at another point on the system, and frequently bulk material such as sand and granite block is received at this point. To facilitate handling the latter, a stiff-leg derrick equipped with a clamshell bucket and a triple-drum electric hoist has been installed. While there is some storage space for sand beside this derrick, most of it is transferred direct from the steam railroad cars to those of the company. In connection with the asphalt mixing plant it is of interest to note that it includes ten pans having a daily capacity of 525 sq. yd. All usable asphalt removed from the street is delivered to this plant, where it is panned and delivered again to the street. The average cost of asphalt surface in place is 76.7 cents per square yard.

The track department rolling stock includes three 18-yd. Koppel dump cars, one 20-yd. side dump car, one crane car, two flat utility motor cars, one tool and supply car, one flat car for transferring equipment, two asphalt dump cars, six 6-yd. side-dump cars, three 6-yd. center-dump cars, five flat cars and one Knox tractor with a steel dump body, having a capacity for 9 cu. yd. of material and a stake body which is used in transferring track tools and equipment. The latter is an auxiliary piece of equipment used in emergencies.

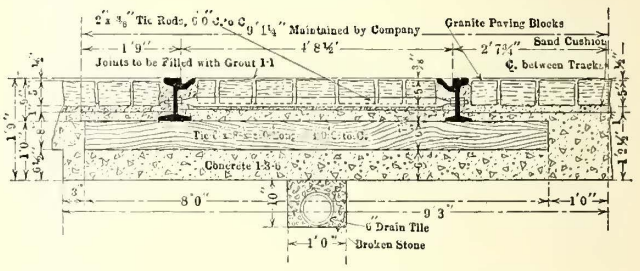
It is also of interest to note that the Kansas City Railways Company operates its own stone quarry which produces from 75 cu. yd. to 200 cu. yd. of crushed stone per day for use as ballast or as concrete aggregate. The stripping taken from this quarry is used as a filling material at points where it is needed on the system.



KANSAS CITY TRACK CONSTRUCTION—SELF-PROPELLED BATCH CONCRETE MIXER

City Helps to Hasten Track Construction

As a general proposition the railway company has been aided by the city authorities in hastening construction jobs. Temporary tracks laid on the street surface with portable cross-overs are permitted, and in some instances the entire street has been given over to the railway company in order to complete the reconstruction work in the least time possible. On two occasions, the busiest retail streets in the downtown district of Kansas City were vacated for this purpose, and the time required to do the work was reduced about one-half. In order to obtain this concession the representatives of the railway company called on the various business interests which would be inconvenienced by a partial vacation of the street during track reconstruction, and outlined to them the advantages of giving over the entire



KANSAS CITY TRACK CONSTRUCTION—CROSS-SECTION OF STANDARD 141-LB. GIRDER GROOVED RAIL TRACK

street. These interests appreciated the value of having the construction work out of the way in the shortest time possible and granted the necessary permission. The dispatch with which these jobs were handled and the careful consideration of the rights and wishes of the merchants during the progress of the work, have made other arrangements of this kind possible in both heavy and light traffic districts.

Office Record System

An atlas of the entire system of trackage, drawn to a scale of 200 ft. to the inch, on individual sheets 18 in. x 30 in. in size, provides a permanent office record of any and all repair or reconstruction jobs of any size. This atlas is kept up to date and the work for each month in the year is shown in separate colors. This, together with a detailed typed record, makes an excellent account of the department's work for any month in the year, or for the year as a whole. By a system of daily reports, these records for the month's work are all ready for use by about the fifth day of the following month. The quarry foreman, the granite cutter foreman, the welders, rail grinders, asphalt plant foreman and the asphalt layers all have printed record sheets which are very easily prepared and facilitate the work of compilation and calculating cost data.

All accidents, which occur on the work, are immediately reported by telephone to the chief clerk, where instructions are issued for the proper care of the injured employee. This gives an immediate record of the accident and in almost every instance the injured party can be attended by the company's physicians. To facilitate the handling of all departmental matters, all incoming and outgoing reports, mail, etc., pass over the desk of the chief clerk.

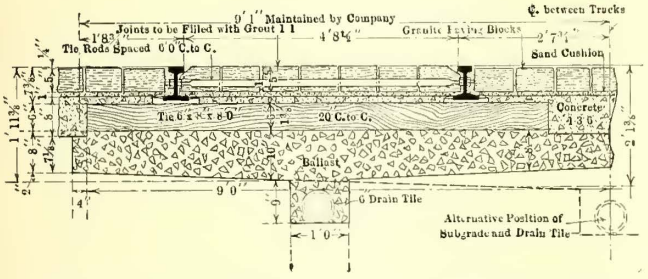
A directory of most of the regular employees of the

department is also kept, giving addresses and nearest telephones so that individual employees can be quickly located in case of accident. In this way any roadmaster, special foreman, or track foreman can be located within a few minutes. The division carhouse operating department offices assist in this by transmitting messages by motormen.

All requisitions on the storekeeper for material are made by the assistant engineers who also prepare the detailed estimates used when authority to do construction or rehabilitation work is requested. By a daily check received from the storekeeper, the superintendent's office is able to keep a fairly close record on what material is actually delivered on the various jobs. Roadmasters also report daily any material transferred to other jobs than the one for which it was ordered.

HANDLING TRACK TOOLS

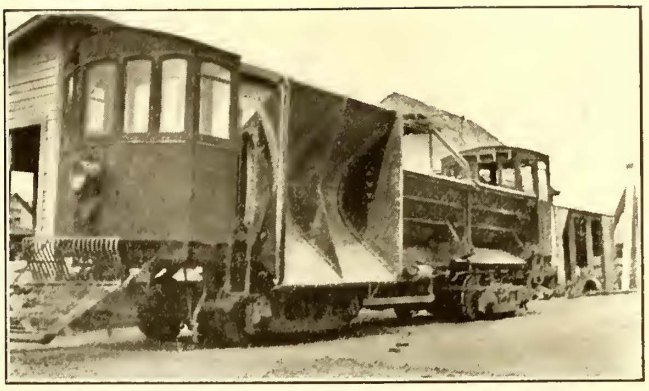
As a rule the quantity and condition of track tools and equipment is everybody's business, but this is not so in the track department of the Kansas City Railways. On this company's system the entire tool problem is centralized under the supervisor of tools and equipment. Whenever a construction job is scheduled to start, the supervisor is notified and he makes it his business to see that the tools are not only supplied, but that they are in first-class condition.



KANSAS CITY TRACK CONSTRUCTION—CROSS-SECTION OF STANDARD 7-IN. PLAIN GIRDER RAIL TRACK ON BALLAST

Too often mechanical tools have been condemned because they have been put in the hands of men incompetent to understand their use or care for them. The manufacturers are, to a considerable extent, to blame for this as they encourage corporations to use such tools by telling what can be accomplished with them by unskilled labor. A power tool of any kind, by slight misuse, may be damaged and put out of service. If there is no one on the job who understands it, and generally neither the foreman nor the roadmaster is able to repair it, the tool is laid aside and the work progresses as best it may with hand tools. At a convenient time, possibly as early as the following day, the tool is sent to the repair shop, where, after considerable delay the repairs are made by a mechanic who may be entirely ignorant of the action of the tool in actual service. In due time the tool again appears on the street, to be put out of commission more quickly than it was repaired. Such has been the history of many tools ever since they were first put on the market.

Under the organization that exists on the Kansas City Railways, all special tools as well as the repairs of the simplest hand tools, are placed under the direction of a man who is familiar with their uses, and with their operation and repairs. Where the tools are requisitioned by a roadmaster, they are sent, together with operators who have full charge of them, and who report only to the roadmaster or foreman. It is the duty of these men to operate the tools, see that they are always in proper working order and that they are returned to the tool house in good condition. Frequently,



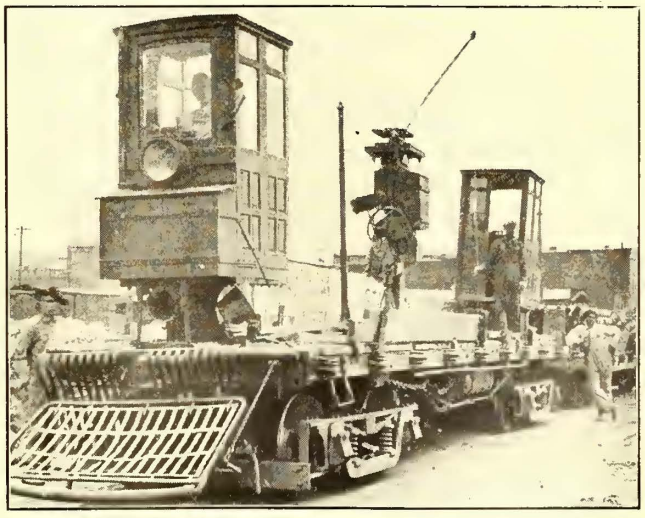
KANSAS CITY TRACK CONSTRUCTION—STEEL SIDE DUMP MOTOR CAR

under this arrangement, slight derangements are corrected immediately on the street, because the operator understands the machine and can locate the trouble. If the trouble is too complicated, a telephone call to the tool house will bring such further help as may be required. In this way the maximum service is obtained from all special tools, which include such equipment as concrete mixers, rail grinders, power drills, arc welders, thermit welders, stone crushers and asphalt kettles.

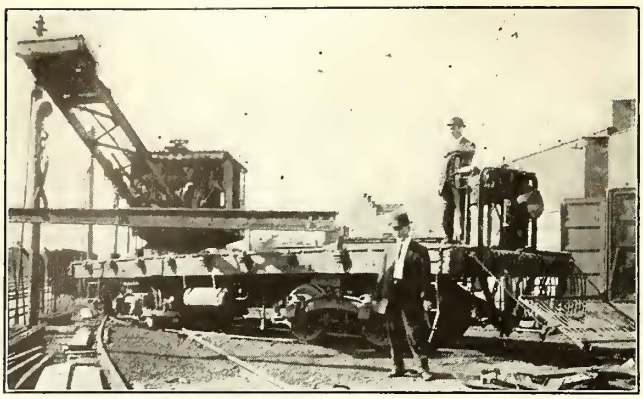
TOOL REPAIR FORCE

One of the railway company's old carhouses has been remodeled for a tool repair department and storeroom. In this repair department two blacksmiths and two helpers are employed regularly. Two repairmen and twenty-six others, including the operators of the power tools, make up the remainder of the force. The repair department is equipped with a small machine shop containing drills, grinders and a small lathe, and a wood shop with a circular saw, a sander, a band saw, and a mortising machine. A small plumbing and tin shop and a paint shop complete the tool repair facilities. In addition to the work on tools, all repairs to the wagons belonging to the company are made at this point. While this force is kept busy during the construction season repairing tools, the work does not cease during the winter months, but all tools are carefully put in first-class condition and painted a bright red as a distinguishing mark.

All tools are issued upon orders from the roadmaster and are charged out in a tool record. As fast as tools wear out or break they are turned in at the tool car



KANSAS CITY TRACK CONSTRUCTION—UTILITY MOTOR CAR AND TRAIN



KANSAS CITY TRACK CONSTRUCTION—ELECTRIC CRANE FOR HANDLING SPECIAL WORK

which returns bad-order tools to the storeroom and delivers new tools to the various jobs over the system. In the hand-tool department one or two men are continuously engaged in making repairs, and, as mentioned before, repairs to all power track tools are made by the operators assisted by the department blacksmiths and machinists.

Advantages of Tool System

This method of handling tools through a centralized tool storeroom and a tool supply car, minimizes clerical work and insures the prompt delivery of tools to all jobs. Moreover, under this system there is no occasion for a man working with a defective tool which may either reduce his efficiency or injure him. As a matter of fact the elimination of all injuries due to defective tools has alone justified this system of handling them.

Included in the power equipment there are several small continuous mixers which have been found very satisfactory for small concrete jobs. A motor-driven batch mixer mounted on car wheels is the standard equipment used on large construction jobs. Other track equipment includes tar and asphalt heaters, a stone crusher, thermit welding outfits, ratchet jacks of all kinds, a sand blasting outfit and a portable air compressor which is dismounted for shop use when it is not required on the street.

Unit Costs of Various Track Operations

Unit costs of various roadway operations are always of interest, particularly when sufficient information is given to analyze the basis of calculations. For the guidance of the engineers making estimates on track repairs and construction jobs, the superintendent of roadway has compiled unit cost figures for practically every operation and all of the more common classes of track repairs. Practically all of the granite nose block is cut by the company, and the average cost for cutting 20,000 blocks, including the cost of sharpening the tools, is 2.9 cents per block. Old granite block is redressed at an average cost of 2.25 cents per block. This is the average for cutting 230,700 blocks for five months.

The average cost of work train service has been found to be approximately 15.3 cents per mile for hauling heavy material, and the average mileage per day in this service is approximately 56 miles. The cost of handling light supplies on work trains is approximately 12.7 cents per mile, and these trains will average about 89 miles per day. These costs include crew wages and all other items properly chargeable to work train operation.

Cost of Delivering Rail

The cost of hauling rail, including the loading and unloading charge, has been found to average as follows:

Labor loading	33 cents
Power loading	4 cents
Crew time	92 cents
Power unloading	4 cents
Labor unloading	33 cents
Total	$1.66
Cost of delivery per ton	17 cents
Cost per mile hauled, inclusive of loading and unloading for the round trip	1.53 cents per ton
Derrick car capacity loading	10 tons
Three men loading 10 tons material in thirty minutes, rate per man, per hour	22 cents

Cost of Loading Track Materials

The unit cost of loading various materials has also been calculated on the basis of a gang of twelve men receiving 17 cents per hour and one foreman receiving 20 cents per hour.

Item	Time	One Motor Load
Granite blocks	20 minutes	2,400 blocks
Cement	35 minutes	300 sacks or 75 bbl.
Pavers	30 minutes	7,500 blocks
Sand	30 minutes	21 yd.
Rock from cars	1 hour 30 minutes	21 yd.

Item	Unit	Cost
Granite blocks	1 sq. yd.	$0.0078
Cement	1 bbl.	.0174
Pavers, brick	1 sq. yd.	.0090
Sand	1 cu. yd.	.0533
Rock from cars	1 cu. yd.	.1600

Unit Costs of Track Construction

The following is the summary of the unit costs on ten different jobs of track reconstruction:

Summary of Unit Costs on Various Jobs

Location	Length	Rail	Ballast	Paving	Track Material	Track Labor	Track Total	Paving Material	Paving Labor	Paving Total	Grand Total
Hardesty, Seventh to Independent	669 ft. D.T.	106 lb.	Crush Rock	Asphalt	$1.61	$2.59	$4.20	$3.21	$ .93	$4.14	$8.34
Main Street, Ninth to Twelfth	1,182 ft. D.T.	106 lb.	Concrete	Granite	1.74	3.89	5.63	2.92	.46	3.38	9.01
Delaware, Fifth to Ninth	1,528 ft. S.T.	106 lb.	Concrete	Granite	.75	1.95	2.70	2.21	.76	2.97	5.67
Southwestern Boulevard, State to Rosedale	8,779 ft. D.T.	106 lb.	Concrete	Granite	1.52	1.55	3.07	2.98	1.15	4.13	7.20
Walnut, Thirteenth to Eighteenth	2,315 ft. D.T.	106 lb.	Concrete	Granite	1.45	3.46	4.91	5.68	1.35	7.03	11.94
Wyandotte, Ninth to Twelfth	1,020 ft. D.T.	106 lb.	Concrete	Granite	2.45	4.49	6.94	5.02	1.41	6.43	13.37
Walnut, Seventh to Twelfth	1,880 ft. D.T.	141 lb.	Concrete	Wood Block	3.05	5.73	8.78	5.29	1.60	6.89	15.67
Holmes, Twenty-second to Thirty-first	5,569 ft. D.T.	91 lb.	Concrete	Granite	2.61	3.55	6.16	5.99	1.22	7.21	13.37
Twelfth Street, Liberty to Wyoming	480 ft. D.T.	91 lb.	Concrete	Granite	7.56	4.44	12.00	5.66	1.19	6.85	18.85
Washington, Eleventh to Thirteenth	654 ft. D.T.	91 lb.	Concrete	Granite	4.46	6.19	6.65	5.18	.61	5.79	12.43

KANSAS CITY TRACK CONSTRUCTION—MATERIALS AND TOOLS READY FOR A REPAIR JOB

It is rather difficult to arrive at any average unit cost for track maintenance work because there are so many variables which affect the results. However, the unit costs for twenty typical cases of track repairs made in Kansas City are as follows:

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Twenty-fourth Street and Southwest Boulevard	Material..	$4.78	$0.54	
	Labor.....	1.21	.71	
	Total...	$5.99	$1.25	$7.24

This 394 lineal feet of track work consisted of the renewal of a 9-in. rail tie-constructed double-track branch-off. The new work was 100-lb. rail, tie-constructed track with 282-sq. yd. granite paving, and the job was done by a gang of about twelve men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Eighth Street—Troost to Woodland	Material..	$0.36	$0.64	
	Labor.....	1.88	.54	
	Total...	$2.24	$1.18	$3.42

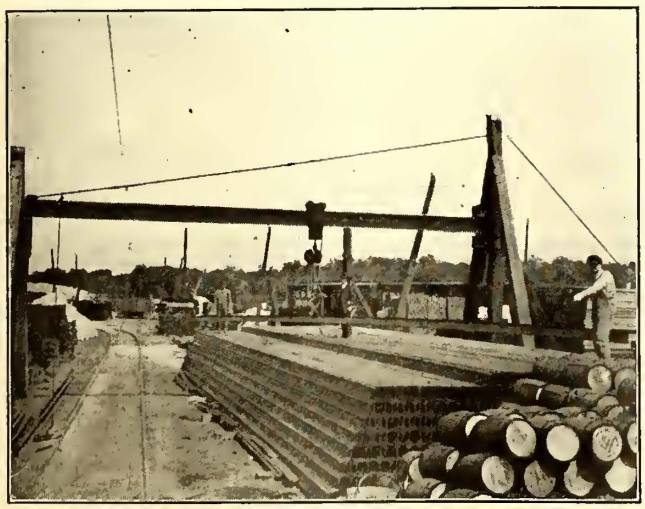
This 1171 lineal feet of track was 106-lb. rail laid on beam construction with conduit and an asphalt paving. The reconstructed track contained 106-lb. rail on tie construction with 1750 sq. yd. of asphalt paving and a 6-in. drain tile under each track. The work was done in stretches of from 50 ft. to 200 ft. by a gang of about forty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Independence—Woodland to Chestnut	Material..	$0.33	$0.28	
	Labor.....	2.41	.24	
	Total...	$2.74	$0.52	$3.26

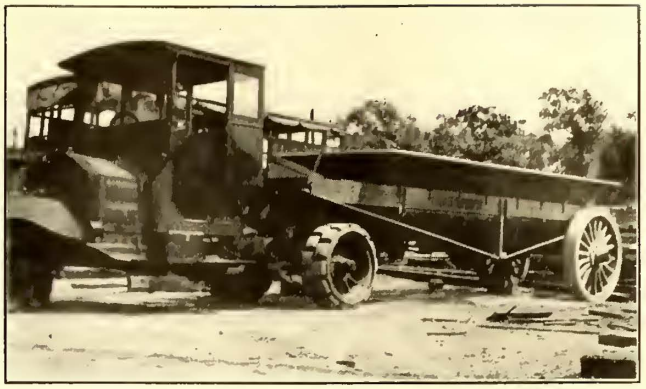
This 7100 lineal feet of track was 109-lb. rail laid on beam construction, with conduit, cast welded joints and asphalt paving. The new track is 109-lb. rail laid on tie construction with a 6-in. drain tile under each track and 7100 sq. yd. of asphaltic macadam pavement on a 6-in. concrete base. The paving costs show only the costs of the concrete base, the wearing surface being laid by contract. The work was continuous, being done by a gang of about seventy-five men, and a temporary third track was used during construction.

		Cost Per Lineal Foot of Single Track	
		Paving	Total
Fifth Street—Grand to Lydia	Material	$0.77	
	Labor	.46	
	Total	$1.23	$1.23

Only 2363 sq. yd. of wearing surface was renewed, and about 50 per cent of the brick was new.



KANSAS CITY TRACK CONSTRUCTION—STOCK YARD RAIL-HANDLING EQUIPMENT



KANSAS CITY TRACK CONSTRUCTION—TRACTOR WITH STEEL DUMP BODY

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Fifth Street—Washington to Oakland	Material..	$0.57	$0.50	
	Labor.....	1.14	.58	
	Total...	$1.71	$1.08	$2.79

This 282 lineal feet of track was and is 106-lb. rail laid on tie construction with 282 sq. yd. of brick paving. The work was done in stretches of about 20 ft. by gangs of about twelve men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Twelfth Street and Walnut Street	Material.	$10.36	$0.88	
	Labor....	2.55	1.36	
	Total..	$12.91	$2.24	$15.15

This 198 lineal feet of track was 9-in. rail laid on beam construction in a double track crossing with a 100-lb. flange bearing crossing on tie construction tile drained, with 135 sq. yd. of granite paving. The work was done by day and night gangs of about twelve men each.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Fifteenth Street—Brighton to Colorado	Material..	$0.36	$0.86	
	Labor.....	1.37	.40	
	Total...	$1.73	$1.26	$2.99

This 1037 lineal feet of track was 84-lb. rail laid on tie construction and a wood block paving. The reconstructed track is 84-lb. rail laid on tie construction with 1388 sq. yd. asphalt paving and a 6-in. drain tile between tracks. The work was continuous and was done by a gang of about ten men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Eighteenth Street—Main to Jackson Avenue	Material..	$0.61	$1.16	
	Labor.....	1.64	.59	
	Total...	$2.25	$1.75	$4.00

This 4218 lineal feet of track was 106-lb. rail, laid on 70 per cent beam 30-per cent tie construction, with both brick and asphalt paving. The reconstructed track is 106-lb. rail, laid on tie construction, with 6459 sq. yd. of paving, 30 per cent of which is brick and 70 per cent asphalt. A 6-in. drain tile is also provided. This work was done in lengths of from 15 ft. to 300 ft. by gangs of about twenty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Ninth Street—Bales to Cleveland	Material..	$0.71	$0.77	
	Labor.....	1.65	.20	
	Total...	$2.36	$0.97	$3.33

This 523 lineal feet of track was 106-lb. rail, laid on beam construction with conduit and asphalt paving. The reconstructed track is 106-lb. rail, laid on tie construction with 1362 sq. yd. of asphalt paving and a 6-in. drain

tile under each track. The work was done in stretches of from 50 ft. to 200 ft. by a gang of about ten men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Twelfth Street—McGee to Wyandotte	Material..	....	$0.52	
	Labor.....	....	.57	
	Total...	....	$1.09	$1.09

The wearing surface only was renewed, and 1036 sq. yd. of old sandstone was replaced by granite block.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Woodland Avenue—Thirtieth to Forty-third	Material..	$0.40	$0.85	
	Labor.....	1.20	.31	
	Total...	$1.60	$1.16	$2.76

This 3847 lineal feet of track was and is 106 lb. rail, laid on tie construction with 5347 sq. yd. of paving. The work was continuous and was done by a gang of about twenty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Central Avenue—Sixth to Seventeenth	Material..	$0.52	$0.85	
	Labor.....	1.32	.27	
	Total...	$1.84	$1.12	$2.96

This 1907 lineal feet of track was 106-lb. rail laid on beam construction, with conduit and asphalt paving. The reconstructed portion is 106-lb. rail, laid on tie construction with 3906 sq. yd. of asphalt paving and a 6-in. drain tile under each track. The work was done in stretches of about 100 ft. by gangs of about twelve men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Thirty-first Street—Main to Indiana	Material..	$0.87	$1.21	
	Labor.....	2.19	.42	
	Total...	$3.06	$1.63	$4.69

This 2734 lineal feet of track was 106-lb. rail, laid on beam construction with asphalt paving, but without conduit. The reconstructed track is 106-lb. rail on tie construction, with 3759 sq. yd. of asphalt paving, and a 6-in. drain tile. The work was done in lengths of from 15 ft. to 150 ft., by gangs of about fifteen men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Independence—Walnut to Highland	Material..	$0.68	$0.76	
	Labor.....	1.64	.40	
	Total...	$2.32	$1.16	$3.48

This 1389 lineal feet of track was 106-lb. rail, laid on beam construction, with asphalt paving, but without conduit. The reconstructed track is 106-lb. rail, laid on tie construction with 2162 sq. yd. of asphalt paving and a 6-in. drain tile between tracks. The work was done in stretches of about 50 ft. by gangs of about fifteen men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Main Street—Thirty-third to Westport	Material..	$0.40	$0.95	
	Labor.....	1.21	.46	
	Total...	$1.61	$1.41	$3.02

This 8569 lineal feet of track was and is 80-lb. rail, laid on tie construction with 8818 sq. yd, of asphalt paving. The track was excavated to the bottom of the ties, the battered ends of the rails cut off, new joints applied, and the track resurfaced and paved. The work was continuous and was done by gangs of about thirty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Walnut Street—Seventh to Eighth Street	Material..	$1.30	$0.82	
	Labor.....	2.62	.32	
	Total...	$3.92	$1.14	$5.06

This 115 lineal feet of track was 141-lb. rail, laid on beam construction, with conduit and asphalt paving. The reconstructed portion is 141-lb. rail, laid on tie construction with 123 sq. yd. of asphalt paving and a 6-in. drain tile under the track. The work was continuous and was done by a gang of twenty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Grand Avenue—Seventh to Eighth Street	Material..	$0.88	$0.35	
	Labor.....	1.84	.78	
	Total...	$2.72	$1.13	$3.85

This 498 lineal feet of track was 106-lb. rail, laid on beam construction, with conduit and asphalt paving. The reconstructed portion is 106-lb. rail laid on tie construction with 498 sq. yd. of granite paving and a 6-in. drain tile under each track. Considerable old granite was used, on which there was no charge. The work was continuous and was done by a gang of twenty men.

		Cost Per Lineal Foot of Single Track		
		Track	Paving	Total
Troost Avenue—Eighteenth to Thirty-seventh	Material..	$0.65	$0.99	
	Labor.....	2.02	.44	
	Total...	$2.67	$1.43	$4.10

This 6407 lineal feet of track was 106-lb. rail, laid on 50 per cent beam and 50 per cent tie construction, with an asphalt paving. The reconstructed portion is 106-lb. rail, laid on tie construction, with 10,822 sq. yd. of asphalt paving and a 6-in. drain tile under each track. The work was continuous in stretches of from 50 ft. to 300 ft. and was done by twenty men.

Referendum on Federal Regulation

The Philadelphia joint committee on the reasonable regulation of railroads has been notified by Elliot H. Goodwin, general secretary of the Chamber of Commerce of the United States, that the directorate of that body, at its next meeting, will act on the request of the joint committee, made through the Philadelphia Bourse, for an early referendum to determine the attitude of the commercial organizations of the country toward unqualified federal regulation of railroads. Recognizing the impracticability of a referendum on a specific program, the joint committee asks only for a vote on the general principles of the "Philadelphia plan," which was submitted by the Bourse last February and has been circulated throughout the nation by the joint committee. Previous reference to this plan was made in the ELECTRIC RAILWAY JOURNAL of April 29, 1916, page 816.

In a statement issued on Aug. 30 the Philadelphia Bourse contended that any reform program should include, along with centralized regulation and an enlargement of the federal regulatory body, delegation to that body of power to regulate wages and the settlement of wage disputes. "To conceive properly constructive railroad regulation," the Bourse said, "the rate-regulating power should be accompanied by power to regulate questions of expenditures and the requirement that wage disputes be submitted to the same tribunal that controls rates, so that, when necessary, increases in wages may be covered by advances in rates. To expect proper regulation when, in addition to being hampered by conflicting state jurisdictions, the regulatory body has no control over expenditures, is inconsistent and illogical."

The government of Argentina has authorized the Buenos Ayres Western Railway to construct in its own shops, with the assistance of the Great Southern Railway, the coaches required for the company's electric service between the states of Once and Moreno. The Western Railway had originally contracted for these coaches in Germany, but the war naturally involved the cancellation of this contract. British firms were then approached, but had to decline the business owing to pressure of war orders.

Training School for Safety Scouts*

How to Supplement Safety Lectures in Schools with an Organization Tending to Induce Safety Work on Part of Children Themselves—Results in Tacoma, Wash., Surpass Expectations

By T. N. HENRY

Lecturer on Safety Tacoma Railway & Power Company, Tacoma, Wash., and Puget Sound Traction, Light & Power Company, Seattle, Wash.

THE subject of safety work in schools may be studied with profit in connection with the details of any particular system or plan which with a reasonably fair trial has shown fairly satisfactory results. For this reason I will here confine my attention to the origin, material, devices, working plans and some of the results of the "School Safety Scouts," under which name safety work has been conducted by me in the schools of Tacoma and Seattle during the last year.

The work in Seattle for the Puget Sound Traction, Light & Power Company has been limited thus far to lectures and the distribution of so-called safety-scout literature, while in Tacoma, under promotion by the Tacoma Railway & Power Company, the plan has been fully developed by perfecting, in each of the ward schools, the organization of a pupil safety committee, which is the chief instrument for carrying on the work. The plan having thus been carried further in the Tacoma schools than in those of Seattle, I shall limit this paper largely to a discussion of the work in the Tacoma schools:

*Abstract of paper delivered before convention of Pacific Claim Agents' Association, in Tacoma, Wash., on Aug. 9-11.

WHY THE PLAN WAS INTRODUCED

We had been giving safety lectures in the Tacoma schools which were well received by both pupils and teachers, and which, through the schools, aroused sufficient public interest to create a demand for the lectures on the part of parent-teacher associations and other organizations. We became convinced, however, that the safety lecture, while very necessary as a part of any system of work in this field, should not be the sole reliance for lasting results in safety work with school children. Being necessarily limited to very brief references to a few phases of the question—little more than a mere introduction of the subject—the school safety lecture alone is not an instrument with which to achieve that percentage of efficiency which is in keeping with the standard striven for in modern business.

Thus, since the mere words, illustrations and figures of a single lecture before a school would be soon for-

HOW CAN YOU TELL A GOOD "SAFETY SCOUT"?

IN SCHOOL

1. He KEEPS TO THE RIGHT on walks, in halls, going up and down stairs.
2. He goes up and down stairs ONE STEP AT A TIME.
3. He LOOKS where he runs.
4. He doesn't bully the little fellows.
5. He sees that the little chaps have a fair chance on the playground and that they don't get hurt.

OUT OF SCHOOL

6. He does not play on streets where street cars run.
7. He LOOKS BOTH WAYS in crossing streets and railroad tracks.
8. He LOOKS SHARP for automobiles, wagons and motor cycles when alighting from a street car.
9. He does not loiter around railroad stations or cars.
10. He does not walk on railroad bridges or tracks.
11. He makes the car stop before he gets off or on—the car can wait; but he steps lively.
12. He peeks 'round to see what's coming on the other side (or the other track) when crossing behind a street car. When carrying an umbrella, he peeks 'round that, too.
13. He doesn't hitch on or steal rides on street cars, automobiles or wagons.
14. He never uses his roller skates, his skatemobile or his coaster near street car tracks or where many automobiles run.
15. He does not jump off moving trains, cars or engines, and does not crawl over, under or between cars.
16. He says: "I have no right to take a chance of getting hurt; some one else may have to take the consequences."
17. He looks out for automobiles turning corners.
18. He looks where he goes and keeps to the right.
19. He looks and listens for DANGER SIGNALS and HEEDS them.
20. He says: "Any wire may be a 'live wire.' Don't touch it."
21. He keeps his eyes on a scratched match till he's sure the spark is dead.
22. He never leaves a camp fire till he's dead sure it's out.
23. He doesn't THROW STONES. He knows it's a DANGEROUS and USELESS habit.
24. He tries to do at least one Good Turn for Safety every day.
25. He PLAYS SAFE, as much for the other fellow's sake as for his own.
26. He thinks "Safety First"—not part of the time, but all the time.
27. His motto is: "Better Be Safe Than Sorry."
28. He has the SAFETY HABIT.

NOTE—Many of the best Safety Scouts are Girls.

SCHOOL SAFETY SCOUTS—BASIC RULES USED IN TACOMA

gotten by a large majority of the children, and since nothing of a concrete nature other than a limited amount of admonitory printed matter was being left in the schools to keep the subject before the minds of the pupils, we believed that to prevent the larger portion of the work from being wholly wasted the initial lecture should be supplemented with something as a "follow-up" that should tend to induce activity on the part of the child himself. This concrete something should be so designed as to appeal to the child's imagination, to furnish scope for his enthusiasm and to supply material upon which to expend his overflowing energies. The child is the true idealist, and the humane side of the safety movement, when presented to him on his own level, makes a strong appeal to the best that is in him, and leads him to act accordingly.

Views to this end were submitted to the company, and authority was granted for the introduction of a plan to supplement the lecture work. The result was the school safety scout system. This plan of organization, formulated by the writer with many valuable suggestions and much helpful advice from H. G. Winsor, superintendent department of accident investigation Tacoma Railway & Power Company, was submitted to City Superintendent W. F. Geiger of the Tacoma schools for his approval early last October. After some changes suggested by him had been made for the purpose of better adjustment to local conditions, the plan was introduced in the schools the latter part of that month. Its distinctive feature—a feature we have so far regarded as unique in school safety work—is that it places the work almost wholly in the hands of the school children themselves and combines safety education and work with a simple and easily administered form of pupil government. The lectures after the introduction of the safety scout plan, while still serving the general purpose of a beginning in safety instruction, became the occasions for the introduction and explanation of the new pupil organization in a way that immediately caught the attention and aroused the interest of a large percentage of the pupils and gave an impetus to the more essential matter of getting them to act for themselves.

Safety Scout Rules Are Basis of Plan

The basis and chief feature of the school safety scout plan is a poster known as "Safety Scout Rules," shown in the accompanying illustration. This poster is headed with the question: "How Can You Tell a Good Safety Scout?" The answer, constituting the body of the poster, is a series of twenty-eight statements as to the conduct of the "good" safety scout in relation to practices, conditions and situations involving danger to human life and limb. The chief end toward which these so-called rules are designed to lead the child is the formation of the safety habit. "Get the safety habit" is one of the principal slogans of the school safety scouts.

In connection with the lectures in the schools we have had the cordial co-operation of the school principals and teachers, and by reason of this have had no difficulty in securing such grouping of the children as has generally given us an audience whose ability to comprehend has been not far from uniform. That is to say, each group addressed was usually made up of not more than three contiguous grades, more often of two only, and in some of the largest schools the ideal condition of one grade has been presented, thus giving the lecturer an opportunity to adapt the talks to the age and comprehension of almost every one of the group.

As a feature of every lecture, whether given before a class of kindergarteners or to a high school group, a rehearsal in concert of various safety slogans suggested by the safety scout rules was given in true class yell style with the lecturer acting as yell leader. "Get the safety habit," "Better be safe than sorry," "Be careful all the time, everywhere—use your eyes and ears," "Look both ways," "Stop, look, listen," "Any wire may be a live wire—don't touch it," are some of the slogans or safety scout yells which have echoed through every ward school in Tacoma during the last school year and through a large number of those of Seattle.

Our safety scout organization for an individual school, as carried out in the schools of Tacoma, is composed of a safety committee consisting of two pupils, one boy and one girl, from each room, plus a safety scout master, to be appointed by the principal from one or the other of the highest two grades in the building. This provides a committee of from eleven to twenty-seven members, depending upon the number of rooms in the school. The work of this committee, consisting of recruiting, conducting examinations, checking on conduct of would-be safety scouts, inspection, patroling, etc., is carried on by sub-committees, the results of whose work are made matters of record by the secretary of the general committee under the direction of the safety scout master and the advice of the school principal. The complete rules and regulations governing the formation and activities of the safety scouts and their committees are contained in a folder formulated by the author of this paper. This folder is signed by Mr. Winsor for the Tacoma Railway & Power Company and is approved by the superintendent of schools.

Prizes Awarded for Individual Excellence

In formulating the plan it was deemed essential that a number of awards for excellence in safety work be provided. These awards are of two general classes: (1) Those designed for individual pupils, and (2) those intended for classes, grades or rooms and for schools.

The awards for individuals are:

1. The safety scout button of white and green enamel with gold letters and bands, a white cross on a green ground encircled by a white enamel band bearing the words "Safety Scout" in gold letters, and
2. The official council or safety scout commission. This latter is issued by the Tacoma branch of the National Safety Council, signed by its president and secretary and, in approval, by the city superintendent of schools.

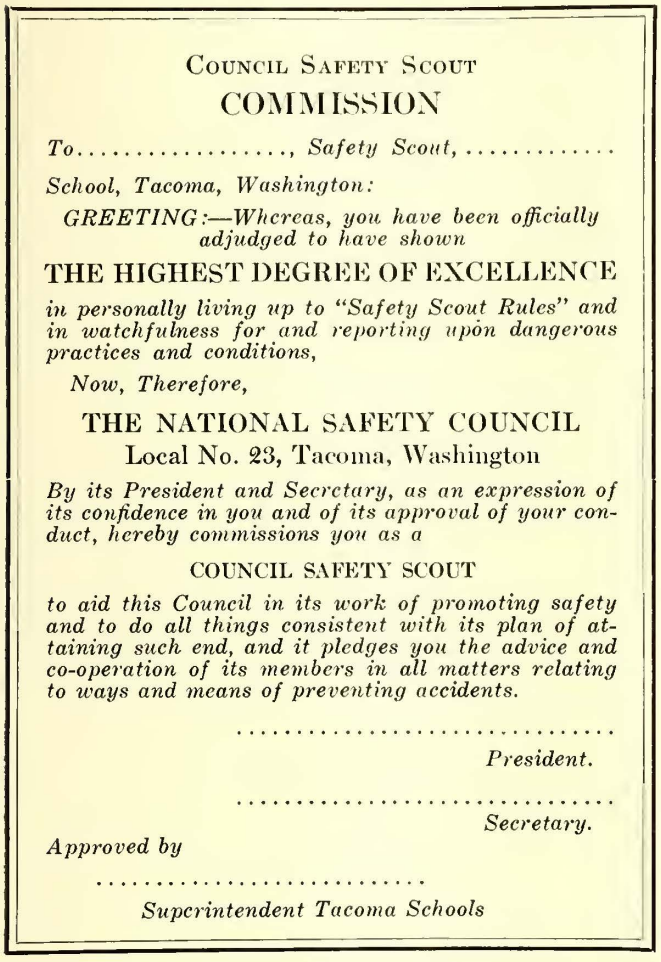
The safety scout button was designed by a Tacoma school boy in response to the offer of a cash prize by Mr. Winsor through the city superintendent of schools. The offer resulted in a large number of designs being submitted by both grammar grade and high school pupils. This, occurring as it did in the early stages of the work, served the important purpose of arousing interest and of giving to the movement a local coloring and significance highly gratifying to the children.

The official safety scout commission was also designed as a part of the local plan. As will be noted from the accompanying illustration, it is addressed to the recipient in the second person in order to obtain a more personal touch.

To win the safety scout button, and thus achieve full rank as a safety scout, it is necessary for the pupil (1) to memorize paragraphs 6 to 25 inclusive of the safety scout rules poster; (2) to recite these without error before the pupil sub-committee on examination, and (3) under the eyes of committee-member inspectors, to show excellence in living up to all safety scout rules for a period of at least two months. At all times it is sought to impress on the mind of the aspirant to this honor that the button worn by a safety scout is an

expression of his school's confidence in him and its certificate to the public that the wearer can be depended on to observe safety rules, not only for his own sake but for that of others.

The official safety scout commission is awarded to each of the two pupils in each room throughout the schools who are adjudged by their own organization to have made the best record in the observance of safety scout rules and in reporting to the safety scout master on dangerous practices and conditions. A special attraction is given to this commission by reason of the fact that it confers upon the winner the privilege of being the guest of the Tacoma Railway & Power Company at the annual safety scout picnic.



COUNCIL SAFETY SCOUT

COMMISSION

To....., Safety Scout, ...

School, Tacoma, Washington:

GREETING:—Whereas, you have been officially adjudged to have shown

THE HIGHEST DEGREE OF EXCELLENCE

in personally living up to "Safety Scout Rules" and in watchfulness for and reporting upon dangerous practices and conditions,

Now, Therefore,

THE NATIONAL SAFETY COUNCIL

Local No. 23, Tacoma, Washington

By its President and Secretary, as an expression of its confidence in you and of its approval of your conduct, hereby commissions you as a

COUNCIL SAFETY SCOUT

to aid this Council in its work of promoting safety and to do all things consistent with its plan of attaining such end, and it pledges you the advice and co-operation of its members in all matters relating to ways and means of preventing accidents.

.....
President.

.....
Secretary.

Approved by

.....
Superintendent Tacoma Schools

SCHOOL SAFETY SCOUTS—OFFICIAL SAFETY SCOUT COMMISSION ISSUED FOR BEST RECORDS

AWARDS FOR GROUP ACHIEVEMENTS

The awards provided for groups and for schools are as follows: 1. A safety pennant for each room wherein at least three pupils win the safety scout button. 2. A standard silk or bunting United Sates flag for the school in which the largest percentage of pupils win the safety scout button. Basing this award on the percentage of pupils successfully passing the tests gives the smallest school an equal chance with the largest.

To each room of each school's primary department, covering the first three grades or years, a safety pennant was presented this year regardless of the number of pupils therein winning buttons. As a result of this the children in 112 primary rooms participated in an equal number of little ceremonials involving the presentation of the pennant on behalf of the company and its acceptance by the teacher. The presentation of the pennants to rooms or classes entitled to them by reason of success in winning the required number of buttons was also made the occasion of a similar brief ceremony with the safety lecturer representing the company in presentation and the teacher speaking for the school in acceptance. Eighty-one rooms won safety pennants under this provision.

The school winning the flag did so with a record of 36 per cent of its pupils becoming winners of the safety scout button. The presentation and acceptance of this flag was made an occasion of interest in all the schools of the city by reason of the fact that the safety scout masters from other schools had places on the platform with their various school pennants and colors as invited guests of the winning school. A large number of patrons and friends of the school were present, and addresses were made on behalf of the schools, the parent-teacher association and the company, whose representative made the presentation address. This ceremony being held at a time (June 15) when the flag, patriotism and "Americanism" were ever-present topics of public speech and print, the event was made the occasion for emphasizing a number of the duties of good citizenship, among which all the speakers included that of aiding the safety movement by becoming good safety scouts and inducing others to do so.

THE CULMINATING EVENT OF THE YEAR—THE PICNIC

One thousand three hundred forty-seven pupils achieved full safety scout honors by meeting successfully the tests provided by the rules for winning the safety scout button. Three hundred and twelve of these, representing all of the twenty-one schools organized, were adjudged by the various safety committees to have qualified for the official safety scout commission. These, in company with a number of teachers from their respective schools, participated as guests of the company in what the pupils came to regard as the grand culminating even of the safety scout year, the first annual excursion and picnic of the Tacoma school safety scouts.

This excursion and picnic was given on Saturday, June 10, one week before the closing of the schools for the summer vacation, that date being chosen in preference to one after the beginning of vacation, for the reason that in the latter case many of the teachers would be out of the city.

For the purpose of the picnic free transportation was provided for the commission scouts and the accompanying teachers, this being delivered to the principals of the various schools previous to the date of the excursion. A common meeting point was designated at which the picnickers were to take the special cars provided for the occasion, and the happy 312 boys and girls, the flower of Tacoma's little army of soldiers of the common good, with a representation of the teaching corps from each school, indicated on that June morning that they regard punctuality as a safety rule.

The place of outing was the company's beautiful and spacious park at Spannaway Lake, the terminus of one of its suburban lines. A substantial luncheon with an abundance of ice cream and lemonade was served free by the company's extemporized commissary department, and an elaborate program of amusements and sports was provided. This latter was under the direction of the supervisor of physical training and hygiene of the city schools, assisted by a number of school principals and high school students.

An impressive feature of the day's program was the public presentation of each safety scout commission by a member of the city board of education. These were done up after the fashion of school diplomas and tied with green ribbon, and it is certain that no members of a school's graduating class ever received their diplo-

mas with more apparent pride and gratification than did these safety scouts.

Organizing the Safety Scout League

After the organizations in the several schools had been well established and large numbers of the children had become familiar with and interested in the plan and scope of the work, a safety scout masters' convention was held in the school administration building. At this "The Tacoma School Safety Scout League" was organized by the adoption of a constitution and by-laws providing for the usual list of officers and among other things for a membership of five (chiefly ex-officio) from each school and an ex-officio advisory council consisting of (1) the city superintendent of schools, (2) the commissioner of public safety of the city of Tacoma, (3) the president of the Tacoma Chamber of Commerce, (4) the secretary of the Tacoma branch of the National Safety Council, (5) the president of the Tacoma Labor Council, (6) the president of the Tacoma Automobile Club, (7) the supervisor of physical training and hygiene of the Tacoma schools, and (8) the safety lecturer of the Tacoma Railway & Power Company.

A part of the paragraph setting forth the objects of this central organization reads as follows: "(2) To exchange ideas and information relative to methods of carrying on the work of our school safety committees;

"(4) To unite all the girls and boys of the Tacoma schools for the purpose of interesting all citizens in safety scout rules;

"(5) To seek the advice and counsel of other organizations and persons interested in safety work."

Thus the safety organizations in the various schools of the city provided themselves with a clearing house for ideas pertaining to their particular line of work corresponding in its relationship and functions to the National Safety Council in its relation to the safety organizations of the mills, factories and transportation companies of the country at large.

Results Have Surpassed Expectations

It is gratifying to be able to state as a general observation that this company's campaign during the last year in school safety work under the plan herein described has surpassed all expectations in what it deems good results. It has not only enlisted the active and enthusiastic interest of a larger percentage of the school children than was expected, but it has induced a keen interest in safety measures on the part of the many parents who heretofore have given the subject practically no thought, and it has attracted the favorable attention of the public generally.

A very potent element in the work of interesting the public in the movement has, of course, been the support of the newspapers in the way of news reports of these activities in the schools. The 15,000 school children of Tacoma, however, carrying their safety slogans into every home in the city, and in thousands of cases constituting themselves the advisers and protectors of other members of the family, afforded a means of effective publicity not second even to the newspapers. Moreover, an indispensable element of success in the safety work was the co-operation of the school officials and teachers. This we had in both Tacoma and Seattle. In Tacoma Superintendent Geiger was found to be deeply and actively interested in all manner of safety measures and in the movement generally. He gave a ready hearing to our initial proposal, invited the presentation and discussion of the plan before meetings of his ward school principals, and subsequently through official bulletins lent approval and encouragement to the work by urging principals and teachers to co-operate with us. The principals and teachers, with a cordiality showing their right appreciation of the great humane problem involved, gave in full measure the needed support.

Principals Testify to Value of Plan

At the close of the year's work I addressed a letter to the principal of each of the twenty-one schools organized, asking for an estimate of the work and its influence upon the pupils. The replies need no comment to make it clear that the safety scout movement has become a potent factor in the work of solving the safety problem of Tacoma.

The principal of one of the largest schools, a man of long and successful educational experience, says:

"The influence upon the habits of pupils has been noticeable in many ways. Pupils do not take chances as they did before. One boy discovered a live wire on one of the city light poles and promptly reported it. Other boys have reported broken sidewalks in various parts of the district. Both boys and girls report promptly reckless driving by automobiles, frequently giving the number of the machine. The influence on the school as a whole has been marked. Formerly larger boys often promoted 'fights' among the little fellows. Now every scout feels that he is a special officer to prevent such. The parents whose children attend the school are pleased with the movement, and in many cases give active co-operation. Your plan of organization is a good one, and can be adapted to fit the conditions peculiar to any school."

The head of another large school says:

"In a general way it has set the reckless child to thinking more of his acts in their relationship to the school as a whole and to the rights of others."

Another states:

"Our safety scout organization has been a live, helpful agency in this school. To a large extent this body has helped in inspiring a wholesome respect for safety first ideals."

A principal whose school shows a record of two rooms in which every pupil qualified for a safety scout button and a total of 142 button winners for the school, states:

"Pupils have been more careful, not only at school but on the streets and elsewhere. They have been on the lookout for dangerous places, hanging wires, defective sidewalks, etc."

A lady principal, referring to conditions in her school after the work had been well started, remarks:

"A spirit of caution seemed to spread through the school. Teachers and principal began to realize that the responsibility of seeing that dangerous practices were avoided was being shared by a large number of the pupils."

The fact that this plan of organization, or any similar plan, offers itself to the teacher as an instrument for working out incidentally problems of discipline and arouses in the child an interest that is in harmony with the teacher's aims in this connection, will win for it the active support of the earnest teacher who becomes familiar with its workings.

There are now 1347 boys and girls in the city of Tacoma, ranging in age from ten to seventeen years, each proudly wearing the badge of a safety scout. Here are 1347 missionaries for the cause of safety; 1347 potential citizens with childhood's idealism unspoiled enlisted with abundant enthusiasm to spread the gospel of caution and carefulness. We are confident that the work has been well worth the doing and that the seed sown in so propitious a soil will produce a harvest in ample compensation for the effort and expense put forth in the work of opening the field and the labor of sowing.

Cast in "Care Cure," a Musical Comedy, Presented by Milwaukee Electric Railway & Light Company Employees

Co-operative Activities of Railway Employees

Bert Hall, Welfare Secretary of The Milwaukee Electric Railway & Light Company, Describes Welfare Work of Public Utilities in General and That of the Milwaukee Company in Particular

IT is an indisputable fact that any co-operative activity which promotes the health, happiness and well-being of a large number of persons living in a community will react upon that community in a beneficial way. That electric railways are alive to the value of mutual benefit and welfare associations is shown by the number of such associations that have been formed within the last few years. Among the most successful of these has been the Employees' Mutual Benefit Association, organized four years ago among the employees of the Milwaukee Electric Railway & Light Company and associated companies.

In a paper delivered before the local company section of the American Electric Railway Association on May 25, 1916, Bert Hall, welfare secretary of the company and chairman of the section committee on co-operative activities, explained the plan and scope of the above-mentioned work. He also gave the results of certain investigations conducted by his committee into the operation of welfare work elsewhere. In preparing his paper Mr. Hall had assumed that what the employees desired was a discussion of those co-operative activities embraced in the general term "welfare," and which are designed not only to promote the welfare of employees, but also that of all others concerned in a great business enterprise.

The Local Association

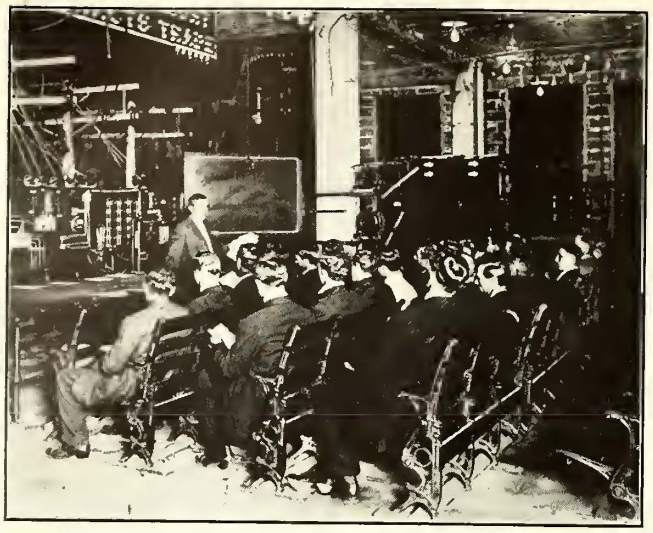
The Employees' Mutual Benefit Association of The Milwaukee Electric Railway & Light Company was organized in 1912 primarily for the purpose of creating, managing and distributing a fund to provide free medical assistance for members incapacitated for work by sickness or accident when not within and subject to the provisions of the workmen's compensation act. The association has become a most efficient machine for conserving the health of those who work for the company and for caring for their dependents whenever disease or accident necessitates medical or surgical care. Its greatest field of usefulness has not been the payment of sick benefit or death claims, but rather the conservation of the health of its members. Through the opening of doctors' offices at the places of employment, it has been possible to reduce the amount of time lost on account of sickness by fully one-third, making a total annual saving of more than 10,000 work days annually.

What Other Companies Are Doing

During an investigation made by the committee of which Mr. Hall was chairman it was found that seventy-nine of the leading street railway and electric light companies of the United States conduct welfare work, which provides either life insurance or sickness and accident insurance, or both, through various agencies. Seventy-one companies do this through employees' mutual benefit associations which will be described later, five have additional benefits similar to those provided by the association of The Milwaukee Electric Railway & Light Company, in the form of insurance. Certain other companies provide life insurance policies for employees, the company paying the entire premium for a blanket policy covering all of its employees, in which case insurance ceases with employment by the company.

These mutual benefit associations group themselves naturally into four distinct classes, as follows:

Associations in which the members pay a certain



SCHOOL FOR LINEMEN, MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY

amount of dues and to which the company contributes to some extent.

Associations in which the membership is divided into classes according to salaries received. In a typical case of this kind the dues range from 30 cents to 90 cents per month, the benefits from $7 to $12.50 per week, and the death benefit from $300 to $600.

Associations to the funds of which the individual members contribute nothing, the entire expense of sick benefits and death benefits being borne by the employing company.

Associations maintained entirely by employees, and to which the employing company contributes nothing in the way of money, but may contribute to rental of quarters and some clerical help.

By far the largest number of the associations maintained by electric railways or electric railway employees belong to the first class. Only one of the large companies of the country operates under the second type of association, and two large corporations operate under the third form. The fourth form, that in which the association is maintained and operated by the employees, seems to be the least popular, as the employees appear not to have sufficient confidence in this type of organization to warrant them in joining it. In one large company having an association of this type only 30 per cent of the employees are members of the mutual benefit association.

As welfare of this kind has been conducted by some of the companies for the past fifteen years, and as from reports it is plain that no standardization of practices has been reached, it would seem that a committee on employees' welfare of the national association might well take up this matter, sifting out from the various types of associations those which seem to have produced the best results, and recommending more uniform adherence to the best practice.

Women's Relief Work

Apparently not more than four or five companies employ visiting nurses to assist in caring for those who are sick, nor are there many associations which have well-organized visiting committees, whose duty it is to give assistance to those who are sick or injured, in addition to the relief afforded by the medical department.

In the work of caring for those who are sick, the women's auxiliary of the Milwaukee association has proved extremely helpful. It was organized during the past year, and has been of great assistance in those cases where the regular benefit provided by the association does not completely meet the requirements of the case. It provides for the household duties and the taking care of small children in cases where the mother of a family has been sick for a long time, where the finances of the family will not permit of the hiring of help, and where there is no relative who can step in to perform these duties. Through this agency a number of poor families have been provided with Christmas cheer, and it has also been very helpful in providing social recreation.

Educational and Recreational Work of the Local Association

Among the educational features of the association's work a branch of the public library has been established in the Public Service Building; company sections of the American Electric Railway Association and the National Electric Light Association have been organized, and regular departmental schools have been founded. The annual report shows that the total attendance at the departmental educational classes during the year 1915 was 15,529 persons. During the past year the educational and social auxiliary of the association has played an important part in giving to employees an opportunity to hear lectures on timely topics of high educational

DRILL TEAM EMPLOYEES' MUTUAL BENEFIT ASSOCIATION, MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY

value. These included travel talks on Mexico and on the great cities of Germany, the experiences of an ambulance driver during the European war, and lectures on South America and the American Indians.

That wholesome recreation is considered important by the officers of the Milwaukee association is evident from the wide field covered by its recreational activities. During the winter months these take the form of dances and musical and dramatic entertainments, pool playing, indoor baseball and bowling. These activities are in charge of committees of the benefit association, which

THRIFT DIAGRAM USED IN MILWAUKEE WELFARE WORK

Shows results of laying aside $5 per month; upper figures in building and loan association, lower ones in savings bank at 3 per cent interest, after one year and half and full maturity of shares respectively

have done their work exceedingly well, and all of the various events have been well attended.

Provident Funds

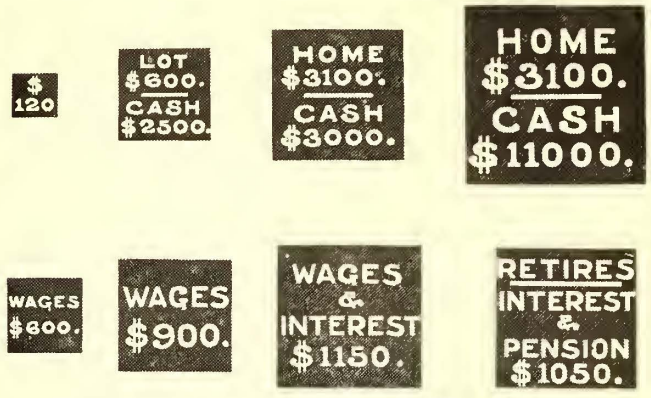
Very few companies were found to be doing any systematic work to promote thrift among employees. The employees' mutual savings, building and other associations of the Milwaukee company stand out as conspicuous examples of this kind of co-operative work. The opportunity which they give to a thrifty family to lay aside something for a rainy day, and the readiness with which the employees of the company have taken stock stamp this as one of the most beneficial of the several forms of the company's work. Four or five other electric railway companies have arranged to loan money to employees temporarily in need due to sickness or death in their families. The general custom is to charge interest on the money loaned.

The Milwaukee Electric Railway & Light Company has made provision for such emergencies, but makes no interest charge. Since the benefit association has extended its scope to provide medical attention for the wives and dependent children of its members the necessity for making such loans has been greatly reduced. Since Jan. 1, 1916, the association medical staff has made 2852 calls on dependents, and has performed fifty surgical operations which would otherwise have cost employees $4,561.

The value of such work as this as a provision for circumventing the notorious loan shark is very evident. Such a fund, however, needs to be administered with great care because there are sure to be some in a large body of workers who will attempt to take improper advantage of it and to ask for loans for very frivolous reasons. The Milwaukee Electric Railway & Light Company carefully scrutinizes all applications for loans, making a thorough investigation as to the necessity in each case, to insure the fund against unnecessary drains and preserve it intact for the benefit of those who are deserving and are in real need of assistance. Otherwise it would be easy to convert such a fund into a menace rather than into a help to the employees.

Pensions

The section committee found only six railway companies which provide pensions for employees who have become incapacitated for work through age, sickness or accident. The rules governing the granting of pensions by these companies fix the age of retirement at about sixty-five years, and the duration of service at from twenty to twenty-five years. The minimum retir-



THRIFT DIAGRAM USED IN MILWAUKEE WELFARE WORK

Shows possible financial history of employee between 21 and 60 years of age; initial capital $120

ing age appears to be sixty years, and the duration of service fifteen years, these being the limits set by The Milwaukee Electric Railway & Light Company. In this regard the company is in advance not only of other street railway and electric lighting companies, but also of the several departments of the city government of Milwaukee. The city pension system involves liberal contributions from the wages of policemen, firemen and school teachers, and much longer periods of service.

Work of the Secretary of the Association

Considerable general welfare work is performed through the office of the secretary of the benefit association of the Milwaukee company. During the first three months of 1916 there were 863 calls made at the secretary's office by persons who needed help in solving their problems, and he made ninety-eight calls outside of the office for the purpose of giving such help. The calls made outside of the office in cases of sickness and death, and in making investigations relative to troubles of employees, numbered 1018, which added to the other outside calls mentioned made a total of 1881, an average of about twenty-one calls per day. The demands on the secretary's time have increased to such an extent that it has become important for all departments to cooperate closely with him to eliminate useless calls, for example, by prompt reporting of recovery from sickness or accident and of the removal of patients to the hospital.

In conclusion, Mr. Hall summarizes the ideals of welfare work about as follows: The very best that industrial life owes to any individual under ideal conditions is steady employment from which he may earn a living for himself and for his family at work which is congenial to himself and useful to the rest of the world; an opportunity to rise to higher and higher places of responsibility commensurate with his ability and industry; an income sufficient to admit of his laying up of a fair part, large enough to care for him in sickness or old age, and provision that his work shall be wholesomely interspersed with periods of rest and recreation.

Six-Cent Fare Disallowed for Bay State

Massachusetts Public Service Commission Sanctions Higher Rates for Country Lines of Bay State Street Railway but Retains Existing 5-Cent Fare for Principal Cities—Tells How to Secure More Revenue Through Increased Efficiency and Larger Co-operation on Part of Public

On Aug. 31 the Massachusetts Public Service Commission handed down a decision, which is abstracted below, ordering the Bay State Street Railway, Boston, Mass., to cancel the proposed schedule of increased fares which has been before the board since Sept. 7, 1915. A preliminary notice of this decision was published in the Electric Railway Journal of Sept. 2. In brief, the changes proposed by the company were: (1) A general increase in the unit cash fare upon all lines from 5 cents to 6 cents; (2) an increase in certain local fares from 5 cents to 8 cents; (3) the sale of nine tickets for 50 cents, each ticket good for a single cash fare in certain city districts; (4) the modification of certain existing fare zones; (5) the modification of certain transfer privileges, and (6) the withdrawal of all existing reduced-fare tickets other than half-fare tickets required by law for school-children. The company estimated, on the basis of its operations in the fiscal year 1914, that these changes would yield an increase of nearly $1,250,000 or about 14.5 per cent in passenger revenue. This estimate assumed traffic losses on the various lines, due to the increased fares, ranging from 5 to 20 per cent and a 60 per cent use of tickets in the city districts.

On June 30, 1914, the company operated 951 miles of single track and owned 897 miles in Massachusetts. The total area served was 1528.6 square miles and the average population per square mile 873.8. The system furnishes a composite of city and country service. The company is the successor of sixty-three street railways which have been consolidated. Practically all the common stock is held by the Massachusetts Electric Companies, an unincorporated association, but a relatively small amount of preferred stock outstanding is held by the public.

Franchise Cannot Restrict Fares

In many instances the locations in public ways which the Bay State company now holds were originally granted to predecessor companies on condition that the fare charged for any ride within certain limits should not exceed 5 cents. In the Middlesex & Boston case (2 Rep. P.S.C. 105) the commission ruled that such conditions are not valid as against the rate-making power vested in the board by the public service act. This has recently been affirmed by the Supreme Court of Massachusetts in Board of Survey of Arlington vs. Bay State Street Railway, decided June 21, 1916. The legal right of the commission to permit a fare increase, notwithstanding the terms of local franchise grants, is thus clearly established. The commission holds that even in the cases of Lowell and Fall River, whereby certain fare limitations were established by direct legislative enactment, the board's power to act is not affected.

Revenue Needed for a 7 Per Cent Return

The company claimed that it is justly entitled to a fare increase because its revenues are insufficient to pay operating expenses and taxes, provide for depreciation and yield a reasonable return upon the investment. The total investment claimed by the company was $42,987,405 (including $1,424,097 working capital). The company urged that it needed $1,578,648 additional yearly revenue to pay a 7 per cent return upon the above investment and meet operating expenses and fixed charges, the total revenue for 1914 (fiscal year) being but $9,092,077. The total revenue needed was made up of the following items: Variable expenses, $5,993,505; taxes, $604,957; depreciation in addition to present maintenance charges, $1,063,145; interest on investment, $3,009,118; total, $10,670,725.

The decision reviews at length the inventory of Sloan, Huddle, Feustel & Freeman, consulting engineers for the company, which established $41,563,308 as the total original cost of the property on Nov. 1, 1914. The addition of working capital to this gave the total investment of $42,987,405. The total outstanding capitalization of the company in 1914 was $49,431,500, composed of common stock, $21,035,900; preferred stock, $2,748,600; funded debt, $23,747,000, and unfunded debt, $1,900,000. The difference between the engineers' estimate of the investment and the total capitalization is $6,444,095. The capitalization in part represented discount on bonds amounting to $1,251,010 and replacements in suspense amounting to about $750,000. Premiums amounting to $1,414,680 were paid in at various times on new stock issues.

Commission Criticizes the Inventory

In the opinion of the commission, the method of determining original cost used by the company experts creates an impression of accuracy which is not wholly warranted. Ties, ballast, building foundations and other items are in whole or in part buried in the ground. Nor can the amount of street grading when the track was originally laid be determined with accuracy by present inspection. Information in regard to these matters the engineers were forced to obtain from the imperfect records of the company, supplemented by statements of its officers. The same difficulty was experienced in determining property ages, and even less accuracy was possible in the case of unit prices in earlier years. The difficulty was enhanced by the fact that the promoters of many of the original roads were at the same time their builders, doing the work under contracts which were largely a matter of form. Without disparaging the work of the engineers, the commission holds that it calls not infrequently for the drawing of general conclusions from fragmentary evidence.

Much difficulty was experienced in checking the unit prices which were used. The results of the investigation, however, tended on the whole to check the unit prices used, although they showed the somewhat speculative character of many of the prices and the meagerness of the data upon which it was at times necessary to base conclusions. The chief engineer of the commission, H. W. Hayes, estimated a net reduction of about $600,000 in the total estimate of original cost. No criticism is intended by the commission of the work of the engineers, for it is doubtful if more satisfactory evidence could be obtained. So far as the evidence relates to prices for labor and materials within the last

ten years, the records are fairly complete, and the company has, the board feels, in general sustained the burden of proof. On the facts before the commission, the same must be said of all the prices of land, cars, car and power station equipment. The data in regard to buildings and paving, also, are detailed, and have not been challenged by the remonstrants. The best judgment of the commission is that the company's engineers did not attach sufficient weight to the low labor and material costs prevailing in the nineties, or to the imperfect and cheap character of street railway construction during that period.

Overhead Charges Held to Be Excessive

Of the total investment value of $41,563,308 estimated by the company's engineers, $4,721,674 covers overhead charges. These average 12.74 per cent of the direct property cost and are assigned by the company as follows: Engineering and superintendence, 3.68 per cent; interest during construction, 2.23 per cent; taxes during construction, 0.12 per cent; insurance during construction, 0.48 per cent; organization and legal expenses, 3 per cent, and contingencies, 3.23 per cent.

The commission points out that the above percentages are based not upon records, but upon judgment. A considerable number of these costs were incurred during the construction of the constituent companies and were outstanding capital obligations at the time of the consolidations. As a test of overhead expenses in earlier construction, the commission's accountants selected at random from the board's files thirty appraisals or estimates submitted in capitalization cases from 1890 to 1900. In these appraisals no overhead charges were noted save engineering and superintendence in the cases of roadbed, track and overhead system. These amounted on the average to 2.19 per cent of the total cost of these property items.

The commission realizes that much overhead expense in the past and even recently has not been segregated in the records, but it believes that the company has failed to sustain the burden of proof in this matter and that its estimate considerably exceeds the reality. The present Bay State system has grown slowly and a large portion of its cost represents additions and improvements to already existing property, a fact which has tended to lessen interest during construction. Much of the engineering and superintendence, especially in the past, has probably been supplied by officers whose salaries were charged to operation, and this is no doubt true of other overhead expense. The item of contingencies the commission believes has been considerably overestimated. In this case, therefore, the commission finds that 8 per cent is a liberal allowance for overhead charges. Assuming that the engineers of the company overestimated the direct cost of the property by $600,000, the total estimate for overhead expense on this 8 per cent basis is $2,899,330, instead of $4,721,674.

Working Capital and Revised Original Cost

The company allowed $1,424,097 for working capital, defined as cash on hand and money invested in stores and supplies, the figure used being based on the average of these items during the past five years. The remonstrants urged that no such amount is needed or should be allowed as a part of the investment, emphasizing the point that the company collects its income more frequently than it pays its bills. The commission points out that in 1909 its predecessor, the Massachusetts Railroad Commission, authorized the Boston & Northern and Old Colony companies (now the Bay State) to issue securities to supply $1,141,375 working capital, and therefore sets this standard for the present case.

Making the above revisions, the commission has set the fair original cost of the existing tangible property in Massachusetts, including working capital, at $40,282,340. The commission figures that $39,104,340 represents the amount which must be used as the basis of fixing passenger fares in Massachusetts, after taking out $600,000 on unit prices; $1,822,343 on overhead charges; $282,722 on working capital; $293,000 on unused property and $885,000 on property leased to the Boston Elevated Railway.

Claims for Intangible Values

No evidence was introduced by the company to substantiate its claim of intangible property, but claims were made for reward for promoters' services, the cost of securing money and the cost of the development of the plant. The first claim is that a certain amount of over-capitalization was necessary in order adequately to reward promoters and that initiative for the future will be destroyed unless capital allowance for such services in the past is taken into account. Such evidence as the commission has in regard to "water" in the Bay State capitalization indicates that it was injected largely during the process of electrifying roads which had long since passed the promoters' stage. In the main, the promoters of the newer enterprises seem to have sought their reward in the shape of construction contracts, and it is probable that they also reaped additional profit from enhancement of land values. There is no evidence, the commission states, in the records of capitalization cases in the past that issues of securities were either allowed or sought to have commissions for bankers.

Regarding development charges, the commission concedes that a reasonable opportunity should be given to spread the loss over the earnings of succeeding years, but such a policy cannot be continued indefinitely. Electrification took place over twenty years ago and the process of consolidation more than ten years ago. No doubt much property was abandoned in the process of electrification, but the amount has been exaggerated. In the absence, at least, of tangible evidence in regard to the amount, character and time of abandonment of property, the commission is of the opinion that no allowance for such property should be made.

Indirectly, a claim for land appreciation was made even prior to the filing of the brief of the company, the appreciation amounting to $648,502. Later, at the request of the board, the cost figures were substituted. Car riders, however, cannot be expected to pay higher fares because land has increased in value, nor ought they to pay lower fares if it should decrease. Even if the doctrine of present worth were accepted, the figure to be used in rate-making would clearly be present worth for street railway purposes, and in this case no evidence has been submitted that the land has increased in value for such purposes.

The remonstrants claimed that the original cost estimate includes all the existing property, whereas a substantial portion was paid for out of income and therefore not invested by either stockholders or creditors. Under the looser methods of bookkeeping which have prevailed in the past, capital expenditures could be concealed by including them in operating expenses with the maintenance charges. In the sixteen years in which the Massachusetts Electric Companies have controlled the Bay State system, however, the evidence points to no such padding of the maintenance accounts. The tendency has been to capitalize expenditures wherever possible and to distribute the maximum possible dividends.

The commission does not feel that the theory

of the remonstrants can be applied to the Bay State company, in view of the history of the property.

Depreciation and Dividends

The commission rules that in determining the revenues to which the company is entitled, allowance should be made for an amount equal to a fair return upon all the capital honestly and prudently invested, without deducting accrued depreciation. Upon the basis of the Feustel figures the property had depreciated 31.1 per cent, representing about $12,000,000, but the company claimed that insufficient earnings have been received to enable it to make proper provision for depreciation. In making the above ruling, however, the commission states that it must not be understood as deciding that the company can, if it earns the amount to which it is entitled, properly pay dividends before the depreciation and other deficits from past operation are made good. In the Blue Hill case (3 P.S.C. Rep. 75) no dividends whatever had been paid by the company, and no deduction was made for depreciation in estimating the fair basis of return.

A more difficult question arises in the case of a company which has paid dividends and which has neglected to provide adequately for depreciation. It is doubtless true, the commission feels, that it would not now be regarded as sound business practice for a public utility to pay any dividend whatever at the expense of adequate provision for depreciation, but in dealing with the past transactions of street railways it would in many cases work injustice if the rule were inflexibly applied that a company which has failed to make adequate provision for depreciation ought to have paid no dividends whatever. The average dividend paid by the Bay State and its predecessors from 1862 to 1900 was 4.07 per cent. Even if the amount of excessive capitalization is eliminated and the return is figured on the actual legitimate investment, the dividends paid by the company in the past average less than a fair return upon the money actually put into the property.

During the time when these dividends were being paid no attempt whatever was made, the commission states, to provide for future depreciation by creating a reserve until the regulations of the Interstate Commerce Commission, two years ago, made it necessary to set aside something for depreciation on rolling stock. President Sullivan testified that he realized when he took up the management of the system in 1899 that in future years the amounts necessary for renewals would increase sharply, but he and his associates considered it sound policy to make renewals when necessary and relied upon the future increase of revenue to cover all contingencies.

The Bay State system is made up of a large number of city, suburban and interurban lines, some of which were nearly forty years old at the time of consolidation. There may have seemed at the time some justification for the view that the property had reached a condition where the renewal requirements of successive years would not vary greatly in amount, or at any rate, would not increase more rapidly than the growth of traffic. Under the circumstances, the Bay State company should not be criticized too severely for adopting a policy which was in conformity with the prevailing standards. The dividends paid have not been large, and under the Massachusetts laws a company which is not paying dividends finds it difficult to finance its needs. Nevertheless, the commission holds that the company should cease paying dividends on its common stock until current repairs and renewals have been completed, with the replacement of obsolete equipment. While this ruling may seem harsh to stockholders who have at best received only a moderate return, the board is convinced that it is not only in the general public interest but in the interest of the investors that a larger portion of the earnings shall be put back into the property.

In determining the depreciation provision the engineers of the company first eliminated all property, such as land, which does not require eventual replacement. All overhead charges were considered depreciable except those for organization and taxes during construction. The board concludes that half the annual depreciation allowance should be estimated on the straight-line basis and half on the sinking fund basis, instead of on the all straight-line plan, as figured by the company. The commission finds that $1,044,374 may be properly allowed for depreciation annually.

Discussion of Fair Return

The company claims that it is justly entitled to a return of 7 per cent upon the full amount of capital found by the commission to have been honestly and prudently invested. Past experience with Massachusetts public utilities give little ground for the claim that the above return is essential to attract capital. Stock of fairly capitalized and well-managed properties, even including street railways, has frequently been issued, taking premiums into consideration, upon better than a 6 per cent basis. The commission states that the company is asking not only for a 7 per cent return but for funds sufficient to make provision for depreciation such as no other street railway in Massachusetts has ever hitherto made. The provision for depreciation which is allowed and the fair rate of return must be considered together, the board holds, and so concludes that a 6 per cent return should be ample.

Assuming a charge of 4.7 per cent for money borrowed, this will leave 7.3 per cent for the portion of the investment represented by capital stock. In fixing this rate the commission emphasizes the point that it must not be understood as declaring that a street railway which finds it possible to declare dividends in excess of 7 per cent may reasonably be required to reduce its charges. Each case must be judged upon its own merits. Due consideration in the present case has been given to the fact that the company's dividend policy has lost it the right to claim an enhanced return which it might have had if a more conservative program had been followed.

Making Up the Earnings Deficiency

Making the various corrections and deductions specified by the board, it appears that the net earnings applicable to dividends amount to $1,757,444, or about 4.5 per cent, on the amount of investment to be used as the basis of reasonable rates. The deficiency below the 6 per cent return found to be reasonable is $588,816. Yet in view of the provisions of the statutes under which the Bay State consolidations were effected, in view of the circumstances leading up to them, and in view of the little community of interest between certain parts of the system, it would, in the judgment of the board, be an injustice to the many populous communities which the company serves to regard its system wholly as a unit for rate-making purposes. This does not mean that every line should be required to pay its own way. It may be conceded that the communities in which the company earns the major part of its divisible income must expect in some measure to bear the burden of tributary lines which cannot support themselves. This, however, does not mean that the full burden of carrying the "speculative" properties in sparsely settled territory, which were made a part of the system sometimes hastily and with the assumption that econo-

mies would necessarily follow from consolidation, must be borne by the better-paying communities.

At the request of the remonstrants, the territory served was divided into fifteen districts regarded in general as having some community of interest, and the company's engineers regrouped their figures showing the estimated surplus or deficit from operation on the ninety-five operating "routes" as submitted in the company's evidence. The regrouping was then refigured by the commission, using the amount fixed by the board as the present basis for passenger fares and the corresponding depreciation allowance. With the exception of the Gloucester, Newburyport and New Bedford districts, all showed a surplus on the investment ranging from 0.38 per cent to 8.35 per cent.

Six-Cent Fare Is Unpopular

The results of fare increases from 5 to 6 cents on Massachusetts street railways have been disappointing, in the opinion of the board. The 6-cent fare unit is admittedly awkward and unpopular. Conditions in parts of the Bay State territory seem peculiarly unfavorable to the increase. General Manager Goff testified that under the proposed schedule fares between some points, especially in the Boston metropolitan district, would in some cases exceed even the steam railroad single fares, and would generally be about double the commutation rates. Further, the centers of larger population are in general mill and factory cities, with comparatively short average haul. In such localities walking is a form of competition not to be ignored. So far as the board is advised, no attempt has been made elsewhere to increase the 5-cent unit, in cities at least, although in many cases it has been reduced by ticket concessions. The tendency in other parts of the country, in the main, is clearly to meet the new difficulties by inviting additional traffic through faster, better or generally more attractive service, or by decreasing expense through improved operating methods. Encouraging progress has been made in recent years in both directions.

How to Secure Greater Efficiency of Operation

The decision reviews various points discussed in the report of Bion J. Arnold to the board upon possible increases in the operating efficiency of the Bay State company. The commission concludes that the moderate increases in speed recommended can be effected, and suggests that the general problem of speed increase be given higher executive attention and specialized skill. Reduction of service in short-haul urban territory is doubtful wisdom, but the board holds that this can be done effectively on some of the longer interurban lines where the traffic is light, especially at certain seasons of the year. The later rolling stock is praised by the commission, but emphasis is laid upon the need of repairing, cleaning and painting the older cars. The decision points out that the Bay State company has 984 open cars in use out of a total of 1996 cars in service, and points out that while the open car has been popular in the East, it is an expensive luxury. It involves a duplicate investment, greatly increased maintenance expense, increased accident hazard, loss of fares and hardship to employees. The semi-convertible car can be made nearly as attractive to riders, and is far more economical. The gradual retirement of open cars is recommended.

The commission also points out that with the new equipment fare boxes could also be used, and states that it is significant that almost alone of the great systems of the country the company has not at present a single prepayment car. (Exception should be made of the latest type of semi-convertible car designed by the company, which furnished the basic design for 200 new cars lately ordered.—Eds.) The change in equipment would also facilitate the introduction of trailers, which at present are not used at all, although the use of double-headers is frequent. The economy of properly designed trailers, even though they require the construction of additional loop tracks, is now well established. Regarding one-man cars, the company is of the opinion that these can be used on certain routes. The company cannot be held responsible for any failure to use one-man cars up to the present, as the commission has previously regarded this practice with disfavor. The board states that it is willing to give this matter renewed consideration without prejudice, in view of possible recent improvements in this type of car and methods of control.

The commission favors the installation of additional feeders. It is also inclined to believe that some substantial saving in general expense can be attained through methods of organization. The commission is convinced that the interurban lines are in but a rudimentary stage of development at present, and that they hold forth the possibility of largely increased traffic, provided they can in some way be made to furnish more expeditious and more convenient service. The prospects are also more hopeful than ever for the development of trolley freight service along broader lines. The company has in mind the extension of this service into the territory north of Boston, where the population is larger, the freight service of the railroads subject to many delays, and where much market-gardening exists. Through charging admission to parks and through the sale of unused real estate, the company may possibly increase its resources. The commission feels that new shops and other improvements could be capitalized on a paying basis.

Co-Operation of the Public

The economies which have been suggested, however, cannot be carried into effect without the co-operation of the public. Excessive taxation in connection with paving requirements is a serious burden to the Bay State company. In securing new locations involved in the laying of double track, reduction of curves, etc., the company has continually been obliged to negotiate with the local authorities and finally to agree to perform work upon the streets which the statutes do not require or even contemplate.

The decision points out that it is natural that municipal governments, anxious to keep down the local tax rate by which they are so largely judged, should seek to unload upon the street railway all possible expense, but that such a policy, in the long run, reacts upon the public served. Any burden or tax imposed upon the company the car riders ultimately must pay. Further, the burden is not measured wholly by the cost of the physical work which the company is finally required to do, for the continual dickering over such matters consumes a large amount of time and adds materially to the cost of management. The cost of the paving alone for which the Bay State company has paid since 1898 and which it has been expected to maintain, is estimated at more than $2,000,000. In a report to the 1916 Legislature, the commission strongly urged that the present system should be changed by eliminating, in effect, the present "commutation tax," by placing all paving work squarely in the hands of the municipalities, and by requiring the street railways to meet only the reasonable cost of any such work done within their track locations. The companies ought not to be required to pay the present "commutation tax" and at the same time to do the work for which this tax was supposed to be a substitute.

The elimination of many of the present indicated stops and the decreasing of headway on overserved lines

are also strongly advised by the commission as further means of increasing revenue. Better traffic regulation through police co-operation is also considered advisable. The commission states that in the past small concessions have been withheld by the public, when these ought, in the larger interest, to have been granted, and petty restrictions have been unwisely imposed. The commission now believes that if the company makes any serious and comprehensive attempt to improve operating conditions, it will not find the public lacking in co-operation.

RURAL FARES MAY BE INCREASED

The commission states that the weakness of the Bay State situation arises from original error of judgment in the too hasty combination, on an equal basis, of all sorts and conditions of companies without any adequate consideration of the fact that some of the older properties had suffered in capitalization and in physical condition from the operations of certain predatory syndicates, and that many of the newer properties were manifestly speculative in their nature and constructed in territory where the hope of any early return was exceedingly small. Coupled with and accentuating this error was the inflation of the shares of the holding company used in bringing about the combination. From this initial handicap the system and its managers have continually been suffering and they have faced a difficult and oppressive situation in which they have not been wholly free agents. As President Sullivan has stated the property has never at any time been in a "normal" condition.

If the company and the public will each do its share toward the relief of present conditions, however, the prospects for the future cannot be considered unfavorable. The public can reasonably be expected to make contribution in the form of some increase in fares. The proposed new schedule cannot be allowed, as the commission finds no evidence which would justify it in permitting the regular unit of cash fare to be increased in the populous centers which are already carrying their fair share of the burden. The board also has grave doubt whether an increase in the 5-cent unit in this thickly-settled, short-haul territory where jitney competition is so feasible and so prevalent would be of material benefit to the company. Any increase in the unit cash fare is therefore disallowed in the present 5-cent zones within or from the centers of the following cities: Boston (including Hyde Park), Brockton, Chelsea, Everett, Fall River, Haverhill, Lawrence, Lowell, Lynn, Malden, Melrose, Quincy, Revere (town), Salem and Taunton. These are roughly the districts in which the company had proposed to sell nine tickets for 50 cents. The 5-cent zones radiating from these centers include, in whole, or in part, adjoining municipalities, such as Beverly, Peabody, Saugus and Swanpscott.

The other lines of the company, in general, form part of the interurban routes and are located in the less populous districts. If the company wishes to increase the prevailing fares on these lines, it is just and reasonable, in the board's opinion, for it to do so. In its schedule the company had in certain cases provided for increases beyond a 6-cent fare unit, had introduced certain new fare zones and altered existing transfer privileges. The commission has not been able, from the evidence submitted by the company, and for lack of time, to deal with such changes in the present proceeding.

For the reason mentioned and because such fare increases would in any event yield a small increase of revenue and might cause serious hardships to certain small groups of riders the board is of the opinion that no changes of this character can be allowed at this time. The company is, however, authorized to file a new schedule, to become effective within thirty days after filing, of rates, which schedule, upon approval by the commission and proper notice, will be allowed to become effective without further hearing. With respect to reduced fare tickets, the commission doubts its authority to require the company to put into effect or continue concessions over the regular rates. After one year under the new schedule the commission will be prepared to consider further revision of rates if this is proved to be necessary.

COMMUNICATION

Public Relations Outline Commended

FORD, BACON & DAVIS, ENGINEERS
NEW YORK, Sept. 6, 1916.

To the Editors:

I have read with much interest the outline of important methods of improvement of public relations, which is published in this week's issue of the ELECTRIC RAILWAY JOURNAL, and I want to congratulate you not only upon its completeness and value but also upon the crisp form of presentation.

This schematic plan of presenting the subject is one that carries an appeal to the human understanding, both by its brevity and its logical form. This outline will form a very valuable supplement to the code of principles prepared by the public relations committee of the American Electric Railway Association several years ago.

FRANK R. FORD.

Floral Tribute to Superintendent Bolen

A FEW days ago nineteen social clubs composed of trainmen on several parts of the system of the Public Service Railway of New Jersey recognized the completion of thirteen years of service with the company by General Superintendent N. W. Bolen in a remarkable manner. The recognition took the form of a floral shower, comprising trolley cars, large horseshoes, bou-

MR. BOLEN SURROUNDED BY FLORAL TRIBUTES

quets and other set pieces. Accompanying the floral pieces were signed testimonials tendered by a number of the social clubs extending best wishes for the continued leadership of Mr. Bolen. The accompanying halftone shows some of the contributions. One of his associates describes the occasion thus: "It certainly was a great day for 'Boss Bolen' on the Public Service system.

Another Strike Hits New York

Indications Are, However, That Strike Is Broken—Interborough Subway and Elevated Lines, the Primary Objective, Are Operating Normally—Individual Working Agreements the Main Cause of Trouble

THE long-threatened rapid transit strike has at last occurred in New York, but unless unforeseen developments arise the residents of the city will not be seriously inconvenienced. On Wednesday night, Sept. 6, about 2000 disgruntled union employees of the Interborough Rapid Transit Company voted to strike because the company refused to cancel individual working agreements with more than two-thirds of its employees, and at the same time employees of the New York Railways, the surface lines controlled by the same management, walked out for reasons much in dispute. According to the latest reports, the surface line service is disrupted but steadily improving, while the subway and elevated services are operating in excess of the normal amount through the loyalty of more than 9000 of the 11,000 employees. Unless the labor interests succeed in calling out all other surface lines in Manhattan, the Bronx, Queens and Richmond, and the Brooklyn Rapid Transit Company as well, the strike seems certain to fizzle out in short order.

THE ISSUE

As Stated by the Company

"There is just one issue involved in the proposed threat to tie up the street railways of New York:

"Shall the Interborough Company be compelled to cancel and annul contracts, creating improved conditions of employment, voluntarily entered into between the company and more than 8,000 of its employees?"

Fundamentally the whole cause of the present situation seems to be the individual contracts which the Interborough company has secured through the voluntary act of most of its employees, and which the New York Railways is now distributing among its men. The former contract was published last week, and the latter, differing only in its time limit, appears elsewhere in this issue. The way in which the New York Railways has been drawn into the rapid transit dispute, in spite of the elaborate arbitration clauses of the agreement reached on Aug. 7 in settlement of the earlier strike on these surface lines, is quite complicated. The union men allege that they were given to understand that the policy of this settlement, covering the right to organize, treatment with committees and arbitration of disputed points, would be followed out in the case of the Interborough lines as well as the New York Railways, but that when they wished to arbitrate the fairness or unfairness of the individual working agreements and the question as to whether the methods used in obtaining them were a breach of the settlement plan, the Interborough general manager, Frank Hedley, refused. Consequently, when they learned that the New York Railways was contemplating the issuance of similar working agreements for its men, they did not pursue the stipulated course and ask Mr. Hedley as general manager of the surface lines to arbitrate the contract question, but voted to follow the Interborough men in striking.

The Interborough officials, on the other hand, deny the existence of any agreement comparable to the New York Railways settlement, and aver that they could not arbitrate all the Interborough contracts that had been already voluntarily signed through the exercise of a constitutional right, especially when the Interborough unionists voted to strike in an effort to coerce the company into cancelling the contracts. Moreover, the company says, in going out on strike the New York Railways men deliberately violated the settlement plan of Aug. 7, and this is no longer operative.

Working Agreement and Conference of Aug. 30

The dispute between the Interborough Rapid Transit Company and its union employees began to assume a critical form on Thursday, Aug. 30, when at a conference regarding union demands Mr. Hedley introduced a printed copy of the working agreement that for several days had been circulated among the individual employees. This working agreement, as stated in the ELECTRIC RAILWAY JOURNAL of Sept. 2, was formulated in conference with the committees representing each of the departments of the road, and these committee said that they would recommend the terms of the agreement for execution by the individual employees. Although these agreements, carrying with them $1,250,000 in increased wages, concessions in working hours and stable conditions for about two years, were being voluntarily signed by more than two-thirds of the 11,000 Interborough employees, the minority union interests immediately asserted that they constituted an attack on the right of collective bargaining and their circulation must be stopped.

Moreover, at this conference the question was immediately raised as to whether the employees of the Interborough Rapid Transit Company had a legal and a moral right to organize. In regard to the attitude taken by the company representatives, Mr. Hedley after the conference issued a statement in part as follows:

"I said that I would be glad to hear the grievances or demands of the employees on the assumption that the principles which had been agreed upon in so far as the New York Railways was concerned would also apply to the Interborough Rapid Transit Company. The New York Railways agreement provides that committees of the men have a right to have their individual committeemen, if they desire represented also by spokesmen, appear before the officers of the company to present their cases and, further, that should disputes arise with the management which cannot be settled with the employees, the questions in dispute shall be arbitrated, excepting, however, all matters relating to efficiency. Of course, the same procedure will be followed on the Interborough lines."

Strike Order Voted by Interborough Unionists

To such an extent did the individual working agreements stir up the union leaders that a strike meeting of

Interborough unionists, numbering, it was asserted, about 3000, was held on Friday night, Sept. 1. The men then voted that an ultimatum should be presented to the company on Tuesday, Sept. 5, the date set for the next conference. The resolutions passed demanded forthwith the return and cancellation of all such individual working agreements as had been signed, and stated that "in the event of the failure of the company to return and cancel said contracts and upon their refusal to do so, we authorize, empower and instruct our officers and executive board to take such steps as they may see and deem fit and proper; and, if in their judgment they deem it expedient and advisable, to call forthwith a suspension of all work on the lines of the Interborough Rapid Transit Company."

It was directed, moreover, "that a copy of this resolution be delivered to Division 722 of the Amalgamated Association of Street and Electric Railway Employees of America, the members of which division are employees of the New York Railways, which is owned, operated and controlled by the officials, board of directors and management which owns, operates and controls the Interborough Rapid Transit Company, with the request that they co-operate with us to obtain our just and proper rights."

Interborough Refuses to Cancel Contracts

In advance of the conference scheduled for Sept. 5, Theodore P. Shonts, president of the Interborough Rapid Transit Company, announced that the company would not annul the individual working agreements with the vast majority of its men. In a statement issued on the evening of Labor Day, Sept. 4, Mr. Shonts said that his position as president of the company was that these contracts were entered into voluntarily by the men and officers of the company, that they were binding upon both parties, that they could not be abrogated by either without the consent of the other, and that in making the same, both parties were exercising the right of liberty to contract guaranteed by the Constitution. It was, therefore, obviously impossible to comply with the demands of the minority represented by the officers of the union. He emphasized the fact that there was nothing involved in the controversy except the right of the employees of the Interborough to form their own brotherhood and the right of the company and the members of the brotherhood to enter into contracts respecting rates of pay and hours of labor.

The position of the company was further set forth in large advertisements sent to the newspapers on the evening of Sept. 4, summarizing the recent negotiations between the company and its employees. Along with other things it was explained therein that conferences between the company and the committee of employees selected under its own brotherhood plan took place before any other committee, union or otherwise, had presented any requests whatsoever. In order that there should be no mistake, and that the company might know definitely that the new schedules were satisfactory to the men, a contract was prepared for submission to each man individually. No man was asked to sign by any one selected by the company, or by any man with authority over others. Submission of agreements to the individual men was handled entirely by elected representatives of an overwhelming majority of the men, and they had up to that time been signed by more than 8000 of the employees.

Mr. Shonts also gave out a letter that had just been sent by Mr. Hedley with his approval to Mayor Mitchel, asking that in the event of the threatened strike materializing, the company be given immediate police protection. A copy of this letter had been forwarded to Governor Whitman, "in order that if a strike with all its disorder should come and the police be found inadequate to cope with the situation, and we ask the militia be sent, the authorities could not say they had not been informed of the seriousness of the car situation."

Warning Notices Issued to Employees

At this same time notices were sent out to Interborough employees explaining why the company would not annul the working agreements as demanded by the union and warning them that all those who either encouraged or participated in a strike or interfered with the freedom of their fellow-employees or with the peaceful and continuous operation of the road, would not be entitled to the benefits secured by the contracts or to those accruing under the rules of the company from seniority of service, and that all employees who absented themselves from duty because of a strike order would be dropped from the company's service, and if re-employed at a later date would be taken into the service as new men.

WORKING AGREEMENT

1. *The New York Railways employs the undersigned for the wages and hours set forth on the annexed schedule from Sept.* 3, 1916, *to Aug.* 31, 1918.

2. *The undersigned agrees to work for the company in such positions as may be assigned to him from time to time (provided there shall be no reduction in position except for good cause) for such wages and hours for such periods.*

3. *It is further agreed that if the company shall increase the wages or change the hours set forth on the schedule, the undersigned shall have the benefit of such increase or change notwithstanding this agreement to the contrary.*

4. *If, after five years' service in any one class, for physical causes beyond the control of the undersigned, he shall be assigned to a lower position, he shall then receive at least the low rate wages on the schedule of the class from which he is transferred.*

Dated New York City, 1916.

NEW YORK RAILWAYS,
By Frank Hedley
Vice-President and General Manager

.....
Employee
Pass No......

NEW YORK RAILWAYS INDIVIDUAL SERVICE CONTRACT

In view of the co-operative aid that the union strike resolutions had asked of New York Railways employees, a similar notice was sent to these, admonishing them that they were bound by the formal settlement of Aug. 7 and that any sympathetic strike would be a breach of that agreement with the company. They were notified that any strike activity or any absences on account of a strike order, or otherwise, would result in a discharge from the company's service. If re-employed at a later date, the discharged men would be taken back as new employees.

Conference on Sept. 5 Fans the Flame

The scheduled conference on Tuesday, Sept. 5, between Mr. Hedley and leaders of the union served only to show that the company intended to keep its word in refusing to annul the individual working agreements. Although the labor leaders had the power to call a strike at once, they did not take advantage of it but decided, after notifying Mayor Mitchel of the deadlock, to pass the responsibility for calling a strike back to the In-

terborough union employees at a mass meeting on the evening of Sept. 6.

At the conference company officials stated that if the working agreements were thought to have been illegally obtained, their validity could be ascertained in court. The union leaders offered to arbitrate the question as to the fairness or unfairness of the working agreements and also the methods that were being used in getting the men to sign the same. To this the company would not agree.

The labor leaders then offered to submit the whole matter to the Public Service Commission and the company also refused that, claiming that the commission had no jurisdiction in the matter. It was pointed out by the company that if the working agreements were to be tested, the act should take place before a tribunal where perjury could be punished. The company representatives were disinclined to discuss any points beyond the refusal to annul the agreements, inasmuch as it was reported that the labor leaders had threatened a general tie-up from the Bronx to Coney Island. Counsel for the union men, however, denied that they had made such a threat.

At the above-mentioned conference the question of the union demands for the New York Railways was also taken up, and the company representatives were asked whether they had proposed for the employees of this company any working agreement similar to that used for Interborough men. While insisting that nothing whatever had been done which by any chance could affect in any respect the settlement agreement of Aug. 7, company officials stated that a similar agreement had been discussed and drawn up, but that they had determined to withhold any distribution of such contracts for the present.

According to statements of the union leaders, however, the suggestion and discussion with reference to the advisability of getting all of the New York Railways employees under contract had taken place not only subsequent to Aug. 7, the date of the New York Railways settlement, but also after the conferences were begun between the officials of the company and the committee of employees and their spokesman in accordance with the settlement plan.

No Agreement Between Interborough and Its Men

After the conference Mr. Shonts issued a statement in part as follows:

"There is and has been no agreement between the Interborough Rapid Transit Company and the Mayor and Chairman Straus covering relations between the company and its employees. The only agreement between the Interborough and any of its employees is the individual 'working agreement' signed by the company and now more than 8500 of its men.

"With that agreement the Amalgamated Association has and has had nothing to do. It was the outgrowth of conferences between this company and representatives duly chosen by the vote of an overwhelming majority of the employees. It is these agreements which the union officers—representing but a small minority of the men—ask us to cancel. We have received no such requests from the men who did sign.

"The employees of the Interborough have formed a brotherhood of their own, and have manifested in a variety of ways their desire to deal with the company independently and to be free from the attempted invasions upon their work and freedom. The whole situation involves an effort by the outside union, of which but a minority of our men are members, to create an issue, whereby through strike, or threats of strike, the majority of our men shall be compelled against their will to join the outside union."

The Strike Finally is Called

The first step in the impending strike finally was taken the evening of Sept. 6, when mass meetings of the union employees of the Interborough Rapid Transit Company, covering the subway and elevated lines in Manhattan and the Bronx, voted to quit service at about 9.30 p. m., and about 11 p. m. the unionized strength of the New York Railways, operating the "green-car" or one of the two big surface systems in Manhattan, followed suit. About midnight the surface lines suspended service for the night, but the rapid transit lines continued to operate with little delay.

On Thursday morning, Sept. 7, New York awoke to learn that what it has been fearing for weeks had come to pass—*i.e.*, a strike on the rapid transit lines or main arteries of travel in Manhattan and the Bronx. Yet only from the newspapers was this in general discernible, for through the support of more than 9000 of loyal employees and some of the 3000 emergency workers which it had gathered in its carhouses and at its terminals, the Interborough company was able to offer normal service. At the time of the strike the company had received 9264 signed working agreements, and only twenty employees thus represented failed to report in the morning for duty. Only three motormen on the whole rapid transit system struck.

On the New York Railways about 2500 of the 3300 men went out. From early morning, however, when service was resumed, operation gradually improved. At 7 a. m. the company had 70 cars in operation; at 8 a. m., 143 cars; at 9 a. m., 157 cars, and at 10 a. m., 179. This latter figure, which was maintained during the day, was 25 per cent of the normal service.

The board of directors of the New York Railways voted increases for the men who stuck by the company. A new scale, with individual contracts for two years, is being offered to these men. The increases voted amount to $350,000 a year. Up to 10 a. m. 409 of the surface car men had signed the individual contracts. Double pay until further notice was also announced by Mr. Hedley for both Interborough and New York Railways employees who remained loyal and signed the individual working agreements.

The subway and elevated lines were operated all night Thursday, but the surface-car traffic was halted at dusk until Friday morning. In the face of the great set-back, the union leaders declared they would hit at the Interborough through the power houses, but Interborough officials reported that every one of its power house employees had signed the individual contracts. In consequence, the company declared, it had no fear of a strike call among its power house employees.

Strike Seems to be Fizzling Out

At the time that this paper went to press, it was evident that the rapid transit strike had failed, more than normal service being operated, and the only inconvenience suffered by the public is the partial suspension of service on the green-car lines. Union employees of the Third Avenue System and the Second Avenue Railroad, the other surface lines in Manhattan and the Bronx that were mixed up in the preceding strike, voted on Thursday night against joining the strike at this time.

The latest figures on the lines already affected by the strike show that a total of 1150 men have gone out on the subway and elevated lines, while 9977 employees have signed the individual working agreement. The 1150 strikers are recruited from the following classes

of workers: On the elevated, four motormen, eight towermen, three switchmen, twenty-three station agents, 216 gatemen, 442 guards and one special officer; on the subway, three station agents, twenty-five gatemen, 240 guards and one escalator man. These figures total 976. The balance is made up of track hands, assistants in the car shops and other unskilled laborers.

As for the New York Railways, up to 9.30 a. m. Friday 1588 or almost half of the employees had signed the working agreements, giving increased wages for the next two years. No strikebreakers were being used on the surface lines, but the service was being steadily improved. At 7 a. m. Friday 136 green cars were in operation as compared to seventy the preceding day at the same hour, and at 9 a. m. the total was 234 as compared to 157 on the preceding day. Less than one-fourth of the 3000 strikebreakers whom the Interborough officials had ready for the strike had actually been used. The number actually called into service was between 600 and 700—mostly on the elevated roads and for unskilled positions such as gatemen and guards, inasmuch as the majority of the strikers had gone out there. A large number of former employees of the surface lines were using the opportunity to get back in its employ.

On Friday morning Mr. Shonts announced that the striking employees of the New York Railways would have until 1 p. m. Saturday to return to work without prejudice. The company, however, would reserve the right to reject the applications of any men who were known to have indulged in illegal acts during the strike. Moreover, no men taken back would be allowed to continue union affiliations.

Statements by Queens and Third Avenue Lines

The New York & Queens County Railway, which was included in the preceding surface strike, in a notice to the public dated Sept. 5 stated that neither it nor its employees had any concern in the Interborough dispute. It said that it was carrying out in good faith the method provided for settlement of its own controversies, to which it agreed with Mayor Mitchel and Chairman Straus of the Public Service Commission on Aug. 8, and would continue to do so. It wanted the public to accept its assurance that it did not propose to have its part of the street car service of the city tied up because of any demand of a labor union that another company shall grant its demands through a committee representing a small disaffected minority of its employees.

In a similar notice to its employees, the company reminded them that it was their duty to remain in continuous and peaceable performance of work. If as a matter of sympathy with any disaffected men of the force of any other company, or as a matter of obedience to the dictation of any union, any men should leave the service of the company, their places would be filled by others. First preference would be given to present employees who remained at work. They would be entitled to an advance of seniority rights and would hold such seniority during the continuance of their employment against any employee who should have left the service and might afterward for any reason be taken back into the employ. Employees not reporting for duty or not taking out runs assigned during any emergency would be considered out of the service.

The Third Avenue Railway stated on Sept. 7 that it was endeavoring to carry out in good faith the method provided for the settlement of any of its own controversies as agreed on Aug. 7, and it expected the employees to do the same. On Sept. 6 at a conference between the management and employees further consideration of a proposed agreement was had, and each of its twenty-six sections was fully discussed. As a result a number of them were agreed to, several were passed for further discussion and others, including those relating to the increase in wages, were also considered. It was concluded to arbitrate these questions.

Little Disorder in Early Stages of Strike

Up to Friday morning few signs of disorder were apparent along the affected lines. In some cases missiles were hurled at the elevated trains, and some employees were roughly intimidated, but in general the situation was quiet. Police Commissioner Woods ruled that pickets would not be permitted to ride on the front platforms of cars and attempt to recruit motormen. His reason for ruling against such action, Commissioner Woods said, was that the motorman's attention would be distracted and public safety endangered.

Throughout the city there were 5000 policemen on strike duty. There was one man to each of the surface cars; two to each of the elevated and subway trains being operated; two to each of the subway and elevated station platforms, and others guarding the power stations, sub-power stations, and car barns and terminals.

Commissioner Begins Investigation

On Thursday Chairman Straus of the Public Service Commission subpoenaed Mr. Shonts and Mr. Hedley, representing the railways, and W. B. Fitzgerald, organizer, and William Conway, local president, for the men. Hearings were held throughout the day in an effort to learn the issues involved in the strike and to fix the responsibility for the downfall of the New York Railways settlement underwritten by Chairman Straus on Aug. 7.

At this hearing Mr. Fitzgerald was asked why the strike on the New York Railways took place without any formal request for arbitration. He replied that he and his associates had offered to arbitrate the fairness or unfairness of the contracts on the Interborough system, but this had been declined by the company, and the fact that similar contracts had been prepared for the employees of the New York Railways Company caused the union to abandon its promise to arbitrate. The union had no signed agreement with the Interborough Company, but from previous interviews with Mr. Hedley the men understood that the same policy in regard to treating with the union which had been followed by the New York Railways would be followed also by the Interborough Company. Several statements by Mr. Hedley, taken from the stenographers' minutes of the meetings, were then read into the minutes. The gist of them was that in Mr. Hedley's opinion unless the directors who had molded the policy for the New York Railways Company were to reverse themselves, the Interborough would have to deal with the union.

Mr. Hedley, in his testimony, said that the Interborough had no signed agreement with the union as was the case with the New York Railways. Personally, he had not been in favor of the agreement of Aug. 7 made by the New York Railways. He believed the road could deal with its own employees more effectively than through "outside parties."

Mr. Shonts testified that the directors of the New York Railways on Sept. 6 had voted not to ask their employees to sign individual service contracts. This action was taken about two hours before Mr. Hedley and the union leaders had the conference that resulted in the strike. Asked why Mr. Hedley had not told the union leaders that the company did not intend to send out the service contracts, Mr. Shonts said Mr. Hedley had not heard when he went into the conference that the directors had taken this action, and did not learn of the decision until the next day, after the strike had begun and the working agreements were circulated.

Evils of Union Domination

Views of a Prominent Manager on the Activities of the Electric Railway Labor Agitators

THE steam railroad labor crisis has brought the methods by which steam railroad employees enforce their demands prominently before the attention of people of this country. The question of union domination, however, is not confined to the steam railroads. Many electric railway companies have also had experience with it, and the seriousness of the situation is increasing rather than decreasing. During the past week the editors of this paper have had the opportunity of obtaining an expression of opinion from the manager of an important electric railway property on this general condition. The following is an abstract of his remarks:

How the Amalgamated Association Operates

"From my point of view many serious and vital problems confront the American Electric Railway Association, as representing the street and interurban railway properties throughout the country, but all of these problems pale into utter insignificance as compared to that of having their properties organized by the Amalgamated Association and dominated by that organization

"The present plan seems to be for the Amalgamated Association to pick out properties individually, where from peculiar municipal conditions or a favorable feeling of the Mayor or public officials to the Amalgamated Association, organization is rendered possible and then use the whole resources of the Amalgamated Association, including all of its financial resources, to organize this property. On the part of the street railway companies, each company is permitted to fight out its own battles alone and unaided, except solely from the moral support and sympathy of the other properties, but this is not of any great material assistance to a struggling street railway property which is unable to bear the financial burden imposed upon it by loss in receipts and heavy expense in operation caused by strike conditions.

Railways Must Get Together

"Unless the street railway companies of the country realize the situation that they are facing and get together an organization for combating the tactics and methods followed by the Amalgamated Association and present a united front to the organization of their properties by the Amalgamated Association, I can personally see nothing but disaster ahead for a vast number of the weaker street railway properties throughout the country. The trustee of the mortgages of these properties and the financial interests connected with them usually require that a fund is to be set aside covering losses to the property that may accrue due to fire or tornado, but they make no provision against losses occurring through attacks of the Amalgamated Association, both in loss of receipts and destruction of property, which are vastly more serious at the time of a strike occurring and in their after effects than any losses due to fire or tornado or flood could possibly be.

"In my judgment, if a number of street railway properties in the country would get together and form a nucleus to start with and set aside a percentage of their gross receipts, say, running from 1 to 3 per cent, for a strike fund which would be handled by a committee to be selected, for example, by the American Electric Railway Association, covering funds to be expended for the defense and protection of the properties attacked by the Amalgamated Association, this would be of greater benefit to the street railway and interurban interests of the country than the solution of any other problem now confronting them, and unless the street railways interests of the country wake up to the true conditions of affairs and some plan of this kind is worked out by the American Electric Railway Association, or the larger financial interests of the country who have their money invested in street railway properties, I can see nothing but disaster ahead for them.

Situation on the Boston Elevated

"Take the Boston Elevated property to-day, as an example. If you will look over their last wage agreement you will find that in addition to covering the motormen and conductors, it includes between fifty-five and sixty departments of the company, exclusive as I have just stated of motormen and conductors, reaching even to 'stockroom clerks,' 'treasury department employees,' etc. In case of the disciplining or discharge of a man, or a number of men in any of these departments, regardless of what the nature of their offenses may be, if these men are sufficiently close to the Amalgamated Association and of enough importance to them, the union has simply to say that unless the men are reinstated and given whatever their demands may be, that the whole organization will be pulled out on a strike. This would place the railway company in a position where it could not operate its power stations, or substations, etc., and would leave it utterly helpless even to make any start toward the operation of its property. It is tied hand and foot by the Amalgamated Association, and the street railway property is run only through the sufferance of the Amalgamated Association and practically as it may dictate. I simply refer to the Boston Elevated as I happen to have just read a copy of their last articles of agreement, but there are any number of companies throughout the country which are in exactly the same condition as the Boston Elevated.

An Effective Defense Plan Is Needed

"It would seem from the recent developments in New York City, with the surface, the elevated and the subway lines, that the true character of the Amalgamated Association should be made plain to the street railway interests throughout the country and that this absolutely vital question should arouse sufficient interest among them to wake them up to a plan of defense which would effectually and forever put down the tyranny and oppression now exercised over any property which may have been forced into membership in the Amalgamated Association by methods of strike, rioting, bloodshed and destruction of property, and would cause the street railway companies throughout the country to join together and present a united front against the further wrecking and devastating of street railway properties by an outlaw organization such as the Amalgamated Association.

"When the Amalgamated Association goes into a city to organize the same, it is usually able to get together at least a small nucleus of discontented employees, sufficient to call a strike and make a disturbance. The Amalgamated Association then demands arbitration of its differences to prevent a tie-up of street railway traffic. This appeal usually strikes the uninformed public and newspapers as only fair. An arbitration agreement is then entered into, and this gives the Amalgamated the foothold among the employees of the company that it wants, and then, after getting the property fully organized, unless the Amalgamated gets what it wants, its slogan is 'arbitration be damned.'

"This policy of the unions is perhaps most forcibly evidenced by the attitude of the Brotherhoods in the recently threatened steam railroad strike. They were perfectly willing to arbitrate, but only after they had been granted the only real demand that they expected to gain."

Some Recent Advances in

EQUIPMENT AND ITS MAINTENANCE

Testing Lamps and Fuses Saves Many Steps—Punching Reduces Work on Maintenance Reports—Use of Potential Relays Saves Fuses—Better Rail Steel a Panacea for Rail Corrugation—Graphics Simplify Line Calculations—Snow Scrapers and Water Heaters for the Coming Winter

Punches vs. Pencils for Daily Car-Shop Reports

BY HARRY BRANSON
Superintendent of Equipment Lehigh Valley Transit Company, Allentown, Pa.

The accompanying illustrations show the conductor's car report slip and the daily car maintenance report card which have been designed by the writer to facilitate the keeping of the car maintenance records of the company. The reports are similar in some respects to a conductor's transfer, the striking features being that the conductor's car report slip is punched by the conductor, who reports in this way any defects in his car, while on the daily car maintenance report card the workman records the work which he does on the car by punch marks instead of writing out a report.


Lehigh Valley Transit Co.
CONDUCTOR'S CAR REPORT
Line 9 Run No. 18
Time 1:15A M. Car No. 809
Date 8-20-16 191
Conductor C Rose
Badge No. 928
Motorman E Shaw
Badge No. 1021

FRONT	Motors	REAR
FRONT	Controller	REAR
FRONT	Sand Boxes	REAR
FRONT	Trucks	REAR
FRONT	Vestibule	REAR
FRONT	Headlight	REAR
FRONT	Wheels	REAR
FRONT	Step	REAR
FRONT	Handle	REAR
FRONT	Platform	REAR
FRONT	Signs	REAR
FRONT	Signal Bell	REAR
FRONT	Gong or Whistle	REAR
FRONT	Circuit Breaker	REAR
FRONT	Fuse Box	REAR
FRONT	Doors	REAR

Trolley	Trolley Stand
Brakes	Fender
Panels	Glass
Register	Register Rod
Signal Cord	Ventilators
Airmotor	Stove
Seats	Hand Straps
Lamps	Light Switches
O. K.	

Note—The front of Car is the end having the Light Switch.
Form C S—30m-7-1-'15-o.k. pstd co

CONDUCTOR'S CAR REPORT

It is often a difficult matter to get shop men to write. They are liable to slight a written report of their work by omitting some of the important facts or by not writing clearly, while if care is taken in making a written report considerable amount of time is used. The use of the daily car maintenance report card solves the difficulty.

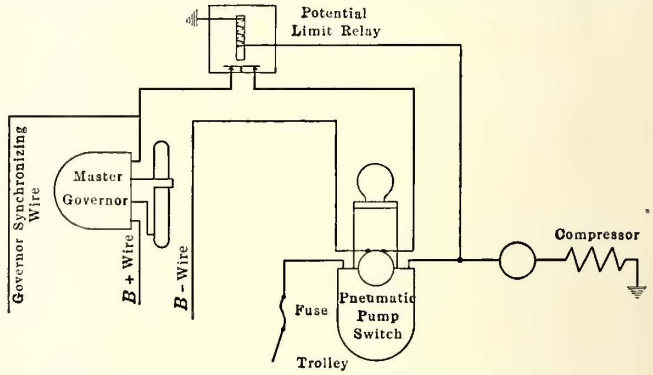
Each car is provided with a card holder, and in the morning before the car leaves the carhouse the previous day's card is removed and a new one put in its place. When the car is in the carhouse for inspection or repairs each workman, by means of his punch, records on the card the jobs which he has done. Each repairman and inspector has his own punch and each punch makes a perforation of different shape, so that a permanent record is made showing both the work done and the man who does it.

In the office the data on these cards are transferred by the clerks to the monthly record sheets and the cards are filed in an open rack, which has a compartment for the records of each car. If a car is overhauled a green tag is put over the end of the card. These tags are visible after the cards are filed, so that it is very easy to pick out the card giving the overhauling record. In the same way the painting of a car is shown by a red tag. The card shown in the illustration is for a car that has been overhauled.

Potential Relay Saves Fuses in Compressor Circuits

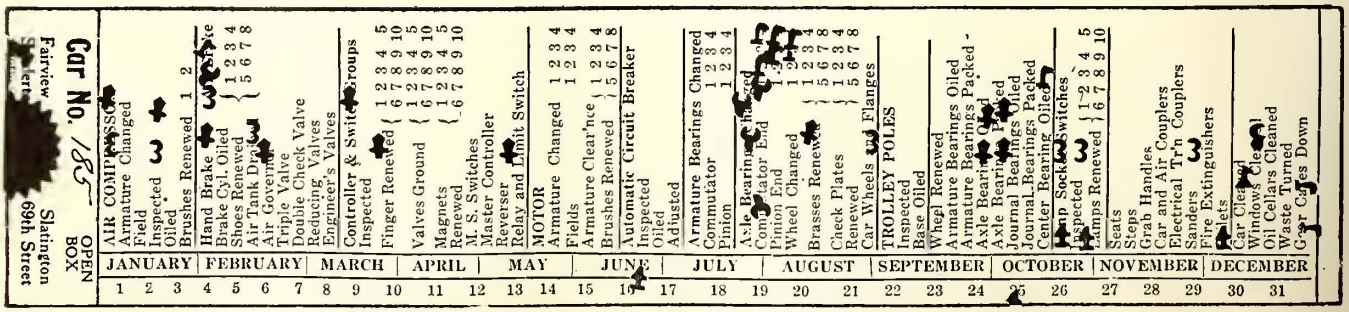
BY GEORGE H. BLECKWEDEL
Inspector Long Island Railroad, Morris Park, N. Y.

Considerable difficulty was formerly experienced on the multiple-unit cars of this railroad, due to the "blowing" of excessive numbers of fuses in the air compressor motor circuits. These are 30-amp., 600-volt fuses. This fuse blowing was objectionable, not only on account of the cost of the fuse, but train delays were caused due to the motormen having to replace blown fuses in order to keep up the air pressure.



WIRING DIAGRAM FOR POTENTIAL LIMIT RELAY FOR MOTOR-COMPRESSOR CIRCUIT

This matter was checked up carefully about four years ago and it was found that the fuses invariably blew on long feeders where the voltage was low. In making tests on these feeders it was learned that when a heavy load was applied, such as was caused by a four-



DAILY CAR MAINTENANCE REPORT CARD WHICH IS PUNCHED BY THE SHOP MEN TO RECORD THE WORK DONE

car or five-car train taking power, the voltage sometimes dropped to one-half its normal value.

The releasing of this heavy load produced a voltage kick which was anywhere from one and a quarter times to twice normal voltage. If the compressors were running at the time they invariably flashed over, blowing the fuses.

In order to overcome this difficulty various plans were tried, such as the use of choke and resistance coils in series with the compressor motor circuit, but these afforded very little satisfaction. It was finally decided to build a relay that would operate at 725 volts and, on application of this potential, open the 14-volt magnet circuit which held the compressor pneumatic switch closed. Several of these were built and operated very well.

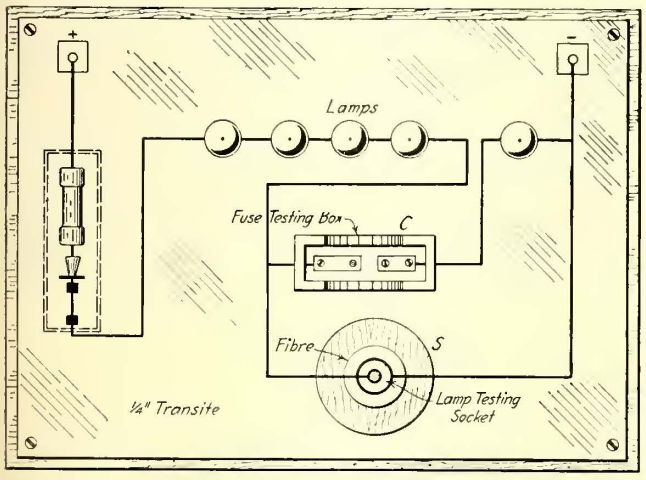
After one year's trial 100 more were installed, and after two years' service these have cut the consumption of fuses on the cars about 60 per cent. The wiring diagram on page 454 shows how the relays were connected in the circuit.

Combination Fuse and Lamp Test Board

Time Is Saved by Using This Testing Outfit in the Maintenance Storerooms

BY E. D. RANSOM, B.E.

Considerable time is wasted in maintenance work in separating good fuses and lamps from those which are burned out or otherwise defective. Many times a man will traverse a considerable distance between a storeroom and a car only to find that the lamp or fuse he has secured to replace the defective one is also defective. Where locking receptacles are used the time wasted in installing a defective lamp is still greater. To eliminate this waste of time the test board shown in the accompanying illustration has been installed near the door of each maintenance shop stockroom of a well-



COMBINATION FUSE AND LAMP TESTING BOARD

known railway system. All lamps and fuses can now be simply touched to the proper contacts as they are being taken out of the stockroom, thus making certain that the fuse or lamp is a good one.

The test board consists of five lamps, a fuse test box, *C*, and a stripped socket, *S* for the lamp test. If a fuse is placed across contacts in the test box the lamps which form a standard five-light circuit will light if the fuse is a good one. The lamp to be tested is pushed in the stripped socket *S* and the lamps in this circuit will light if the lamp being tested is not defective.

The sides of the fuse test box are of maple, the wood being cut away to form arched gaps which permit a man's hand to go far enough into the box so that the fuse which he is holding can be touched to the copper contact blocks in the bottom. These contact blocks consist of two sections of scrap bar copper about 1 in. x ¼ in. in cross-section, laid in the bottom of the box, and flush with the surface. The bottom is made of transite, and the contact blocks are held in place by screws which do not go through the transite into the wood below. The gap between the contact blocks is arranged so that the smallest fuse will just bridge the gap while the over-all length of the contacts from end to end is arranged to take the largest fuse used.

The lamp test socket is made of an ordinary socket, the threads being pounded out leaving the sides smooth and slightly larger in diameter than the original threads.

In this way a lamp has merely to be pushed in to make contact. Lamps can be tested in this socket as fast as a man can pick them up and put them down again. Around the socket there is a large wooden rosette with a ring of fibre between it and the metal part of the socket. As this rosette extends beyond the top of the socket, it protects the workman against accidental contact.

The board proper on which the testing apparatus is mounted consists of a wooden base entirely covered with ¼-in. transite and equipped with a standard control switch and fuse protected by a box with a door.

In addition to trying out lamps and fuses for immediate use, all lamps received at the shops of this company are tested when delivered, as they can be tested as fast as they are unpacked. The test boards have proved to be very convenient and the time saved makes them well worth the small cost of construction and installation.

Long-Lived Poles

Some interesting facts on the life of poles have recently been obtained by the Lindsley Brothers Company, Minneapolis, Minn., dealers in Western and Northern cedar poles. The fact that this company was established in 1896 and began shipping Western red cedar poles into the Central States in 1899 affords it unequaled opportunity for making a study of this kind.

Some months ago the company wrote to a number of concerns to which it had furnished red cedar poles in these early days asking about their present condition. A company in St. Paul, Minn., reported that of a lot of poles set in 1899, 90 per cent are still in very good condition and should last at least five years longer before reinforcement is necessary. Another company in Fort Worth, Tex., reported that of the lot set in 1899 none had been removed on account of rotting. A company in Milwaukee made the same statement, and one in Louisville reported that of sixty poles set in 1901-1902 only two had been replaced and the others seemed good for ten years. Reports of very similar tenor, with the year in which the poles were set, were received from Minneapolis, 1900; Dallas, Tex., 1899; Menominee, Mich., 1899; Iron Mountain, Mich., 1899.

In addition to these investigations, which were conducted by mail, a special study was made by G. L. Lindsley, of the firm, of some poles shipped to Grand Rapids, Mich., in 1900. These poles were still standing, apparently in as good condition as when first set. On closer investigation, a little sap rot was found just below the ground line but not enough to weaken the pole in any way. Other red cedar poles which were set in 1900 in Detroit were also found by Mr. Lindsley to still be in good condition.

Rail Wear and Corrugation

English Rail Expert Discusses the Curved Head Rail and Commends a New Process Steel for Tramway Rails

In the issue of the *Railway and Tramway World*, London, England, for Aug. 10, 1916, considerable space is devoted to a discussion of rail design, and rail wear and corrugation, based partly upon articles which have appeared in recent issues of the Electric Railway Journal. In one of the leading articles Robert B. Holt,

CROSS SECTIONS OF LEEDS 1910 CURVED HEAD RAIL AND WORN TIRE SHOWING INTIMATE CONTACT OF TREADS

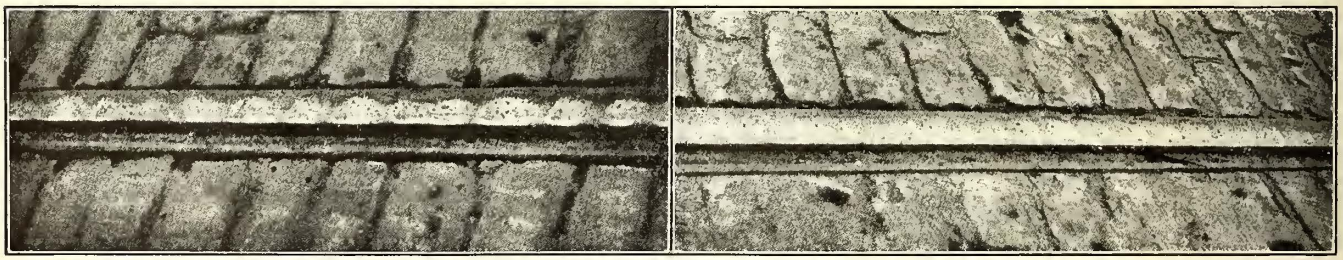
highways and permanent way engineer, Leeds, summarizes the progress which has been made in the last five years as exemplified particularly in the city of Leeds.

In articles published in the *Railway and Tramway World* in 1910, Mr. Holt had called attention to the inequalities in wear of rails and wheels due to defects in the design of both. He had noted that in service rails assume a convexity of about 12 in. radius, and he referred in these articles to the imperfect contact which existed between new rails with flat or inclined plane treads and worn wheels, and between partly worn rails and new tires. As a result of the poor contact there was detrusion of the metal in the rail head. To overcome the defects mentioned, Mr. Holt had designed a rail with a curved head of 12-in. radius which was put into operation in Leeds in 1910. This is shown in cross-section in an accompanying illustration, which shows a worn tire in contact with a new rail. The operation of this rail has been satisfactory. Although Mr. Holt favored a curved wheel tread contour no alteration had been made in the contour of the wheels in Leeds.

In the present article Mr. Holt states that many other British tramways have adopted convex rail heads, and that the British engineering standards committee is said to be contemplating alterations to its rail sections in this direction. He then quotes at length from an article by R. C. Cram appearing in the issue of the Electric Railway Journal for Dec. 25, 1915, page 1246. He agrees with Mr. Cram in concluding that imperfect contact causes detrusion of rail-head metal. However, the experience in Leeds has shown that Mr. Cram's conclusions as to corrugation do not hold, because in Leeds there has been no diminution in the tendency for rails to corrugate.

Quoting from an interim report of the Municipal Tramways Association committee on rail corrugation, he states that the investigations of this committee "show that the occurrence of corrugation is independent of the number of cars which have passed over the rails"; that "corrugation produced by one set of cars may be entirely removed by another set of cars running in place of the first, and may also be caused and removed by the same set of cars under apparently the same conditions"; that "corrugation appears on the rails independently of whether the wheels are being actively driven by the motors or not. The committee is of the opinion that the explanation of this may be the slip and skid taking place owing to the different diameters of the wheels, which difference largely results from the unequal wear produced by the relative difference in the speeds of the motors." The committee further states that "it considers that it has ample evidence that the force or forces responsible for the reaction which results in rail corrugation are external to the rail. It is realized, however, that while rails rolled to any known specification are affected to a certain degree by this reaction, some are not affected to the same extent as others. From evidence collected, coupled with experience of the members of the committee, it is of the opinion that steel for rails can be obtained which is more durable and less liable to the development of corrugation than the ordinary varieties of steel in use at present."

Mr. Holt next takes up an article by G. E. Pelissier appearing in the issue of the Electric Railway Journal for Sept. 30, 1911, page 528. He commends this article, but directs attention to Mr. Pelissier's contention that most corrugation can be eliminated by so designing the rail head, wheel tread and wheel flange, and by so laying the rails that the maximum intensity of pressure occurs near the center of the rail tread, and as far as possible from the gage line fillet. He also quotes Mr. Pelissier's recommendation that the elastic limit of the steel should be raised and the area of contact between rail and wheel increased. Although the Leeds rail and that designed by Mr. Cram fulfill Mr. Pelissier's requirements regarding contact, yet in the Leeds rail corrugation still occurs. Mr. Holt's conclusion is that attention to the composition and method of manufacturing steel offers the only practical way of dealing with corrugation.



CORRUGATION DEVELOPED ON LEEDS RAIL AFTER PASSAGE OF 523,350 CARS AND 300,000 CARS RESPECTIVELY

On the Leeds tramway during the past eight years Sandberg silicon steel rails have been used. Although immunity from corrugation has not been entirely secured, only a relatively slight amount of grinding has been necessary. During the past year, air-cooled steel of the same composition has been experimented with in Leeds. This cooling is a patented process which can be applied to any rail, and it is said to increase the life

from 100 to 150 per cent. Tests made at Leeds showed about 6 per cent more tensile strength and 13 per cent less elongation for the new as compared with the ordinary Sandberg rail. So far no corrugation has developed with the new rails and superior wearing qualities have been shown.

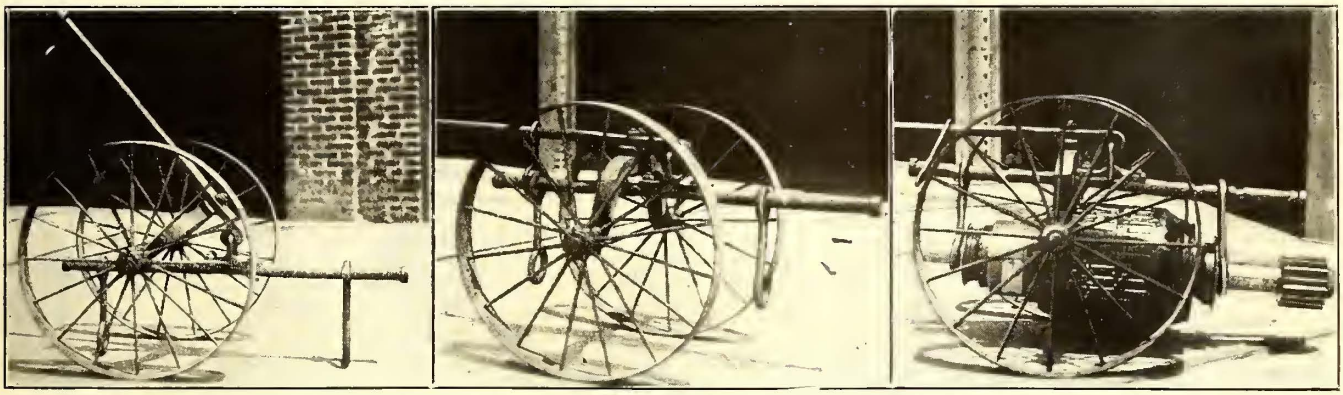
In the same issue of the *Tramway and Railway World*, and on the same general subject, is a comment upon the results secured with differential gear drive on the Huddersfield Corporation Tramways, the details of which were described in the issue of the ELECTRIC RAILWAY JOURNAL for July 3, 1915, page 26. By this plan the wheels are driven independently, so that there is no slippage on curves. This type of drive has been in use since October, 1914, and although there has been no reduction in tire wear or current consumption, rail corrugation has been eliminated.

Armature Buggy Constructed at Small Expense

A simple armature buggy has been designed and put in operation by E. G. Daniels, master mechanic Macon Railway & Light Company, Macon, Ga. The accompanying illustrations show the construction and operation of this device.

In using the buggy, the workman rolls it to the armature and lowers the carriage by raising the long handle. The eye-bar is slipped over one end of the armature shaft and the other end of the shaft is hooked to the carriage as shown. The carriage is then raised by lowering the handle, and when the latter is hooked in position the outfit is ready to be rolled to any part of the shop.

The buggy is of rugged construction and the cost to the company was small, as the wheels were the only parts that had to be purchased. A device of this kind is not only serviceable for handling armatures but may be used in handling many heavy pieces of equipment which can readily be attached to the carriage. The notches on the carriage make it possible to handle armatures of different lengths.



ARMATURE BUGGY USED IN THE SHOPS OF THE MACON, GEORGIA, RAILWAY & LIGHT COMPANY

Improved lighting, a reduction in lamp breakages and thefts, as well as in the amount of energy consumed, and a saving of 175 ft. of wire, were the results obtained by modernizing the lighting systems of the single-truck cars used on the lines of the Public Utilities Company, Evansville, Ind. Two lines of wire in the new plan were substituted for seven lines in the original lighting circuits. In the new scheme seven 56-watt lamps light the car body and vestibules, one lamp is in the headlight and the two other lamps are in the illuminated signs.

Finding Pole and Wire Loads

Handbooks on electric railway engineering supply many data and formulas for pole and wire load calculations, but most of the methods recommended for exact determinations include mathematical steps too far advanced for ready use by those whose engineering training has largely been obtained in the "school of hard knocks." In planning their work few line foremen resort to mathematical calculations which include algebra and trigonometry. A rule-of-thumb backed up by practical experience serves their purpose.

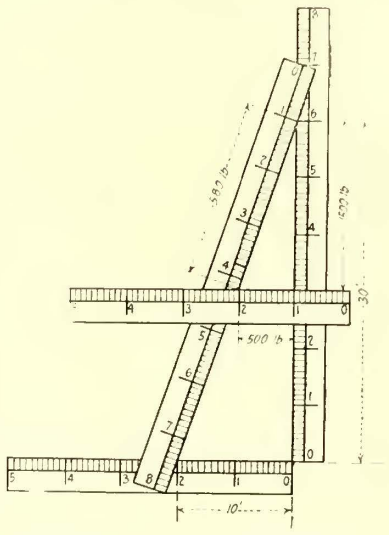


DIAGRAM SHOWING USE OF SCALES IN LINE CALCULATIONS

For those who frequently have to determine how poles should be loaded and guyed, and how wires and cables should be stressed, some very simple ways of figuring are set forth in a new booklet just issued by the Bates Expanded Steel Truss Company, Chicago, Ill. The methods give the results of the experience of A. S. Bates.

Mr. Bates gives a number of tables from which ordinary line problems can be solved readily. By means of problems he illustrates the use of the tables. He also gives a number of illustrations to show how the results of calculations based on the tables can be checked or the problems solved graphically by means of scales. The use of these can best be explained by an example.

In the accompanying figure are shown four scales arranged for a guy-wire problem. Assume that a horizontal pull of 500 lb. on a pole applied at a point 30 ft. above the ground is to be counteracted by means of a guy attached at the same point and entering the ground 10 ft. from the base of the pole. The problem is to determine the pull in the guy wire and from this the safe size of wire. Incidentally the vertical compression on the pole produced by the guy wire will be of interest.

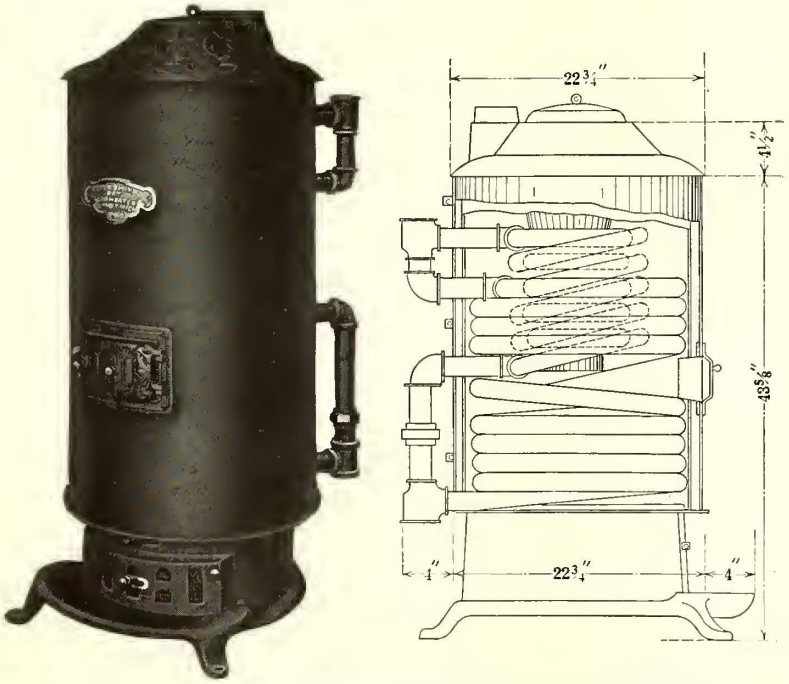
For convenience the scales should be divided into inches and tenths of inches. Two of them are placed at right angles as shown for the purpose first of determining the angle of the guy. Five feet to the inch is selected as a convenient scale of length. A third scale is laid diagonally across the first two from point 6 (rep-

resenting 30 ft. height) on the vertical scale to point 2 (representing 10 ft. on the ground) on the horizontal scale.

Remembering now that the forces involved act along directions parallel to the three scales, the next step is to choose a scale for the forces. A scale of 500 lb. to the inch is convenient. A fourth scale is then laid across the vertical and inclined scales, in a horizontal direction, and is moved upward until they intercept on it just 1 in., which represents the horizontal pull on the pole. This completes a triangle of which the other sides, to scale, represent respectively the pull in the guy wire and the vertical force in the pole. From a table of wire strengths the proper size of guy wire can be selected.

Hot-Water Heater for Steel Interurban Cars

Coincident with the increase in the number of steel interurban cars has been the demand for a hot-water heater which would heat them comfortably when they were operating at high speeds during extremely low temperatures. To supply this demand the Peter Smith Heater Company, Detroit, Mich., has just put on the market a new hot-water heater quite similar to its No. 1-C type heater, which has been in successful operation on interurban cars for a number of years. Although the new heater has greater heating capacity than the 1-C type, this has been obtained without requiring much additional floor space. The new hot-water heater occupies a space 22¾ in. in diameter, which is 2¾ in. larger than that required for the 1-C type heater, and the height of the two heaters is the same. This new type hot-water heater for steel interurbans is shown in the accompanying illustrations.



VIEW OF HEATER AND CROSS SECTION SHOWING COIL ARRANGEMENT

Two features in the design of the new hot-water heater are to be found in the arrangement of the hot-water coils and the manner of connecting them in the heating system. Two sets of coils are mounted in the heater drum, the lower one of which is made of 1½-in. pipe and it serves as a fire pot, and the upper coils lie directly over the fire. The outer portion of this upper coil is made up of 1½-in. pipe, and the two inner coils are made up of 1¼-in. pipe. The magazine feed chamber passes down through the center of the upper coils, and it is of sufficient capacity to supply coal for a twelve-hour run. It will also be noted that the heater coils are interconnected on the outside of the heater casing, and that a 1½-in. air space is provided between the inner and outer casings to insulate the heater so that it may be installed close to the interior wood finish of a car.

In connection with the hot-water heater installation it has been found preferable to provide a double circulation system with a set of heater coils on each side of the car body. This reduces the hot water travel one-half in making a complete circuit of the heating-pipe system, and thus insures a more uniform temperature throughout the car body. Piping systems of this kind are just as readily arranged for center-entrance cars as for end-entrance cars. The heater may be installed at any convenient point in the car, and a piping system provided which will offer free water circulation, and, therefore, uniform heat distribution.

Concreting in Cold Weather

The Portland Cement Association has formulated the precautions necessary to insure best success with concrete work in cold weather, with the statement that while there are limitations to the practicability of doing concrete work in winter it can be done successfully by following a few simple rules. Some of the suggestions are in substance as follows:

During the first few days following the placing of concrete, alternate freezing and thawing at comparatively short intervals will damage it; therefore, it is necessary so to mix, place and protect the concrete that early hardening will be complete before the work is exposed to freezing temperatures.

Sand and pebbles or broken stone used must be free from frost or lumps of frozen material. If these materials contain frost or frozen lumps they should be thawed out before using. As cement forms but a relatively small bulk of the materials in any batch of concrete, it need not be heated, but mixing water should always be heated.

Although adding common salt to mixing water will prevent freezing of concrete that has not hardened, there is a limit to the quantity of salt which may be added if the final strength of the concrete is not to be affected. Salt simply lowers the freezing point of the mixing water; it does not supply what is most needed—heat and warmth. It delays, rather than hastens, the hardening of the concrete.

Sand and pebbles or broken stone and mixing water must be heated so that the concrete when placed shall have a temperature of from 75 to 80 deg. Fahr. Some sands, pebbles and varieties of broken stone are injured by too much heat. A temperature not exceeding 150 deg. will generally prove most satisfactory.

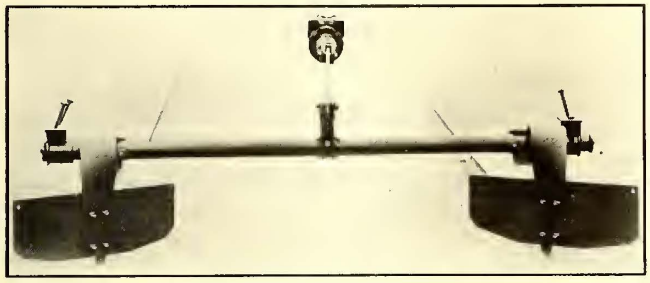
Concrete should be placed immediately after mixing so that none of the heat will be lost before placing in the forms. Metal forms and reinforcing should be warmed before the concrete is placed. Forms can be warmed by turning a jet of steam against them or by wetting with hot water. The concrete should be protected immediately after placing. Canvas covering, sheathing, housing in the work, or hay or straw properly applied will furnish the required protection for some work. In ad-

dition to those means, small oil or coke-burning stoves or salamanders may be used in inclosed structures. In severe, cold weather protection should be continued for at least five days. Temperatures which may not be low enough to freeze the concrete may, nevertheless, delay its hardening for a considerable time.

Frozen concrete sometimes very closely resembles concrete that has thoroughly hardened. When frozen concrete is struck with a hammer, it will often ring like properly hardened concrete. To determine whether concrete has hardened or is simply frozen one board may be removed from some section of a form, and hot water poured on the concrete, or the flame of a plumber's blow torch or a jet of steam under pressure may be turned against the concrete. If the concrete is frozen the heat will soften it by thawing the water contained in it. Although concrete which freezes before early hardening has been completed may not be permanently injured if after thawing out it is not again exposed to freezing until hardened, nevertheless protecting the concrete against the possibility of freezing is best.

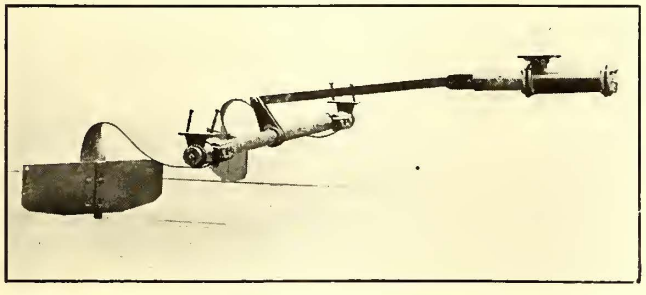
An Improved Snow Scraper

The Root Spring Scraper Company, Kalamazoo, Mich., has placed on the market a new snow scraper for use on low-level or other city cars. This scraper, which is shown in the illustrations herewith, consists of a shaft, an operating arm, and a spring scraper attachment for each rail. The design is such that the shaft



FRONT VIEW OF SCRAPER SHOWING ADJUSTABLE BLADE RESTING IN RAIL FLANGES

is as low as 10 in. to 12 in. from the top of the rail and can be attached to the car sills or platform arm directly or by means of brackets. The operating arm on the shaft is adjustable, so that it can be set to give any desired tension to the scraper flanges on the rail. Only one-half turn of the wheel, which is located in the cab

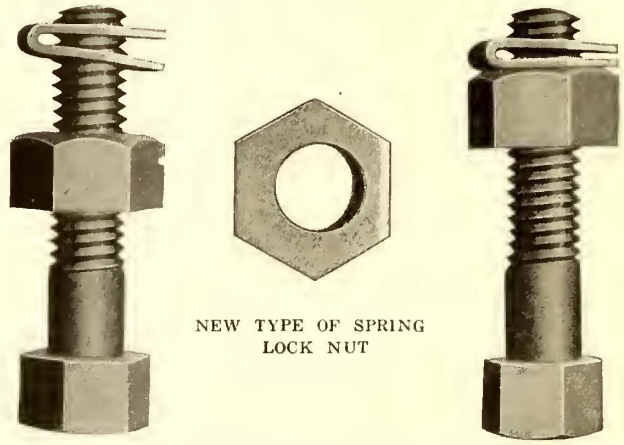


SIDE VIEW OF IMPROVED SCRAPER SHOWING OPERATING MECHANISM

of the car and attached to the operating arm, is necessary to lock the scraper to the rail with any pressure desired. The springs, which are attached to the scraper flanges, are so shaped that they will yield when going forward and will not turn under when the car is going backward. The blades of the scraper, which set into the flange of the rail, are adjustable and can be dropped or lowered as they gradually wear down. This scraper has a concentric locking device which automatically locks the blades of the scraper to the rail or in a carrying position. It can be operated by air, by wheel and staff, or by lever hand power.

A New Lock Nut

The Industrial Development Corporation, Chicago, Ill., is placing upon the market a form of spring lock nut which is said to have been proved effective by long continued tests. It consists of a punching of spring steel bent double, as shown in the accompanying illustrations, and tempered. The punching is so shaped

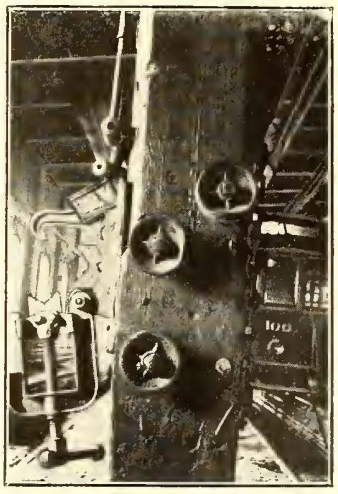


NEW TYPE OF SPRING LOCK NUT

that when bent to finished form the outline is that of a standard nut. Holes of diameter slightly larger than the bolt are punched to be somewhat offset when the lock nut is bent to form. When the lock nut is drawn into close contact with the main nut it binds in the bolt threads, but friction between the two nuts causes it to follow the main nut on the thread.

A Pipe Bender Made of Trolley Wheels

Three old trolley wheels mounted on lag screws driven into an 8-in. x 8-in. wooden building column serve as the device for bending fender rods and pipe in the shops of the Galesburg (Ill.) Railway Lighting & Power



PIPE-BENDING DEVICE

Company. The arrangement of these wheels is shown in the accompanying illustration. The picture also shows a pipe vise mounted on the same building column, where it is convenient for pipe work, which is practically all done at this point in the shop.

NEWS OF ELECTRIC RAILWAYS

RESETTLEMENT PROPOSED IN OAKLAND

Chamber of Commerce Submits Charter Amendment to Aid Railway—Is Seeking Election by Initiative

The Chamber of Commerce, Oakland, Cal., as the result of an appeal by the San Francisco-Oakland Terminal Railways for help in solving its financial and operating difficulties, has drafted a charter amendment to be submitted, if possible, to the people for ratification at the coming November election. The City Council has failed to pass a resolution to place the amendment on the ballot, but an attempt is being made to do this by means of an initiative petition. Various items regarding the proposed reorganization of the San Francisco-Oakland Terminal Railways have previously been reported in these columns.

The proposed charter amendment provides for a resettlement franchise similar to the Kansas City and Chicago plans, but with alleged improvements. In brief, it provides for an appointment by the Mayor of an advisory board with seven members to co-operate with the City Council in drafting the franchise ordinance. This would be submitted to the people for ratification at the spring election in 1917. The franchise would be for an indeterminate period on condition that the city might buy out the system on six months' notice and might transfer its right to buy to a third person, firm or corporation.

The conduct of the traction affairs would be carried on by a joint board, one member representing the city and one the company, with an arbitrator to be called in if necessary. The net profits would be divided between the city and the company, the city to get not less than 55 per cent and the company to be allowed 6 per cent on its valuation and a proper amount for maintenance, operation, taxes, insurance and depreciation.

In the event of purchase by the city, the price would be the valuation of the property as fixed by the State Railroad Commission at the time of granting the franchise, plus the cost of all additions, extensions and betterments as authorized by the board of control and minus depreciation as fixed by the same board and also minus properties sold and abandoned. The city might assume the outstanding obligations of the company, subject to the State constitution, up to the valuation fixed by the State Railroad Commission, the bonds then to be secured by the city's credit or by a lien on a fixed percentage of the gross earnings.

The charter amendment, as first outlined, was intended to apply only to the affairs of the traction company, but as the special committee of eleven appointed by the Chamber of Commerce to unravel the tangle got further into its investigations, it was decided to broaden the amendment so as to permit any public utility to seek a resettlement franchise.

In addition to the principal provisions of the plan as outlined above the charter amendment provides that resettlement franchises shall be let to the highest bidder, 55 per cent of the net annual profits to be the minimum bid, and bids to be raised not less than one-half of 1 per cent. It is also provided that no other street railway or steam railroad shall use the tracks of the franchise grantee, except on express permission of the city.

In the final draft of the amendment the committee had the assistance of George K. Weeks, president San Francisco-Oakland Terminal Railways; W. I. Brobeck, its attorney, and C. A. Beardsley, counsel for the stock and bond holders. Mr. Weeks is reported to have said, after the amendment was whipped into shape for submission to the popular vote, that he considered the plan the best yet evolved in the United States for straightening out street-car difficulties.

Work was started, on Aug. 15, under the direction of the special committee of the Chamber of Commerce, to place the proposition upon the ballot for November. It was planned to obtain 15,000 names as soon as possible to file with the city authorities, asking the election. The names must be filed not later than Sept. 7. The decision of the committee to force the issue followed the refusal of the City Council to take up the plan.

NORFOLK FRANCHISE NEGOTIATIONS FAIL

The proposed new franchises to the Virginia Railway & Power Company in Norfolk have not been acted upon. The old City Council went out of existence Aug. 31. On Sept. 1 the company published in the daily papers a notice in regard to the withdrawal of tickets from the lines of the Norfolk Railway & Light Company. This was followed the next day with a statement of the reasons for the withdrawal. The contract referred to is a ten-year contract with the city covering gas and electric rates and the sale of tickets at stations. It expired on April 1, 1916.

The City Gas Company has filed new gas rates with the State Corporation Commission. The price runs from $1.10 down to 80 cents, with a discount of 10 cents per thousand, with additional discounts of 10 cents and 5 cents per thousand to very large consumers. The special committee appointed to make a report on gas rates failed to present its report before the old Council went out.

The advertisement which appeared in the papers on Sept. 1 is as follows:

"The contract between the Norfolk Railway & Light Company and the city of Norfolk, providing for the sale of tickets at certain stations in the city at a price of six tickets for 25 cents, good on cars of said company, having expired by limitation, the street car fares authorized by the franchise contracts under which the lines of said company are operated will be restored and the sale of such tickets at said stations will be discontinued after Sept. 10.

"No tickets sold after Sept. 10, 1916, except school tickets as hereinafter stated, will be accepted on the cars operated on the lines of the Norfolk Railway & Light Company except in that portion of the city of Norfolk which was formerly the town of Berkley wherein the franchise ordinances require the sale of tickets.

"While not required by the franchise, the company will continue until further notice the sale of school tickets under the same regulations as have heretofore existed.

"All unused tickets will be redeemed on presentation at the company's office in Plume Street in the city of Norfolk.

"As a result of this change there will be a straight 5-cent fare on all lines operated by the Virginia Railway & Power Company in Norfolk, except the line known as the Bay Shore line; the lines in Berkley, and the line between Norfolk and Berkley."

The statement of Sept. 2 by the company to the public was concluded as follows:

"The contract with the city providing for the sale of tickets at certain stations having expired, the company is now remanded to the terms of its original franchise ordinances prescribing its rights and obligations in operating upon the streets of the city, and since these ordinances authorize a charge of 5 cents per passenger and do not require the sale of tickets, the sale of such tickets will be discontinued from and after Sept. 10, and no tickets will be sold for use on the cars of the Norfolk Railway & Light Company other than the lines in what was formerly the town of Berkley, after that date.

"It is believed the public will realize the reasonableness of this action on the part of the company. Not only is the fare of 5 cents a reasonable, and in fact a low fare, as it has recently been declared to be by the Council in fixing the fare on the jitney bus, but as the company is required to live up strictly to the provisions of its contract in favor of the city and to discharge fully its obligations thereunder, it is reasonable that it should expect the benefits of such contract upon the faith of which the investment in the properties was made and the obligations of these contracts assumed."

ELECTRIC RAILWAYS EXEMPTED

The act of Congress fixing the workday of railroad employees after Jan. 1, 1917, at eight hours specifically excludes the electric railways from its provisions. Section 1 of the act, which contains this exemption, is as follows:

"Sec. 1.—Beginning Jan. 1, 1917, eight hours shall, in contracts for labor and service, be deemed a day's work, and the measure or standard of a day's work for the purpose of reckoning the compensation of all employees who are now or may hereafter be employed by any common carrier by railroad, except railroads independently owned and operated, not exceeding 100 miles in length, electric street railroads, and electric interurban railroads, which are subject to the provisions of the act of Feb. 4, 1887, entitled 'An Act to Regulate Commerce,' as amended, and who are now or may hereafter be actually engaged in any capacity in the operation of trains used for the transportation of persons or property on railroads, except railroads independently owned or operated, not exceeding 100 miles in length, electric street railway, and electric interurban railroads from any State or Territory in the United States or the District of Columbia, to any other State or Territory of the United States or the District of Columbia, or from one place in a Territory to another place in the same Territory, or from any place in the United States to an adjacent foreign country, or from any place in the United States through a foreign country to any other place in the United States.

"Provided, That the above exceptions shall not apply to railroads though less than 100 miles in length whose principal business is leasing or furnishing terminal or transfer facilities to other railroads, or are themselves engaged in transfers of freight between railroads or between railroads and industrial plants."

PENNSYLVANIA JITNEYS MUST GET SERVICE PERMIT

The Public Service Commission of Pennsylvania, in opinions rendered on Sept. 6, held that Bryan Blythe and W. T. Alter, operating jitneys in the vicinity of Natrona, Allegheny County, must obtain certificates of public convenience from the commission. The decisions in the main follow the lines of those handed down in the Scranton cases decided by Judge Mongahan, Philadelphia, when a commissioner. The Allegheny Valley Street Railway was the complainant. In the case of Blythe, however, it is pointed out that he had made an application for a certificate and that when a hearing was held on a protest filed by the street railway he did not appear. The opinion says:

"The granting of certificates of public convenience authorizing individuals to engage in the business of a common carrier of passengers is of grave moment to the public. Not only the public's convenience, but their safety is involved. It seems proper that the commission should be informed of the character and fitness of such applicants and also as to their ability to perform the service which such certificates of public convenience would impose upon them."

The opinion contains an order that Blythe must stop operating until he obtains a certificate. A similar order is also made in the case of Alter.

EDITORIAL TRIBUTES TO MR. CHRISTY

The principal Akron papers said editorially of the late Will Christy, vice-president of the Northern Ohio Traction & Light Company, Akron, Ohio:

"Will Christy had not an enemy in the whole city which had been his home since boyhood, which speaks better than all else for the exemplary manner in which he had lived and for the strength of his character. He was always loyal and helpful to his friends, and when fortune favored his business endeavors the resulting wealth and influence that were his did not abate in the slightest degree the genuinely democratic nature of his impulses and associations."

"In the death of Will Christy, Akron loses a valuable citizen and the traction industry of the country one of its far-seeing leaders. Mr. Christy was a practical dreamer with the faculty of making his dreams come true. He saw Akron and his work in a big way—that was the secret of his success. He was still dreaming of big things for Akron when he was called from his busy desk. He was not content to work in his own field. He was interested in all industry, in finance, in Akron. His aid, unostentatious and unsolicited, has gone to many industries and many philanthropies."

JOINT ENGINEERING BOARD FORMED IN MINNESOTA

The engineers of Minnesota believe that through co-operation of various engineering societies they can be more useful to their communities, and are attempting to bring about closer co-operation through the formation of the Minnesota Joint Engineering Board. The constituent societies represented on the board are the Northwestern Association of the members of the American Society of Civil Engineers, the Minnesota Section of the American Society of Mechanical Engineers, the Minnesota Section of the American Institute of Electrical Engineers, the Minnesota Surveyors and Engineers Society, the Engineers Club of Minneapolis, and the Civil Engineers Society of St. Paul. It is hoped that through this central organization the activities of the engineers of the State may be more closely correlated and more accomplished for the public welfare. Geo. W. Rathjens of St. Paul is the secretary of the board.

CROSSTOWN RAPID TRANSIT LINE URGED FOR BROOKLYN

That a crosstown subway in Brooklyn reaching into Queens is indispensable to the proper development of those two boroughs is pointed out by Commissioner Travis H. Whitney and LeRoy T. Harkness, chief of rapid transit, of the Public Service Commission for the First District of New York, in a report to that body dealing with the third-tracking of the Fulton Street elevated line in Brooklyn and with the whole transit situation in the borough of Brooklyn. The report also recommends the institution of negotiations with the New York Municipal Railway Corporation looking toward the fixation of a price at which the existing elevated railroads in Brooklyn can be taken over by the city.

The report suggests a subway extension connecting with the Fourth Avenue line at Fulton Street and Ashland Place and extending under Fulton Street to a point near Cumberland Street, where a connection might be made with the Fulton Street elevated line. If the opportunity were made for such connection, it is pointed out, the existence of the present Fulton Street elevated tracks east of Cumberland Street will be obviated. The report also suggests that a line in Livingston Street, Brooklyn, be built with funds raised by assessment upon property benefited together with certain funds which it is proposed shall be provided by the city.

The crosstown line, it is pointed out in the report, will furnish a through route from Coney Island to Queens, uniting disjointed sections of both boroughs. It is suggested that the crosstown line be built with funds raised by assessment upon property benefited. No statement of the cost of this line, it is pointed out, can be made at this time. The report holds against the suggestion which has been made of abandoning the Nassau Street line in Manhattan immediately and turning the funds thereby released toward the construction of the crosstown line. Several other suggestions are made in the report, one being to the effect that investigation and consideration of the plans and scope of the proposed crosstown line improvement be made at once and that the preliminary steps toward laying out an area of assessment be undertaken. It is suggested that a committee of ten be named, five appointed by the New York Municipal Railway Corporation of Brooklyn and five by the Public Service Commission, to institute negotiations with the railway looking to the making of a valuation of the elevated railroads in Brooklyn. The report states that if this committee is appointed at once such rapid progress may be made that within a period of a few months it can be shown whether success or failure will attend the carrying out of the proposed plan.

The report also renews the recommendation made in a previous report by Commissioner Whitney and Mr. Harkness in which they disapproved a plan for the transfer of the elevated tracks from lower Fulton Street, Brooklyn, to Adams Street. The report points out that this project would cost a very large sum of money and would be hardly worth the expenditure.

A PLEA FOR THE TROLLEY

Further evidence of increasing newspaper appreciation of electric-railway problems is shown in an editorial in the Wareham (Mass.) *Courier*. That paper recently said in part:

"These are hard times for the rural trolley companies. They are having difficulties in meeting the advanced expense of operation in face of the decreased revenue from travel. Trolley stocks are not attractive investments these days. For the situation that exists there is a reasonable explanation.

"There are companies which were wrecked from within, but there are other companies, honestly built, honestly financed and honestly operated, which are feeling the strain from an entirely different cause. They have seen the price of equipment doubled within the last few years. They have been forced to pay more for operating expenses, owing to the increased cost of living. They have seen their taxes increase enormously, and have had to meet the most exacting demands of the various commissions which regulate their operation. Regulation, while intended to safeguard the rights of the public, has gone to an extreme, and there is danger of their being regulated to death. They are forced to incur additional expense to meet the requirements of the numerous commissions which demand different systems of accounting to meet their varying whims. They are forced to maintain safety devices which, while they may be good, cost money.

"With all this, the reports of nearly all suburban roads show that their patronage is decreasing steadily. Every automobile that is put into service means fewer passengers for the trolley roads. From this source alone the decrease has been enormous. Jitneys, too, enter somewhat into the situation. Take it all in all, who would own stock in a trolley road?

"Yet trolley roads are a public necessity. They must continue to be operated even though the stockholders get no interest on their money. It is perfectly plain that something must be done about it. Honestly-operated roads must be supported. They must be relieved of some of their burdens if they are going to continue.

"Making corporations marks for extortion cannot go on forever. There must be a distinction made between the corporation which has been honest and decent and those that have robbed the public. The same regulations cannot be continued over both."

$351,206,584 INVESTED IN ELECTRIC RAILWAYS IN CALIFORNIA

According to information compiled by the California Electric Railway Association, there are twenty-seven street and interurban electric railways in California. They represent an investment of $351,206,584 operate 3037 miles of track, with 3348 passenger and 1598 freight cars, and handle about 2,000,000 passengers daily. These railways employ 17,405 persons, who have 50,210 persons dependent upon them for a living. They operate in ninety-one cities and through numerous districts outside of incorporated cities, serving approximately 2,100,000 people. In 1915 they carried 627 533,941 passengers. The gross receipts in 1915 were $34,147,671, of which $1,792,752 went to the State as taxes. Approximately 2000 motor vehicles commonly called "jitneys" are now operating in direct competition with the electric railways. Most of these vehicles run on the more profitable and short-haul routes. They charge the one-way or round-trip fare, but do not attempt to meet the low commutation rates of the interurban electric railways. Those competing with the 5-cent local lines do not run to the end of the car routes. Street cars carry passengers in the larger cities distances in excess of 10 miles, with transfers, for a nickel. The average trip of the 5-cent "jitney" does not exceed 5 miles. The statement of the association concludes as follows:

"The future of the electric railways in this State rests with the people. Are they going to permit this unsound condition to continue or will they insist on the enactment of laws that will place this new class of utility on a parity with the electric railway companies as to regulation and taxation?"

TERMS OF CHATTANOOGA LABOR SETTLEMENT

The agreement entered into between the Chattanooga Railway & Light Company, Chattanooga, Tenn., and its employees, under which the strike of trainmen was settled, will continue in force until Aug. 24, 1917. The company has agreed to employ only members of Division No. 715 of the Amalgamated Association, or those who, if eligible, become members within sixty days after entering the service of the company. The company agreed that when an employee is suspended or discharged the cause of such suspension be furnished the properly accredited officer of the association. Any employee found not guilty, after investigation, of the offense charged against him is to be restored to his former standing with pay for time lost. All men hired between Aug. 20 and the signing of the agreement were to be discharged. The maximum time for any regular scheduled run is not to exceed ten and one-half hours in any one day. The scale of wages is fixed as follows: First six months, 20 cents an hour; second six months, 22 cents an hour; second year, 24 cents an hour; third year, 26 cents an hour; fourth year, 28 cents an hour. Time and one-half is to be allowed for overtime both for platform men and in all other departments. The men on the extra list are guaranteed not less than five hours a day. The wages and conditions in the line department are as follows: Fifty-eight hours shall constitute a week's work with sixty hours' pay. Ten per cent increase in wages, time and one-half for overtime. Scale for apprentice, 17½ cents an hour for first six months; 25 cents raise a day every six months until three years elapse. Standard scale, 30 cents an hour; thirty-one minutes is to constitute an hour's pay. Emergency men are to receive straight time for first ten hours and time and one-half for overtime. Construction men, time and one-half for Sunday and all overtime. Arbitration is provided for as a means of adjusting all questions which arise and cannot be agreed to mutually.

WAREHOUSES PLANNED BY OWNERS OF CLEVELAND & YOUNGSTOWN RAILWAY

The Cleveland & Youngstown Terminal Company, headed by the Van Sweringen brothers, who are also the promoters of the Cleveland & Youngstown Railroad and principals in the ownership of the Nickel Plate Railroad, announced on Sept. 2 that plans had been completed for a series of warehouses that will have a capacity of 40,000,000 cu. ft. and cost between $10,000,000 and $15,000,000. These buildings are to be located along the right-of-way of the Cleveland & Youngstown Railroad between East Ninth and East Thirty-fourth Streets. The buildings are to be constructed of brick, concrete and steel and made fireproof. They will be built in groups from four to eight floors in height, depending upon the individual demand for space. The warehouses are being planned for both storage and distribution purposes. It is estimated that the buildings, as planned at present, will all be completed within five years. Further plans of the Van Sweringen interests include a union station and freight houses to be used by the interurban lines and a number of the steam roads. This building will extend from the south side of the Public Square to the line of warehouses as proposed. Some of the business places on the square are now being vacated in anticipation of the change. The old Forest City House, on the west side of the square, is also being razed to make room for the Hotel Cleveland, a twelve-story structure which is to be erected by the Van Sweringen interests in connection with the depot proposition.

THREE PROPOSED KENTUCKY ROADS MAY ENTER CINCINNATI

In a report to the Cincinnati Rapid Transit Commission on Sept. 1, Frank S. Krug, chief engineer, discussed the possibility of the entrance to the city of three proposed Kentucky lines, if the use of the Southern Railroad bridge can be secured and the companies are allowed to operate their cars over the rapid transit loop. All three of them would use the same track between Cincinnati and Walton, Ky. From that point south they are separate propositions. One is to be known as the Covington, Big Bone & Carrollton Railway. J. J. Weaver, Ludlow, Ky., is laying out the

line. It will connect Ludlow, Walton, Big Bone, Worthington and Carrollton and may be extended to Madison, Ind. Its length would be 65 miles and it would serve a territory with a population of about 80,000 people. Another road, to be known as the Louisville, Lexington, Maysville & Cincinnati Electric Railway, 120 miles in length, is being promoted by J. C. Blackburn, Dry Ridge, Ky. The third would be 55 miles in length and would connect Ludlow, Falmouth, Cynthiana and Winchester. The three, it is said, would serve a population of 240,000 and would bring 500,000 people into Cincinnati annually. Mr. Krug has recommended a conference between the commission and the promoters of the roads.

Paris Cars Again Running.—The street cars of the Paris (Tex.) Transit Company are again operating, by means of power from the plant of the Texas Power & Light Company at Waco. The street cars had been out of commission since the big fire in Paris on March 21, which destroyed the local company's power station and carhouses.

Cincinnati Commission Has Right to Award Contracts.—Attorney Frederick L. Spiegel, counsel for the Rapid Transit Commission of Cincinnati, Ohio, has rendered an opinion to the effect that the commission is empowered to award all contracts according to law. The commission had asked an opinion on this matter before making contracts for test holes along the route of the rapid transit loop.

Sandpoint System Offered to City.—The directors of the Sandpoint & Interurban Railway, Sandpoint, Idaho, have submitted to the City Council a proposition to sell the entire system to the city. The directors asked the Council to submit the plan to the voters at an early election. The company planned to abandon the system and dispose of the equipment, but this move was protested and it was considered advisable to offer the people a chance to retain the system if the majority desired it.

Increase in Wages in Galveston.—Notices have been posted announcing increases in pay affecting 135 trainmen, conductors and motormen employed by the Galveston (Tex.) Electric Company. The increase amounts to nearly 10 per cent, being a flat increase of 2 cents an hour for all employees, regardless of seniority. Under the new scale of wages, which went into effect on Aug. 15, conductors and motormen entering the company's employ will receive 23 cents an hour, while those longest in the service will receive 28 cents an hour.

Another Boston Tunnel Section to Be Opened.—The Boston (Mass.) Elevated Railway will equip and operate the Summer Street section of the Dorchester tunnel within the next few months, providing rapid transit train service between Cambridge and the South Station via the Cambridge subway. As the result of a recent conference with the Boston Transit Commission, the Park Street-South Station section of the tunnel will probably be operated without a rental charge, pending the completion of the Dorchester tunnel to Andrew Square.

Bay State Employees Seek Wage Increase.—The agreement between the Bay State Street Railway, Boston, Mass., and its employees covering wages expires on Oct. 1. In a new agreement presented to the company the men ask for an increase in wages and changes in the present schedule of runs. The last demands of the union were made in October, 1914. Arbitrators were appointed who awarded the men an advance dating from Oct. 1, 1914, and an additional increase on Oct. 1, 1915. P. F. Sullivan, president of the company, has met the new demand of the union with a request that the carmen go back to the 1914 scale of pay, which was substantially lower than their present rate.

Question of a New Power Plant at Cleveland.—Street Railway Commissioner Fielder Sanders has engaged Fred Sargent of Sargent & Lundy, electrical engineers, Chicago Ill., to advise him as to the best course to follow in regard to the Cedar Avenue power plant of the Cleveland Railway, which is rapidly becoming useless. It is said that about $500,000 would be required to build a new plant and that the cost of abandoning the present plant and installing apparatus for the use of power from outside sources would entail a cost of $1,000,000. Light Commissioner W. E. Davis is urging the company to purchase energy from the municipal light plant, but additions costing $1,750,000 would have to be made to it in order to have the necessary capacity.

Nashville Men Get Higher Wages.—The Nashville Railway & Light Company, Nashville, Tenn., has announced a new wage scale. Under this the rate of pay of men who have been in the service of the company for six months and less than one year is increased from 19 to 20 cents an hour; one year to two years, 20 to 21 cents; two years to three years, 21 to 22 cents; three years to four years, 21 to 22 cents; four years to five years, 22 to 23 cents; five years to six years, 23 to 24 cents; and six years and more, 23 to 25 cents an hour. Employees who have served less than six months are not affected. This class will continue to receive 18 cents an hour. All men on the extra list, and assigned to extra runs, swings, and special cars, will receive pay for not less than three hours.

Changes in Southern Texas Traction Personnel.—Changes in the operating department of the Southern Texas Traction Company, Dallas, Tex., have been announced by Burr Martin, general manager, to become effective at once. Dan G. Fisher, who has been superintendent of transportation for the Corsicana division, has been transferred to the executive offices, reporting direct to J. F. Strickland, president, and assuming the position of assistant to the president. H. G. Floyd, superintendent of transportation of the Waco division, has become superintendent of transportation for both the Waco and Corsicana divisions and is now the ranking operating official for the Southern Traction Company, exclusive of the properties in Waco, where H. B. Foss will remain in charge of transportation for the terminal properties.

Conditions in Bangor Practically Normal.—Since Monday, Sept. 3, cars of the Bangor Railway & Electric Company, Bangor, Me., the employees of which went on strike on Aug. 26, have been operated on regular schedule on the suburban and interurban lines. The city schedule is being operated practically in full. Riding is about 80 per cent of normal. There has been very little violence. All of the new employees are residents of Bangor and Penobscot County. Thomas F. Shine and John H. Reardon are the organizers in charge for the Amalgamated. Parades and public meetings are held almost every night, but outside of a few friends the men who went out are receiving very little support. The strike situation as far as the company is concerned is a closed incident. A visitor to Bangor would hardly notice that there is a strike in force. The Municipal Court Judge fined an engineer of the Maine Central Railroad $100 and costs for interfering with the operation of cars, indicating clearly that effective means will be taken in dealing with offenders who interfere with the orderly conduct of the business of the company.

Labor Day Riot in El Paso.—As the Labor Day parade in El Paso, Tex., concluded many in the parade attacked three cars of the El Paso Electric Railway, the employees of which are on strike, on San Antonio Street, badly wrecking the cars and beating up the operatives. Later three more cars were attacked on Oregon Street by the mob. Police watched the mob for a time without attempting to interfere. Capt. H. Boyd Edwards of the Massachusetts guard hurriedly gathered up a hundred militiamen on the street and, arming them with rifles of the provost guard at the police station, helped the regular provost guard to restore order. Two companies of soldiers were put on duty in the city. Mayor Tom Lea declared he would dismiss the entire force if necessary to enforce order. He placed two men with sawed off shot guns on each street car. A mob later surrounded the Mayor on San Antonio Street in his auto, but armed troops and police came hurrying up and the crowd was dispersed.

Preparing for the Dallas Straw Vote.—C. W. Hobson, who with J. F. Strickland proposes to head the new companies that are to take the street railway systems and the electric light plant at Dallas, Tex., out of the hands of the present owners and operate them on a service at cost basis, is now in the East for the purpose of consummating a lease on the Oak Cliff Lines, owned by the Northern Texas Traction Company and controlled by Stone & Webster. An exact undertaking as to the terms upon which these lines

can be leased and operated, since they cannot be purchased, will be given to the voters before the straw ballot is taken to fix the valuation in the controversy between the city and the traction and electric light interests. The taking of the vote, which was referred to at length in the Electric Railway Journal of Sept. 2, is being held up waiting for this detail. Just when the vote will be taken depends upon Mr. Hobson's return. No further conferences are probable before the election, as Mayor Lindsley expects to be out of the city until after the election is held.

Bids for Special Work Opened.—During the week ended Sept. 2 the Public Service Commission for the First District of New York opened bids for the supply of seven portions of special work for use in the construction of the new Culver line in Brooklyn, and set Sept. 18, 1916, as the date for the receipt of bids for the installation of tracks for a portion of the same line. The new Culver line in Brooklyn will be an elevated extension of the Fourth Avenue system, while the present Culver line is the surface extension of the Fifth Avenue elevated line. The special work order upon which bids were taken includes the purchase of frogs and switches and incidental materials, and the Ramapo Iron Works, New York, to which the award will probably go, was the low bidder at $29,859. The contract for track installation will cover the section beginning at a point in private property between Eighth and Ninth Avenues near Thirty-eighth Street and ending at or near Avenue X and Gravesend Avenue. The city will furnish practically all of the necessary materials to the contractor, whose principal item will be the furnishing of labor and a certain amount of hauling.

PROGRAMS OF ASSOCIATION MEETINGS

Colorado Electric Light, Power & Railway Association

The following tentative program has been arranged for the convention of the Colorado Electric Light, Power & Railway Association at Glenwood Springs on Sept. 21, 22, 23:

"The Electric Range Game," by H. L. Titus.

"The New Operating Rules," by F. J. Rankin.

"Uniform System of Reports and Local Reports," by W. L. Sterne.

"Tell the Public What You're Doing," by F. P. Weed.

"Selling Securities to Consumers," by W. F. Raber.

"Utility Regulations," by M. H. Aylesworth.

"How You Can Get More Lamps Into Use," by S. E. Doane.

"The Society for Electrical Development," by H. W. Alexander.

"Pertinent Remarks on Depreciation and Your Annual Report," by F. W. Herbert.

"Sensible Rates for Lighting, Cooking and Power," by L. P. Hammond.

The report of the special committee on depreciation will be presented by H. U. Wallace, vice-president and general manager of the Western Light & Power Company.

New England Street Railway Club

Those in charge of the outing of the New England Street Railway Club, which will take place at Springfield and Holyoke, Mass., on Sept. 21 and 22, report enthusiastic interest in the affair by members of the club. The local committee has been most energetic not only in preparing a most attractive program for the outing, but in making sure that no one will forget the date. A series of cards have been sent out at intervals with such injunctions as "Don't be a crab! Get away from your business, yourself, or your wife, if necessary, and have a good time by attending the outing of the New England Street Railway Club, Springfield and Holyoke, Sept. 21 and 22." The Holyoke Street Railway has also sent to the members of the club a folder descriptive of Mount Tom at whose summit is one of the most attractive hotels in New England. The program includes a luncheon on Friday at this hotel, which is reached by the lines of the Holyoke Street Railway. All in all, the outing this year promises to outdo even the most successful affairs of similar nature conducted by the club in the past, which is saying a great deal. The full program was published on page 373 of the issue of this paper for Aug. 26.

Financial and Corporate

ANNUAL REPORTS

Puget Sound Traction, Light & Power Company

The comparative income, profit and loss statement of the Puget Sound Traction, Light & Power Company, Seattle, Wash., for the calendar years 1914 and 1915 follows:

	1915		1914	
	Amount	Per Cent	Amount	Per Cent
Railway department	$4,855,839	64.3	$5,714,565	67.6
Light and power department	2,202,337	29.1	2,258,886	26.7
Gas department	54,531	0.7	53,325	0.6
Steam heat department	312,699	4.1	320,548	4.0
Other earnings	134,176	1.8	103,649	1.1
Total earnings	$7,559,582	100.0	$8,450,973	100.0
Operation	$3,144,738	41.6	$3,303,868	39.1
Maintenance	855,893	11.3	881,988	10.4
Taxes	754,132	10.0	821,151	9.7
Total operating expenses and taxes	$4,754,763	62.9	$5,007,008	59.2
Net earnings	$2,804,819	37.1	$3,443,965	40.8
Interest charges	1,878,779	24.8	1,860,824	22.0
	$926,040	12.3	$1,583,141	18.8
Bond sinking funds	301,205	4.1	258,032	3.1
	$624,835	8.2	$1,325,109	15.7
Dividends paid on preferred stock	615,463	8.1	820,618	9.7
Dividends paid on common stock	.....	...	556,736	6.6
	$9,372	0.1	*$52,245	0.6
Net direct charges to reserves and surplus	44,827	0.6	7,407	0.1
Surplus	*$35,455	0.5	*$59,652	0.7

*Deficit.

The total earnings for 1915 decreased $891,391 or 10.5 per cent. The railway department sustained a loss of $858,725 or 15 per cent, and the light and power department $56,549 or 2.5 per cent. These unsatisfactory results necessitated the postponement at the last two quarterly dividend dates of half the amount normally payable on the preferred stock.

The railway earnings contracted under jitney and autobus competition and the general business depression throughout the Puget Sound district. Jitneys appeared in January and increased rapidly until in February and March about 700 were in operation. The loss in gross earnings for a time exceeded $2,000 a day. Since then the number of jitneys gradually declined to about 450 at the close of the year. Light and power revenue was reduced by partial or entire suspension of many industries. Several cement plants were thus affected, and practically all sluicing and dredging work, an important factor in 1914, was discontinued. Reduction in commercial and residential light and power rates in the city of Seattle on April 1 also contributed to the loss.

By rigid economy, however, the expenses of "operation" were diminished $159,130 or 4.8 per cent, while maintenance expenses dropped $26,095 or 2.8 per cent, and taxes $67,018 or 8.1 per cent, so that the total expenses and taxes decreased $252,244 or 5 per cent. The net earnings, therefore, showed a loss of $639,146 or 12.7 per cent. This decrease, with rises in interest and sinking fund charges, was covered by the aforementioned partial postponement of preferred dividends and the suspension of the $556,736 of common dividends. Although, the annual report of the company states, present signs of improvement in general business may be of benefit to the utility, the prospects for a rapid recovery are not encouraging.

Expenditures on property, about one-fifth of which were for replacements, amounted to $1,493,184, as follows: track and paving, $736,405; transmission and distributing system, $378,051; power plant, $67,209; equipment, tools, real estate, steam heat system, gas plant and gas distributing system, $85,137; miscellaneous (principally riparian rights), $226,382. In the railway department expenditures were

made for paving and regrading, amounting to approximately $500,000, and bridges and trestles along the interurban lines between Seattle and Tacoma were rebuilt. To reduce accidents twenty Seattle cable cars were converted into "pay on entering" type, and 368 anti-climbers were purchased for cars in Seattle.

Montreal Tramways

The income, profit and loss statement of the Montreal (Que.) Tramways for the year ended June 30, 1916, follows:

Gross earnings	$6,609,765
Operating expenses	3,707,053
Net earnings	$2,902,712
Deductions:	
City percentage on earnings	$418,083
Interest on bonds and loans	806,721
Interest on debenture stock	800,000
Taxes	93,600
Total	$2,118,405
Net income	$784,307
Dividends	323,871
Surplus for year	$460,435
Transfer to contingent renewal account	275,000
War tax (two years, 1915-1916)	74,013
Transfer to general surplus	$111,422

The gross earnings of the company increased $84,533 or 1.3 per cent during the last fiscal year as compared to the preceding. The increase came in the latter part of the year, thus indicating a tendency to an improvement in the business conditions of the city. The operating expenses of the company decreased $6,943 or 0.19 per cent, so that the net earnings increased $91,478 or 3.25 per cent. The operating ratio in 1916 was 56.08 per cent as compared to 56.92 per cent in 1915.

The sum of $583,894 was expended during the year on the maintenance of the company's property and charged to operating expenses. This, together with $313,576 charged to the contingent renewal account for special renewals, made a total expenditure of $897,470 during the year on the upkeep of the company's property. There was also expended, on capital account, the sum of $320,872. During the year there was redeemed and cancelled $163,233 of underlying bonds, making a total of $1,146,746.

Manila Electric Railroad & Lighting Corporation

The statement of income, profit and loss of the Manila Electric Railroad & Lighting Corporation, Manila, P. I., for the year ended Dec. 31, 1915, follows:

Gross earnings	$1,494,787
Operating expenses and taxes	762,958
Net earnings	$731,829
Interest on bonds	264,975
Surplus over fixed charges	$466,854
Reserves:	
For sinking fund	$41,500
For replacements and renewals	80,000
Total	$121,500
Surplus	$345,354
Dividends	300,000
Net surplus for the year	$45,354

The gross earnings for the year ended Dec. 31, 1915, showed a decrease from the previous year of $107,213, or 6.69 per cent. The operating expenses and taxes decreased $55,455.82 or 6.78 per cent, while the net earnings from operation dropped off $51,757.64 or 6.6 per cent. Interest charges during the year were $264,975 and sinking fund requirements were $41,500, leaving a surplus for the year of $425,354.

The directors maintained the annual appropriation for the replacement and renewal fund of $80,000, and deducting this from the year's surplus earnings there remained an available surplus for the year of $345,354. From this amount there were paid four dividends of 1½ per cent aggregating $300,000, leaving $45,354 over all disbursements and reserves. This was transferred to surplus account, making the total accumulated surplus to Dec. 31, 1915, $1,778,835. Against this amount was charged $55,000 to provide for a special reserve recommended by the company's auditors, leaving total accumulated surplus and reserves of $1,723,835. The total dividend payment of 6 per cent in 1915 compared with 7 per cent in 1912, 1913 and 1914, 5¼ per cent in 1911, 4 per cent in 1908, 1909 and 1910, and 3 per cent in 1906 and 1907.

In the railway department the earnings decreased $107,801, and the operating expenses increased $5,045. In the electrical department the earnings increased $22,139, and the operating expenses decreased $42,568. In the other departments, principally on account of the non-operation of trucks, the earnings decreased $21,550, and the operating expenses decreased $29,343. The company's taxes increased $11,409.

The uncertainty of the future political status of the Philippine Islands created during 1915 a widespread condition of unrest. This condition brought about the almost entire cessation of investment of capital in new enterprises or in already established businesses. Almost all the local industries and business houses followed a policy of retrenchment, causing decreased revenues to the insular and municipal treasuries, which in turn had to resort to the assessment of additional taxes. The government and municipalities also stopped to a great extent all improvements and new public works. The available shipping to and from Manila was so scarce that all lines of trade suffered, and freight rates rose so high as to be almost prohibitive. Now that the political situation has been clarified to a great extent, however, it is thought that business conditions will begin to improve.

OPERATING FIGURES FOR THREE ENGLISH CITIES

The annual report in connection with the South Shields Corporation Tramways states that the total revenue for the twelve months ended March 31, 1916, amounted to £41,826, an increase of £1,981 as compared with the previous year. Female laborers were first used in November to take the place of male conductors, and they have adapted themselves to the work splendidly. It has not been possible, however, to fill all the vacancies caused by the absence of motormen, and the service had had to be reduced at a time when an increased service was required. During the year the ratio of pay had been increased to nearly all the employees by 1 halfpenny an hour, and the standard rate is now one of the highest of any tramway system in the country. The total working expenses, including £1,932 paid to dependents of employees who had joined the forces, was £26,317. After meeting interest and sinking fund charges a net profit of £6,504 remained, as compared with £5,594 for the previous year.

In the annual report of the city engineer for Newcastle, it is stated that the length of tramway opened for service, measured as single track, is 66.5 miles. The maintenance of the permanent way has been £9,545, equivalent to £143 per mile of single track, or 0.40d. per car mile. In addition to ordinary maintenance, £1,580 was expended in renewals, equivalent to £24 per mile of single track, or 0.06d. per car mile, so that the total cost of the permanent way (exclusive of capital charges) was £11,125, equivalent to £167 per mile of single track or 0.46d. per car mile. A considerable length of the permanent way is in urgent need of renewal, but the great difficulty in obtaining a sufficient supply of labor has prevented the work from being undertaken. The major portion of the track has been in use for nearly fifteen years. Consequently, the fact that the present heavy service on a permanent way having many steep gradients is maintained at such a comparatively small cost, is satisfactory, but it is inevitable that the cost will be greatly increased as soon as opportunity will permit of renewals being carried out.

The receipts of the Southampton Corporation Tramways for the last year amounted to £79,828, as compared with £71,037 for the previous year, the highest figure up to that date. The passengers carried numbered 15,494,365, an increase of 2,228,651. The mileage run was 1,636,103, as compared to 1,703,032, a decrease of 66,929. The total receipts averaged 11.710d. per mile, as compared to 6.851d. A total of 135 members or 39 per cent of the permanent staff have enlisted, and more than sixty women are now regularly employed as conductors.

REPORT FOR DISTRICT OF COLUMBIA

The annual report of the Public Utilities Commission of the District of Columbia for the calendar year 1915 states that during the year the commission authorized $512,200 in bonds and $10,360 in stock, there remaining pending at the end of the year applications for $922,614 of bonds and $33,940 of stock. The commission continued its valuation work, and it was estimated that the valuations of the larger utilities would be completed during the first half of 1916. The report of the commission contains miscellaneous operating figures for the individual utilities, some for electric railways being given in the accompanying table:

Miscellaneous Operating Statistics for Electric Railways in District of Columbia for Year Ended Dec. 31, 1915

Name	Total Revenue from Transportation			Total Operating Revenues			Total Operating Expenses			Average Fare	
	For Year	Per Car-mile (Cents)	Per Car-hour (Cents)	For Year	Per Car-mile (Cents)	Per Car-hour (Cents)	For Year	Per Car-mile (Cents)	Per Car-hour (Cents)	Per Revenue Passenger Carried	Per Passenger (Including Transfers)
Capital Traction Company	$2,191,935	0.28056	2.61481	$2,206,493	0.28242	2.63218	$1,152,283	0.14749	1.37459	$0.04296	$0.03214
Washington Railway & Electric Company	2,109,904	0.27174	2.27563	2,411,206	0.31055	2.60060	1,434,395	0.18474	1.54706	0.04310	0.03227
City & Suburban Railway	573,925	0.26250	2.31701	584,193	0.26720	2.35846	375,712	0.17184	1.51650	0.04247	0.03405
Georgetown & Tennallytown Railway	71,856	0.19868	2.16859	72,365	0.20009	2.18395	64,259	0.17768	1.93932	0.04286	0.02975
East Washington Heights Traction Railroad	7,944	0.15273	1.14551	7,944	0.15273	1.14551	5,169	0.09939	0.74543	0.04256	0.02142
Washington-Virginia Railway	490,794	0.27029	3.11817	498,541	0.27456	3.16739	238,761	0.13149	1.51693	0.08988	0.08988
Washington Interurban Railway	18,624	0.13230	1.27280	18,624	0.13230	1.27280	19,653	0.13960	1.34307	0.04082	0.04082
Washington & Maryland Railway	6,100	0.10069	0.65546	6,100	0.10069	0.65546	16,605	0.27409	1.78420	0.03110	0.01801
Washington & Old Dominion Railway*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*The Washington & Old Dominion Railway operates trains by both steam and electricity.

American Public Utilities Company, Grand Rapids, Mich.—The gross sales of all subsidiaries of the American Public Utilities Company totaled for the year ended June 30, 1916, $3,309,586 as compared to $2,932,069 in the preceding year, an increase of 12.88 per cent. The gross earnings of the railway property in Eau Claire showed a gain of 8.08 per cent. The condition of the Jackson Light & Traction Company improved during the year. Competition from jitneys seems to have been almost entirely removed by municipal regulations requiring bonds and licenses.

Birmingham, Ensley & Bessemer Railroad, Birmingham, Ala.—A petition has been filed by the majority bondholders of the Birmingham, Ensley & Bessemer Railroad with the Alabama Public Service Commission asking for the consolidation of the system with the Birmingham Railway, Light & Power Company. Under an act passed by the last Legislature the consolidation of such public utilities is allowed, provided the consent of the Public Service Commission is obtained. That body has set Oct. 2 as the date at which the hearing will be conducted. The Birmingham, Ensley & Bessemer Railroad has been in receiver's hands for two years.

East Washington Heights Traction Railroad, Washington, D. C.—In an order dated Aug. 24 the Public Utilities Commission of the District of Columbia has set the reproduction cost of the East Washington Heights Traction Railroad at $34,978 as of Nov. 1, 1914. The reproduction cost, less depreciation, was fixed at $28,009. In addition to these values the commission found the following: Expended in the construction and equipment of the utility, as shown by the utility's records, $58,020; subscribed by stockholders, $14,800; proceeds of bonds sold, $16,000; and proceeds of notes issued, $27,220. The accrued depreciation, as shown by the utility's records, was nil, while the accrued depreciation as found by the commission totaled $6,969. In its order the commission annual rates of depreciation to be based on the reproduction cost new of property on hand on Nov. 1, 1914, and on the original cost of property subsequently acquired, of 2.86 per cent for way and structures, 3.87 per cent for equipment, and nil for land.

Hudson & Manhattan Railroad, New York, N. Y.—The board of directors of the Hudson & Manhattan Railroad at a meeting on Aug. 31 declared the interest earned on the adjustment income mortgage bonds for the six months ended June 30, 1916, at the usual rate of 2 per cent per annum, or $10 per $1,000 bond for the period. This interest is payable on Oct. 1, 1916, at the office of the company's fiscal agents, Harvey Fisk & Sons, New York City.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—Federal Judge Wilbur F. Booth has authorized C. P. Bratnober, receiver of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, to issue $100,000 of receiver's certificates to take care of obligations existing now or expected to arise. It is stated that the attorneys at the hearing said that the creditors had not come to a decision as to what should be done about the terminal agreement with the Electric Short Line. Action on that matter was postponed. Obligations to be met out of the certificates which the receiver will issue include $15,000 expected deficit within the next sixty days, $35,000 to close up right-of-way claims, $24,000 to pay overdue taxes with penalties and $2,500 in traffic balances to the other roads. It is stated that the road needs $1,500 a month to keep up its terminal contract and that a $15,000 instalment is due on its contract for terminal land bought of T. B. Walker. Action on these latter matters was delayed.

Northern Ohio Traction & Light Company, Akron, Ohio.—A special meeting of the stockholders of the Northern Ohio Traction & Light Company has been called for Oct. 2 to vote on increasing the authorized amount of 6 per cent preferred stock from $5,000,000 to $10,000,000, and common stock from $9,000,000 to $10,000,000. The increase in capitalization is to facilitate financing of the company by new interests which will be in control after Sept. 15. The arrangements for the sale of the property to E. W. Clark & Company, Philadelphia, and Hodenpyl, Hardy & Company, New York, were noted in the Electric Railway Journal of Sept. 2, page 418.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The gross revenues of the Oakland, Antioch & Eastern Railway for the twelve months ended June 30, 1916, totaled $629,928, as compared to $542,039 for the preceding year, an increase of $87,889 or 16.2 per cent. During these same periods the operating expenses at $425,402 and $412,989 showed an increase of only $12,413 or 3 per cent. The net earnings of $204,526 for the last year therefore showed a gain of $75,476 or about 58 per cent. The freight business of the company is showing special improvement, for the total gain of $14,813 in gross for the month of June, 1916, included $6,159 for freight, more than an 80 per cent gain over June, 1915.

Ohio Utilities Company, Columbus, Ohio.—The Ohio Utilities Company has applied to the Ohio Public Utilities Commission for authority to issue $750,000 of 6 per cent first mortgage bonds, $200,000 of preferred stock to pay not more than 7 per cent dividends, and $100,000 of common stock. The company has also requested permission to purchase the property of the Circleville Light & Power Company for $169,500, the Gallipolis Electric & Power Company for $91,600, the Delaware Electric Light, Heat & Power Company for $231,700, and the Chillicothe Electric Railroad, Light & Power Company for $480,000, or a total of $972,800. This would allow the company $27,200 for working capital and $50,000 for extensions and betterments. John P. Phillips, vice-president of the Chillicothe Electric Railroad, Light & Power Company, is president of the Ohio Utilities Company, which was recently organized with an authorized capital stock of $500,000. Attorney J. C. Martin is secretary of the company.

Omaha, Lincoln & Beatrice Interurban Railroad, Omaha, Neb.—The Omaha, Lincoln & Beatrice Interurban Railroad

has applied to the Nebraska Railroad Commission for authority to issue $2,000,000 of common stock and $500,000 of preferred stock and $2,500,000 of bonds.

Pacific Electric Railway, Los Angeles, Cal.—The annual report of the Pacific Electric Railway for the year ended June 30, 1916, to the California Railroad Commission shows a deficit of $821,734 in the company's earnings. The total operating revenues for the year were $8,856,796, while the total railway operating expenses were $5,994,611, which left a net revenue from railway operations of $2,862,185. From this $515,556 was taken for taxes. Other income amounted to $37,301, making the gross income of the railway $2,383,929. From this $3,205,664 was deducted for interest on bonds and floating debt, bond discounts and rents, which caused a deficit in the company's earnings of $821,734. The jitney bus and other automobile passenger carrying traffic are blamed mostly for these results. The railway operates in fifty-four towns in southern California, and very large sums have to date been spent on improvements in the various places.

Philadelphia (Pa.) Rapid Transit Company.—The Philadelphia Stock Exchange has authorized the listing of $1,880,000 of additional extended voting trust certificates of the Philadelphia Rapid Transit Company, making a total of $18,847,500 of these outstanding.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—The St. Joseph Railway, Light, Heat & Power Company has applied to the Missouri Public Service Commission for permission to create a new bond issue of the authorized principal amount of $15,000,000, to secure first and refunding mortgage sinking fund 5 per cent thirty-year gold bonds, due in 1946. The company and its subsidiary, the St. Joseph & Savannah Interurban Railway, also have asked the commission for authority to execute a joint mortgage to secure the new bond issue. Under the terms of the proposed mortgage, provision is made for the delivery by the trustee to the company of $826,000 of bonds, $326,000 thereof to take the place of an equal amount of first mortgage bonds of the St. Joseph & Savannah Interurban Railway now outstanding, but which will be cancelled, and the mortgage securing the same discharged. The proposed new mortgage further provides for the setting aside of bonds to retire, by exchange or otherwise, the present closed first mortgage issue of the St. Joseph Railway, Light, Heat & Power Company of the principal amount of $5,000,000, which matures in 1937. The balance of the bonds will be held by the trustee to provide for future extensions and additions to the property. Simultaneously with the execution of the new mortgage, the properties of the St. Joseph & Savannah Interurban Railway, which include a 12-mile line between St. Joseph and Savannah, will be transferred to the St. Joseph Railway, Light, Heat & Power Company, subject to the new mortgage. The properties will thus be consolidated, with the proposed mortgage covering the interurban property as a first lien and the St. Joseph Railway, Light, Heat & Power Company properties as a second lien. A meeting of the stockholders of the company to pass upon the mortgage will be held on Sept. 28, as noted in the ELECTRIC RAILWAY JOURNAL of Aug. 26 page 376.

Sapulpa & Interurban Railway, Sapulpa, Okla.—The Sapulpa & Interurban Railway, which operates 5 miles of track from Sapulpa to Keifer, has been sold at public sale by the sheriff of Tulsa County to the Midland Valley Railroad. It is said that the Midland Valley Railroad, an operating steam road with main offices in Philadelphia, will build a connecting link between Keifer and Glenpool, a distance of 4 miles. The impending sale of the road was referred to in the ELECTRIC RAILWAY JOURNAL of Aug. 26, page 376.

United Light & Railways Company, Grand Rapids, Mich.—Announcement has been made that the United Light & Railways Company has declared a quarterly dividend of 1 per cent on its common stock and a regular quarterly dividend of 1½ per cent on its preferred stock, both payable on Oct. 2 to stock of record of Sept. 15. The United Light & Railways Company discontinued dividends at the rate of 1 per cent quarterly on its common stock in July, 1914. The declaration which has now been made marks the resumption of the common stock dividend at the regular 4 per cent a year rate.

DIVIDENDS DECLARED

Brooklyn (N. Y.) Rapid Transit Company, quarterly, 1½ per cent.

California Railway & Power Company, San Francisco, Cal., quarterly, 1¾ per cent, prior preferred.

Duluth-Superior Traction Company, Duluth, Minn., quarterly, 1 per cent, preferred.

El Paso (Tex.) Electric Company, quarterly, 2½ per cent, common.

Frankford & Southwark Passenger Railway, Philadelphia, Pa., quarterly, $4.50.

Ironwood & Bessemer Railway & Light Company, Ironwood, Mich., quarterly, 1¾ per cent, preferred.

Second & Third Streets Passenger Railway, Philadelphia, Pa., $3.

Third Avenue Railway, New York, N. Y., quarterly, 1 per cent.

Twin City Rapid Transit Company, Minneapolis, Minn., quarterly, 1¾ per cent, preferred; quarterly, 1½ per cent, common.

United Traction & Electric Company, Providence, R. I., quarterly, 1¼ per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period			Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m.,	July,	'16	$72,642	*$39,318	$33,324	$17,632	$15,692
1 "	"	'15	68,146	*37,948	30,198	17,462	12,736
12 "	"	'16	805,386	*433,219	372,167	211,578	160,589
12 "	"	'15	780,845	*378,809	402,036	211,633	190,403

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m.,	July,	'16	$102,884	*$65,613	$37,271	$30,067	$7,204
1 "	"	'15	90,116	*63,458	26,658	30,337	†3,679
12 "	"	'16	1,195,120	*750,209	444,911	357,072	87,839
12 "	"	'15	1,039,521	*709,345	330,176	351,820	†21,644

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

1m.,	July,	'16	$287,226	*$173,447	$113,779	$42,862	$70,917
1 "	"	'15	239,594	*146,303	93,291	40,232	53,059
12 "	"	'16	3,354,689	*1,961,205	1,393,484	504,364	889,120
12 "	"	'15	3,057,558	*1,816,271	1,241,287	470,860	770,427

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

1m.,	July,	'16	$1,379,381	*$764,743	$614,638	$417,865	$196,773
1 "	"	'15	1,182,520	*654,686	527,834	365,166	162,668
12 "	"	'16	16,009,772	*8,542,235	7,467,537	4,885,185	2,582,352
12 "	"	'15	14,072,518	*7,565,138	6,507,380	4,327,623	2,179,757

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m.,	July,	'16	$264,023	*$159,786	$104,237	$69,423	$34,814
1 "	"	'15	262,080	*141,245	120,835	64,819	56,016
12 "	"	'16	2,761,786	*1,653,046	1,108,740	794,467	314,273
12 "	"	'15	2,555,338	*1,453,628	1,101,710	778,734	322,976

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

1m.,	July,	'16	$258,367	*$151,584	$106,783	$62,987	$43,796
1 "	"	'15	200,599	*122,023	78,576	63,645	14,931
12 "	"	'16	2,760,532	*1,642,212	1,118,320	751,943	366,377
12 "	"	'15	2,448,863	*1,452,450	996,413	758,115	238,298

GRAND RAPIDS (MICH.) RAILWAY

1m.,	July,	'16	$113,948	*$73,043	$40,905	$19,173	$21,732
1 "	"	'15	105,596	*72,022	33,574	13,933	19,641
12 "	"	'16	1,263,820	*835,117	428,703	171,907	256,796
12 "	"	'15	1,216,108	*833,416	382,692	163,523	219,169

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

1m.,	July,	'16	$83,759	*$51,196	$32,563	$15,214	$17,349
1 "	"	'15	75,376	*44,683	30,693	15,949	14,744
12 "	"	'16	772,132	*508,869	263,263	191,518	71,745
12 "	"	'15	706,709	*463,361	243,348	187,996	55,352

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m.,	July,	'16	$199,043	*$125,137	$73,906	$42,248	$31,658
1 "	"	'15	166,927	*109,847	57,080	42,896	14,184
12 "	"	'16	2,283,640	*1,409,218	874,422	514,590	359,832
12 "	"	'15	2,163,788	*1,281,341	882,447	493,588	388,859

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

1m.,	July,	'16	$481,143	$287,692	$193,451	$48,641	$144,810
1 "	"	'15	371,736	219,704	152,032	51,804	100,228
7 "	"	'16	2,860,642	1,720,266	1,140,376	355,006	785,370
7 "	"	'15	2,128,387	1,321,350	807,037	360,270	446,767

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m.,	July,	'16	$448,219	*$255,256	$192,963	$181,780	$11,183
1 "	"	'15	467,946	*260,486	207,460	183,947	23,513
12 "	"	'16	5,437,240	*3,069,517	2,367,723	2,189,891	177,832
12 "	"	'15	5,694,808	*3,103,158	2,591,650	2,210,534	381,116

*Includes taxes. †Deficit.

Traffic and Transportation

SAFETY CAMPAIGN STARTED IN KANSAS CITY

For the First Time the Work Will Be Carried Into the Public Schools

Plans have been completed by the Kansas City (Mo.) Railways, through the aid of the Board of Education, the Commercial Club and other industrial institutions, for a general safety campaign in Kansas City. For the first time the safety work will be carried on in the schools of the city. The Board of Education on July 6 authorized the company to place safety blotters, calendars and other literature in the schools under the direction of Superintendent I. I. Cammack.

A calendar will be placed in every school room and in other places throughout the city. More than 500,000 blotters will be distributed among the school children during the school year. Each child will receive one blotter each month. The blotters are in four colors. Each one carries a safety motto pertaining to the month issued, a small calendar for that month and the words, "Safety and Service," with the name of the company. The large calendars which will be displayed in the school rooms carry the designs that are on the blotters. These designs are grouped at the top with a motto under each design. In the center is the company slogan of "Safety and Service" in a circle with the name of the company worked about the slogan. The calendars start with the month of September, 1916, and end with August, 1917. They are printed in the same colors as the blotters and are on heavy cardboard.

The Board of Education also authorized the distribution of safety league buttons among the children. These buttons will carry the colors of the various schools and the name of each school with the words, "Safety League."

At the suggestion of Superintendent I. I. Cammack it was decided to introduce large bulletins into each room to carry on the educational campaign in connection with the hygienic work. Superintendent Cammack also suggested that motion picture films, showing the price of carelessness and the necessity for always being on the safe side, be exhibited in all the school rooms equipped for such moving pictures. This suggestion has been adopted by the company. In this connection lectures will be given. More than half of the school buildings in the city are equipped for motion picture shows. Additional literature for the pupils may be prepared as the months progress. All this will be done under the direction of Mr. Cammack.

W. S. Woodland, who has been one of the company's supervisors for several years, will be in charge of the company's work. He will be known as the railways safety director. Mr. Woodland will work under a general safety committee consisting of the superintendent of efficiency, the publicity agent and a member of the legal department. This committee will supervise the work in the schools, the other public work and aid in the direction of the safety work to be conducted among the employees of the company. The company is a member of the National Safety Council and arrangements have been made for organizing a Kansas City safety council. Membership in this council will embrace all the leading industrial concerns in Kansas City, Mo., and Kansas City, Kan.

The campaign will be taken up among vehicle drivers and owners. The first step in this direction will be the issuance of form letters to all drivers and owners urging them to do all they can to promote the general safety movement. This will be followed by placards to be placed in all stables and garages. In addition to this there will be talks by members of the council and others on the necessity for safety. This work will be carried on by the general safety committee. In the general public work there will be a new series of dash cards that are practically ready for issuance. Safety suggestions will also be carried on the backs of transfers and on the stationery of the Kansas City Railways.

PRELIMINARY STATEMENT ON SEATTLE JITNEY REGULATION

William Hickman Moore, chairman of a special committee appointed by the City Council to draft proposed jitney bus regulations in Seattle, Wash., states in his opinion the people of this city want the jitney as a transportation fixture, and for that reason the committee will exercise great care in formulating its report and submitting a proposed ordinance to the Council. Chairman Moore said:

"The problem of adequate transportation at reasonable rates to all sections of the city looms up large at this time, because of the complications the auto bus has injected. The settlement of the problem of adequate transportation should not be approached with the thought that the traction company is to be protected as a mere money-making machine operated for the benefit of its stockholders; that jitney owners are to be permitted to earn a living, unrestrained by regulations, or that the public shall finally own and operate all public utilities. The problem is one in which the home owner is interested. Should a zone system be brought about through reduced earnings of the traction company, many home-owners will be compelled to return to the congested districts to escape excessive transportation charges. Establishment of a zone system of fares would be a calamity for the small property owner, and it is imminent unless the transportation problem is settled with fairness to all. The street railway must be regarded as the backbone of a dependable transportation system, and competition which will arrest the development of that system would, without question, retard the development of the city and stifle its growth. Should the petition of the street railway to the Public Service Commission be granted, the city would be deprived of a 2-per cent revenue on the gross earnings of the company, which in 1914 amounted to $72,934 and in 1915 to $61,581. The smaller amount in 1915 is attributed by the company to jitney bus competition. The paving of an 18-ft. strip by the street railway has in many instances made possible the paving of the remaining portion of the street by the property owners, where the limit of assessment would otherwise have prohibited the improvement. If the petition of the company be granted by the Public Service Commission, this additional burden would fall upon the property owner. A release from payment of a portion of the cost of bridges would also fall upon the general taxation."

At this time the Puget Sound Traction, Light & Power Company is petitioning the Public Service Commission to be released from some of its franchise obligations considered by the company to be unreasonably burdensome.

EXPLAINING THE COMPANY'S SIDE

That a frank and courteous presentation of the company's side of a question by company officials to the public is a potent means of establishing better public relations, if not of settling the question itself, is well shown by the following excerpt from the Denver *Tramway Bulletin* for August:

"Golden has been demanding, through her newspapers and Council, that the fare to that city be cut one-half. Study of the question proved that a reduction could not be allowed, and on Friday evening, Aug. 4, General Manager Hild met with the Mayor and Council in a meeting open to the citizens of Golden to explain why a reduction could not be granted. His talk, which was illustrated by lantern slides, was based on such good common sense that the discussion which followed was pleasant and resulted in practically everyone assenting to Mr. Hild's statements.

"The Eighteenth Street Improvement Association met on Aug. 3 to demand greater service on Eighteenth Street. H. C. Kendall, traffic engineer, was present with figures which showed conclusively that there was not sufficient short-line travel during the day on Eighteenth Street to permit increased service at additional expense, and that in spite of the light traffic Eighteenth Street was being given several times as much service as other lines doing a similar business. The explanation of the company seemed to be reasonable and the consideration of Eighteenth Street's needs fair to most of the association members, in spite of a resolution adopted asking for increased service."

CLEVELAND INTERURBAN TO START FREIGHT SERVICE ON OCT. 1

Plans of the Manufacturers and Wholesale Merchants' Board of the Cleveland Chamber of Commerce will have been at least partially consummated on Oct. 1, when the Cleveland, Southwestern & Columbus Railway inaugurates a freight service on its two southern divisions. An ordinance was passed by the Cleveland City Council some years ago providing for the operation of freight cars through the city after 10 o'clock in the evening, but this is the first road to take advantage of it. The ordinance was subjected to a referendum vote, but through this board a favorable result was secured. The service will include cities and towns with a combined population of more than 100,000. For the Bucyrus division there will be a daily through three-car train each way, one starting from each end of the division. A train, making the round trip, will furnish service on the Wooster division. Carl J. Laney, traffic manager of the road, will have charge of the freight service. The rates differ in some respect from the steam road rates. It is said that this service will result in the delivery of freight to most of the towns the road touches in a much shorter time than over steam roads from other places and that Cleveland will, therefore, profit much by it. A freight depot is being built beside the express depot of the Electric Package Company at East Ninth Street and Eagle Avenue, Cleveland.

Winston-Salem Considers Jitney Measure.—The aldermen of Winston-Salem, N. C., have decided not to eliminate the jitney from any street by ordinance, but to require that the routes and schedules to be maintained by each car be inserted in the application for franchise and that this be considered by the board in passing upon the license. The bond is placed at the minimum of $10,000 for four cars and under, and $500 for each additional car. The matter of license to be paid to the city has been discussed, but no definite conclusion was reached in that matter.

Decrease in Dallas Jitneys.—The semi-annual jitney licenses issued by the city of Dallas, Tex., have just expired and it is interesting to note that 425 of the 465 licenses have been renewed. This means a decrease of forty jitneys in Dallas during the last six months. Plans for the relief of traffic congestion in the business district are receiving consideration of the City Commissioners of Dallas. If adopted they will confine the operation of jitneys to streets on which there are no car lines. The regulations contemplated are similar to those put into effect in the city of San Francisco, Cal., and described previously in detail in the ELECTRIC RAILWAY JOURNAL.

Six-Cent Fare Allowed. — The Bristol & Norfolk Street Railway, Randolph, Mass., on Sept. 2, received notice from the Massachusetts Public Service Commission that the local passenger tariff filed some time ago providing a 6-cent fare had been allowed. Under the new schedule the fare of 6 cents will be charged from Holbrook station, in Randolph, to the corner of Turnpike and Page Streets, North Stoughton, and from that point to Washington Street, Stoughton, another 6 cents will be charged. A workingman's fare of 6 cents for the entire trip will be allowed by the company for two hours in the morning and two in the afternoon. School tickets in strips of ten will be sold for 30 cents. It was expected that the change in fare would go into effect on Sept. 10.

Changes in Children's Fares in Vancouver.—The franchise of the British Columbia Electric Railway, Vancouver, B. C., requires the company to carry two children under twelve years of age for one regular fare and to issue tickets to school children at a rate of ten for 25 cents. Under these regulations the company would be entitled to charge full fare for a single child not possessing school children's privileges. It has decided, however, to extend the privilege of school children's tickets at all times to any child five years of age and under twelve for whom half fare must now be paid. Two children of these ages may travel for 5 cents or for a green or red ticket. Children under five years may travel free. The franchise requires the company to carry only infants in arms free. School children over twelve may travel on school tickets between 8 a. m. and 5 p. m., except on Saturdays or Sundays.

Peculiar Succession of Accidents.—One street car was demolished, another was damaged, two automobiles were damaged and a wagon was smashed up as a result of a peculiar accident on Aug. 19 at Rittersville, on one of the lines of the Lehigh Valley Transit Company, Allentown, Pa. A truck driver, dazzled by an automobile headlight, first came into collision with an open street car. A short distance behind the open car came an interurban car, which ran into the wreck on account of the dust surrounding it and the lack of time to apply brakes. In the meantime, however, an automobile touring car and a two-horse wagon were over-anxious to get by the first pile-up, with the result that they were both caught in the second smash, which completely demolished the open street car. Several persons were hurt, but only the truck driver seriously. The fact that the open car contained no passengers prevented many fatal accidents.

Illinois System Preparing for State Fair.—The operating and traffic departments of the Illinois Traction System, Peoria, Ill., are making elaborate preparations for handling traffic to and from the State Fair at Springfield, Ill., on Sept. 15-23. This company is the largest transportation feeder to the big exposition, as it enters the city from three directions and handles annually thousands of State Fair visitors. Low rates have been named from all points effective on Sept. 15, with return limit Sept. 25. Special schedules have also been prepared, and regular trains will run in sections and with trailers attached as the traffic demands. As is customary, the company will maintain an information bureau on the State Fair grounds, where representatives of the State Board of Agriculture and the traction system will furnish information concerning all railway schedules and the fair itself. The company will give away a new souvenir in the shape of an up-to-date and complete railway map of the State.

Who's a "Jay"?—This is the explanation of a "jay," as contained in the August issue of *Safety*, the magazine of the Union Traction Company of Indiana: "A 'jay' walker, 'jay' driver, and 'jay' chauffeur is one who cuts across the street at all kinds of angles, at crossings, in the middle of the block, or any place else, thereby endangering all others in his class, as well as jeopardizing his own safety, and especially increasing his liability to car collisions. A 'jay' rider is a Union Traction employee, not excepting the official class or the semi-official class, who persists in doing things that the ordinary passenger is not expected to do, such as smoking and riding on the rear platform and steps; riding in the baggage room and talking to the motorman; shifting the material in the baggage room to increase his comfort; getting on and off at the front end, when the rear steps should be used; stalking through the car as an indication of ownership; seeking special favors from the car crew, via sending and receiving word through the dispatcher's office.

Newspaper Selling Stopped on Kansas City Cars.—To insure safety for newsboys, scores of whom have been injured jumping on or off cars, the Kansas City (Mo.) Railways at the suggestion of the Board of Public Welfare has decided to abolish the practice of permitting boys to sell papers on the cars. The actual work of securing the new order started with the welfare department of the company as a feature of its public safety work. The order has met with the hearty indorsement of the Kansas City *Star*, *Times* and *Post*. It is being enforced without difficulty or complaint. Three years ago the Metropolitan Street Railway issued an order to the same effect, but withdrew it after a few weeks of futile efforts at enforcement. Recently the Kansas City Railways prepared a statement indicating the cost of the newsboys to its stockholders. About $25,000 a year was chargeable to the freedom of newsboys on the cars. In one month thirty-two claims of newsboys were paid, ranging from $10 to $500. There were several death claims of $5,000 each in the last two or three years. While these claims were called newsboy claims, it was well known that many of the injured were not newsboys, but boys who had got hold of newspapers and were using them as the excuse for riding free.

Personal Mention

T. L. Miller has been appointed vice-president and efficiency engineer of the Fort Wayne & Northern Indiana Traction Company, with headquarters at Fort Wayne, Ind.

Minot J. Hill, general manager of the Trenton, Bristol & Philadelphia Street Railway, Bristol, Pa., is now consulting manager for Martin & Company, Philadelphia, who financed the Salem & Pennsgrove Traction Company line.

A. B. Brown, who has been in the employ of the Texas Traction Company, Fort Worth, Tex., since the interurban railway between Sherman and Dallas was built, has been made assistant to M. J. Loftus, superintendent of transportation.

Harry D. Frueauff has resigned as treasurer and manager of the City Light & Traction Company, Sedalia, Mo., to become general manager of the Montgomery Light & Water Power Company, Montgomery, Ala. Both properties are controlled by the Doherty interests.

Louis A. Pease has been appointed division superintendent of the Western division of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., to succeed C. Earl, deceased. Mr. Pease has been a conductor on this line since the present company acquired the property.

William Heener has succeeded A. L. Bowen as engineer of the power station of the Terre Haute, Indianapolis & Eastern Traction Company at Lebanon, Ind. Mr. Keener has also succeeded Mr. Bowen as chief engineer of the Indianapolis & Northwestern Traction Company.

Lawrence W. Jackson, who has been local auditor of the Alabama Power Company in Anniston for several years, has been appointed acting manager of the local operations to succeed A. L. Kenyon, resigned, who retires from the company on Oct. 1 to take a managerial position at Columbia.

Frederick S. Pratt, chairman of the board, and Thomas Nelson, Thomas N. Perkins and Stedman Buttrick, members of the executive committee of the board of directors of the Puget Sound Traction, Light & Power Company, have been in Seattle on a tour of inspection of the property.

Dan G. Fisher, who has been superintendent of transportation for the Corsicana division of the Southern Texas Traction Company, Dallas, Tex., has been transferred to the executive offices, reporting direct to J. F. Strickland, president, and assuming the position of assistant to the president.

C. F. Berry, who has been clerk of the Lewiston, Augusta & Waterville Street Railway, Portland, Me., has also been made treasurer of the company, to succeed Charles A. Pearson, Jr., Philadelphia. Mr. Berry is also treasurer and clerk of the Cumberland County Power & Light Company, Portland.

E. N. Strait, who for the last ten years has served in the engineering and statistical departments of the Wisconsin Railroad Commission as inspector and public utilities expert, has joined the organization of H. M. Byllesby & Company, Chicago, Ill., as assistant to Arthur S. Huey, vice-president in charge of operation.

William F. Pfennig, accountant for Stone & Webster, who has been connected with the Houston (Tex.) Electric Company for the last ten years, has been transferred to the Boston office of the company. Prior to his departure from Houston, Mr. Pfennig was a guest at a luncheon at the Rice Hotel, the host being David Daly, manager of the Houston Electric Company.

John P. Phillips, vice-president of the Chillicothe Electric Railroad, Light & Power Company, Chillicothe, Ohio, has been elected president of the Ohio Utilities Company, incorporated recently to consolidate the Circleville Light & Power Company, the Gallipolis Electric & Power Company, the Delaware Electric Light, Heat & Power Company, and the Chillicothe Electric Railroad, Light & Power Company, Chillicothe, Ohio.

Simon Bamberger, formerly president of the Salt Lake & Ogden Railroad, which operates between Salt Lake City and Ogden, Utah, a distance of 36 miles, is the Democratic nominee for Governor of the State of Utah. Mr. Bamberger was born in Darmstadt, Germany, in 1847. In 1915 he retired from the active management of his varied and extensive interests and has since then indulged in recreation and travel.

Horace E. Allen, formerly of the Toledo Railways & Light Company, Toledo, Ohio, has been appointed assistant general superintendent of the Michigan Railway, Jackson, Mich. Mr. Allen was graduated from the Massachusetts Institute of Technology. After completing his electrical engineering course he accepted a position with the Westinghouse Electric & Manufacturing Company, and in 1910 he became connected with the Toledo Railways & Light Company under J. F. Collins, then assistant general manager.

George A. Smith, who has been appointed assistant general freight and passenger agent of the Waterloo, Cedar Falls & Northern Railway, Cedar Rapids, Iowa, was connected for twenty-two years with the Chicago & Great Western Railroad as messenger, operator and local agent at several of that company's stations, for three years as traveling freight agent in the Pittsburgh territory and for two years as division freight and passenger agent at Chicago. He resigned from the latter position and engaged in the real estate business. Two years later he re-entered steam railroad work as traveling passenger agent for the Southern Pacific Company in the Pittsburgh territory. He resigned from the Southern Pacific Company to become connected with the Waterloo, Cedar Falls & Northern Railway.

J. B. Duvall has been appointed by President W. A. House of the United Railways & Electric Company, Baltimore, Md., as superintendent of the welfare department of the company. For many years the company has displayed a substantial interest in the welfare of its employees, aiding them in sickness and in time of distress and caring for those who have become incapacitated for work. The welfare work of the organization has heretofore been assigned by Mr. House to various committees of officials, but its growth finally made such demands upon their time that it was found necessary to put some one competent person in direct charge as the executive officer, and Mr. Duvall was selected for this post. He has been in the claim department of the company for many years and his long training and general efficiency are such as peculiarly to adapt him for the new position.

W. Stanley Woodland has been chosen safety director for the Kansas City (Mo.) Railways. Mr. Woodland will have charge of all the safety work to be done by the company. He will work under the direction of the general safety committee. Mr. Woodland was born in Crisfield, Md., on Nov. 12, 1886. He began his street railway career nine years ago at Key West, Fla., where he was employed by Stone & Webster in the power house department. He remained there for two years. In January, 1909, he resigned and went to Beaumont, Tex. At Beaumont he was engineer in a power house of the Beaumont Traction Company, later being promoted to chief engineer of the power house. He remained there until the close of the year, when he resigned to enter the transportation department of the Missouri & Kansas Interurban Railway Company as a trainman. Mr. Woodland remained in the employ of that company until April, 1910, when he went with the Kansas City Railways as night clerk at Twenty-ninth and Southwest Boulevard division. Later he was night clerk at the Ninth and Brighton division, then day clerk at Ninth and Brighton, then assistant supervisor at Ninth and Washington and assistant supervisor at Forty-eighth and Harrison. From the Forty-eighth and Harrison division Mr. Woodland was appointed supervisor at Twenty-ninth and Southwest Boulevard.

OBITUARY

James M. Denniston, for many years general traveling salesman of the American Steel & Wire Company, died at his residence in the Chicago Athletic Association on Aug. 29. Mr. Denniston was born in Pittsburgh in 1866. He was well known in wire circles in Pittsburgh and elsewhere in the West.

Construction News

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

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

RECENT INCORPORATIONS

***Pinellas West Coast Railway, St. Petersburg, Fla.**—Incorporated to acquire franchises, build, lease, own and operate railroads or street railways. Capital stock, $10,000. Officers: H. C. Case, president; J. A. Mangold, vice-president, and C. E. Worrell, secretary and treasurer.

FRANCHISES

Mobile, Ala.—The Mobile Light & Railroad Company has received a franchise from the Council to construct an extension to its Dauphin Street line.

Batavia, Ill.—The Aurora, Elgin & Chicago Railway has asked the Council for a renewal of its franchise in Batavia.

Kansas City, Mo.—The Kansas City Railways has received a franchise from the Council to construct a single-track line on Twenty-fifth Street from Troost to Grand Avenues.

Nashville, Tenn.—The Nashville Traction Company has asked the Board of Commissioners for permission to remove its tracks on Fifth Avenue from Deaderick Street to Church Street.

TRACK AND ROADWAY

Los Angeles (Cal.) Railway.—The Los Angeles Railway and the City Engineer's Department will work out a program whereby 10 miles of work by the company will be finished before the rainy season, the most important being done first. This was decided on by the Board of Public Works when the company asked that it be allowed to reconstruct its tracks on Second Street between Spring Street and Broadway and on Figueroa Street between Seventh and Eleventh Streets before going ahead with work in other districts. Chief Engineer Bulpin of the Los Angeles Railway informed the Board that at present there are nearly 10 miles of track to be attended to in addition to 2 miles on Mesa Drive, just outside the city. He said the work was being pushed as rapidly as possible, and under the present schedule it was hoped to have it cleaned up before winter.

Pacific Electric Railway, Los Angeles, Cal.—It is reported that this company will construct an extension from La Habra to Anaheim, via Fullerton.

San Jose (Cal.) Railroads.—Work has been begun by this company reconstructing its tracks on Seventeenth Street from Santa Clara to Empire. The present 60-lb. Trilby rail will be replaced with 72-lb. T-rail.

Jacksonville & St. Augustine Public Service Corporation, St. Augustine, Fla.—This company expects soon to begin construction on its proposed electric railway to connect Jacksonville and St. Augustine. T. R. Osmond, St. Augustine, general manager. [June 12, '15.]

Atlanta & Anderson Electric Railway, Atlanta, Ga.—The Atlanta & Anderson Construction Company, Electric and Gas Building, Atlanta, has been organized preliminary to constructing the proposed electric railway from Atlanta to Anderson, S. C. J. L. Murphy, Atlanta, is interested. [Sept. 2, '16.]

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—Work has been begun by this company on the construction of an extension north of its Seminary Street line.

Kewanee & Eastern Electric Railway, Kewanee, Ill.—Preliminary surveys are being made of this company's proposed line from Kewanee to Henry. C. G. Lampman, Cedar Rapids, is interested. [May [illegible], '16.]

Chillicothe & Peoria Electric Railway, Peoria, Ill.—This company will probably receive a free entrance to the city of Peoria, if the decision of the streets committee of the Council is upheld. The committee regards the new interurban line merely a tenant of the Peoria Railway, as it will enter the city over tracks of the latter company. [Aug. 26, '16.]

Jacksonville Railway & Light Company, Peoria, Ill.—This company is repairing its tracks on South Main Street and the Vandalia Road.

Kankakee & Urbana Traction Company, Urbana, Ill.—This company reports that within the next two months contracts will be placed for the construction of one block of track in Paxton to complete its line to its new station; also for switches and special work at Paxton.

St. Joseph Valley Railway, Elkhart, Ind.—It is reported that an extension will be built by this company early in 1917 to Toledo, Ohio.

Columbus, Greensburg & Richmond Railway, Indianapolis, Ind.—It is reported that the project to construct a line from Columbus to Richmond, via Greensburg and Connersville, has been submitted to a financing company. John A. Shafer, Indianapolis, consulting engineer. [April 8, '16.]

Bay State Street Railway, Boston, Mass.—Operation has been begun on the Highland Circuit line of the Bay State Street Railway. The extension forms a loop along Dock Avenue, Grant Street and Bay View Avenue, Lynn.

Boston (Mass.) Elevated Railway.—A general widening of the space between tracks and the laying of new rails in Brookline is planned by the Boston Elevated Railway during the coming year. Plans for the near future contemplate track changes on Washington Street from Park Street to Beacon Street; on Harvard Street from Coolidge Corner to the Allston line, and possibly from Boylston Street to Coolidge Corner. Work on Harvard Street is already under way, and will soon be started on the other sections where change is contemplated. The increased space between tracks when the work is completed will be 5 in., and the new rails will be of the heavy type of girder rail. The joints between rails will be electrically welded.

Iron River, Stambaugh & Crystal Falls Street Railway, Iron River, Mich.—This company, which operates a line from Iron River through Stambaugh and Palatka to Gaastra, reports that its line to New Caspian is partly finished and a line is projected to the James locations, 2 miles north of Iron River. Work on the company's main line to Crystal Falls which was begun in 1914 will be continued this year if it is possible to secure labor and the necessary material in time.

Public Service Railway, Newark, N. J.—It is reported that this company will construct tracks from the present terminus of its Cedar Lawn line at Market Street and the Wesel Road to the entrance of Cedar Lawn Cemetery.

Pennsgrove, N. J.—A committee composed of members of the Chambers of Commerce of Wilmington, Del., Pennsgrove, Woodstown, Elmer, Millville, Vineland and Atlantic City, N. J., is working on the project to build either a steam or electric line from Pennsgrove to Atlantic City, connecting all of the towns interested. It is estimated that a line taking in all of these points would cost $5,000,000. Another plan is to connect only Pennsgrove and Elmer with a trolley line, giving Wilmington and Pennsgrove direct connection with Atlantic City and the other South Jersey points, via the Pennsylvania and Jersey Central Railroads. These two railroads seem willing to co-operate in the project, providing connection is made to their lines. [July 8, '16.]

Salem & Pennsgrove Traction Company, Salem, N. J.—This company reports that 4 miles of its line between Salem and Pennsgrove is completed and in operation and the balance will be completed this fall. The line when completed will be 14 miles long. Carl N. Martin, Philadelphia, secretary. [March 11, '16.]

Public Service Railway, Trenton, N. J.—County Engineer Logan has ordered the Public Service Railway to raise its tracks 5 1/3 in., to conform with the road between Bordentown and Trenton.

Southern Public Utilities Company, Charlotte, N. C.—This company is improving its track in Winston-Salem.

Goldsboro (N. C.) Electric Railway.—This company reports that it has just completed the construction of 1½ miles of new track.

Northern Ohio Traction & Light Company, Akron, Ohio.—It is reported that this company plans to construct a new bridge at Walnut Street, West Barberton.

Tulsa (Okla.) Interurban Railroad.—Promoters of the Tulsa Interurban Railroad, which is to afford an entrance into Tulsa for the Iron Mountain and the Missouri, Oklahoma & Gulf Railways, announce that preliminary work will begin in a few days. A route via Broken Arrow has been selected and grading will be rushed. H. D. Pattee, Tulsa, is interested. [July 15, '16.]

Guelph (Ont.) Radial Railway.—A report from this company states that it expects to construct 3000 ft. of track in 1917.

London (Ont.) Street Railway.—This company will construct an extension to its Hamilton Road line and will double track its Dundas Street line.

Sudbury-Copper Cliff Electric Railway, Sudbury, Ont.—It is reported that this company is contemplating the construction of two extensions, one from the Sudbury flour mill, the eastern terminus of the line, to the Murray nickel mine, about 4 miles; the other to start from the Sudbury flour mill to the Mond Nickel Company's plant at Coniston, about 19 miles. J. H. Mackey, Sudbury, president.

***Portland & West Coast Railroad & Navigation Company, Newport, Ore.**—It is reported that construction will soon be begun by this company on a proposed electric railway between Newport and Portland. Dr. A. J. Fawcett, Newport, is interested.

Portland Railway, Light & Power Company, Portland, Ore.—This company has decided to run no electric cars across the big interstate bridge over the Columbia River to Vancouver, Wash. E. Howard, engineer of the company, states there is no money in such an arrangement for the company, as it would cost at least $30,000 to build a line across the bridge to Vancouver. For that sum, the company claims, it can get enough big buses to care for the traffic.

Saskatoon (Sask.) Municipal Railway.—Proposals are under consideration by the City Council of Saskatoon for the construction of 1200 ft. of new double track on the provincial bridge at Twenty-fifth Street.

Knoxville Railway & Light Company, Knoxville, Tenn.—About $175,000 is being spent this year by the Knoxville Railway & Light Company on improvements to its system in Knoxville. The company is reconstructing its Magnolia Avenue line and is improving its double track on the Broadway Pike from the city limits to Arlington. The Sevierville line has been rebuilt from the county bridge to the end of the line, about 1 mile. Of this distance, 2330 ft. is double tracked.

Nashville & Eastern Electric Railway, Smithville, Tenn.—In an election held recently DeKalb County voted to issue $150,000 4 per cent, thirty-year bonds and subscribe that amount to the stock of the Nashville & Eastern Electric Railway. The line will extend from Nashville to Smithville, via Lebanon, Watertown, Alexandria and Liberty. A year ago DeKalb County voted $150,000 4 per cent bonds for the purpose of building an electric line from Lebanon to Smithville, but on account of technicalities the bonds were held void. Construction work will begin at once on the road as the survey has been made and most of the right-of-way has been secured. The road will connect with the Nashville, Chattanooga & St. Louis Railway at Lebanon, which, it is said, will be electrified from there to Nashville. The road is contracted to be finished by December, 1917. [Aug. 5, '16.]

Dallas Consolidated Street Railway, Dallas, Tex.—The City Commission of Dallas has granted an extension of time until Dec. 1 to the Dallas Consolidated Street Railway Company in which to begin track construction work ordered by the commission on Texas Street, between Swiss and Live Oak Streets, and on Colonial Avenue between Lenway and Romaine Streets.

Dallas Northwestern Traction Company, Dallas, Tex.—E. P. Turner, president, and S. G. Perkins, chief engineer, of the Dallas Northwestern Traction Company, have been over the route of the proposed interurban line from Dallas to Denton, conferring with business men of the cities and towns which this line will touch. The officials also have investigated the proposed extension of the line from Denton to Gainesville, and have made favorable report on the project, after conferring with business interests at Gainesville. This line now is practically assured. [June 1, '16.]

Galveston (Tex.) Electric Company.—This company reports that it expects to construct ½ mile of track with concrete foundation and various special work layouts.

Richmond, Rappahannock & Northern Railway, Richmond, Va.—It is reported that nearly all the money needed to insure the construction of this company's line from West Point to Urbanna, 17 miles, has been subscribed, and it is expected that construction will be begun at once. C. L. Ruffin, 514 American National Bank Building, Richmond, chief engineer. [Dec. 11, '15.]

Monongahela Valley Traction Company, Fairmont, W. Va.—Surveys have been completed by this company for the extension of its Weston line through Stealey Heights Street.

SHOPS AND BUILDINGS

United Railways & Electric Company, Baltimore, Md.—Plans have been filed by the United Railways & Electric Company for the construction of a one-story brick waiting station at Callow Avenue. The station proper will measure 20 ft. x 30 ft., while the shed will be 90 ft. x 30 ft.

Kansas City (Mo.) Railways.—This company has awarded a contract to E. L. Winn Construction Company, Kansas City, for the construction of a shelter house at Union Station. The structure will be 22 ft. x 60 ft., of cut stone with red tile roof. The floors will be of stone and brick. The cost is estimated at $4,000.

Goldsboro (N. C.) Electric Railway.—This company advises that contracts will be placed at once for the construction of an addition to its carhouse.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.—A freight depot is being built by this company beside the express station of the Electric Package Company at East Ninth Street and Eagle Avenue, Cleveland.

Lake Erie & Northern Railway, Brantford, Ont.—The Brantford City Council has granted a permit for the erection of a brick station on Colburn Street, to be used jointly by the Lake Erie & Northern Railway and the Brantford & Hamilton Railway. The work of putting in the foundations is being done by Schultz Brothers, Ltd., Brantford. The cost of the station is estimated at $25,000.

Valley Railways, Lemoyne, Pa.—It is reported that this company will construct a new waiting station and office building at Second and Walnut Streets, Harrisburg.

Dallas, Tex.—The new $1,500,000 interurban terminal at Dallas was opened for service Sept. 1. It was built by the Dallas Terminal Association. Cars of the Northern Texas Traction Company, the Texas Traction Company, the Southern Traction Company and any other lines which may be built out of Dallas will use the new terminal.

POWER HOUSES AND SUBSTATIONS

Pacific Electric Railway, Los Angeles, Cal.—The hydroelectric plant of the Pacific Electric Railway at Upland was recently destroyed by fire, causing a loss of about $20,000.

Union Traction Company of Indiana, Anderson, Ind.—This company has ordered twenty complete quadruple equipments with No. 333-V motors and HL control from the Westinghouse Electric & Manufacturing Company to replace some of their high speed passenger equipments consisting of 50-C motors and type L hand control.

Des Moines (Iowa) City Railway.—This company is asking for bids for the reconstruction of its power station. The equipment will include one 1000-kw. and one 5000-kw. generator unit.

Kentucky Traction & Terminal Company, Lexington, Ky.—This company reports that it has awarded a contract to the Edge Moor Iron Company, Edge Moor, Del., for one 500-hp. boiler, to be installed and ready for service by Nov. 1. An extension to the company's plant to take care of this new equipment is now under construction by the Armstrong Engineering Company, Taylorville, Ill.

Manufactures and Supplies

SHEET METAL CULVERT TRADE SITUATION

Since the beginning of the European war the demand for sheet metal culverts has been rather less in amount than that in normal times. Prices have increased and decreased in accordance with the galvanized metal market, and the range of prices has varied from 5 to 15 per cent above the prices for corrugated culverts established in normal years. The selling conditions are thought to have been influenced not so much by the variations in culvert prices as by the generally slackened new construction work. Substantial quantities of metal culverts, however, were purchased for maintenance work. The low relative cost of this type of culvert is also responsible, probably in considerable part for the continued activity which has been experienced in the culvert market during the last year. These culverts are easier to transport and install than the materials used for the heavier types of drainage structures, and the increased prices that have been asked for cement, reinforcing steel and cast-iron pipe, together with the high cost of labor since July, 1914, have greatly improved competitive conditions so far as corrugated iron culvert sales are concerned.

The largest manufacturers of metal culverts state that the longer that installations of corrugated culverts are in service the clearer becomes the necessity for the use of high grade metal in them. The adaptability of corrugated culverts in heavier than standard gages for those situations where, on account of unstable foundations or other severe conditions it is difficult to maintain a permanent waterway, is likewise becoming more and more firmly established.

PRICES AND DELIVERIES FOR TWIN STEEL TIES

Prices of steel products have varied so greatly in the last few months that observations on the steel tie situation are now of interest. Steel ties for city track work have been installed by a large number of city properties and also on some interurban lines.

One manufacturer, the International Steel Tie Company, Cleveland, Ohio, states that its twin ties have been used for the construction of more than 450 miles of city track in paved streets.

The first installation of this type of tie was made in 1909 on the Altoona & Logan Valley Electric Railway at Altoona, Pa., the second was made by the Cleveland Railway in 1910, and the third was made early in 1911 by the Scioto Valley Traction Company at Circleville, Ohio. Since that time their use has spread. Now they are used by nearly 100 different electric railways located in all sections of the United States.

The cost of the steel itself is said to account for more than half the selling price of twin steel ties, the present price of which is $4.90 per tie. One tie, however, is sufficient for each 6 ft. of track. In times of normal steel prices these ties sold for $3.50 each, f. o. b. Cleveland. Then steel was about $1.10 and now it is $3 per 100 lb. The price of malleable iron rail clips, eight of which are required per tie, is 5 cents each. Thus the total price of ties and clips per mile of track is about $4,665. The manufacturers point out that a reduction in the quantity of excavation and concrete needed brings about a sufficient lessening in the total cost of the track foundation to enable these steel ties to compete with wood ties on the basis of first cost of paved track substructure, even at the present high cost of raw steel.

The manufacturer also states that his contracts with steel producers provide sufficient steel for the manufacture of about 300,000 more ties than are now on order and that deliveries can be made immediately in carload lots of 300 to 500 ties so that they may be used for fall construction work. Recent rush orders for Fargo, N. D., Tippecanoe City, Ohio, and Beaumont, Tex., were shipped within four days from receipt of order.

OUTDOOR TRANSFORMER AND SWITCHING STATIONS

Continued development of the sale of power direct from the transmission lines of interurban railways has greatly increased the sales of the manufacturers of outdoor transformer and open-air switching stations. The interurban lines of the North Central states have installed a great many open-air switching stations for tapping their high-tension railway transmission system so that local consumers, such as industrial plants and small municipalities, may be fed direct from the railway circuits. These open-air stations consist of towers carrying horn-gap switches that are operated from a lower level through the medium of connecting rods. One refinement in this general type of switch as produced by the Railway & Industrial Engineering Company of Pittsburgh is that of the automatic air-break switch equipped with overload trips and no-voltage release. A further refinement which has been lately supplied to some railways is that of remote electrical control for opening or closing the air-break switches. One use for switches so equipped is for sectionalizing branch lines.

This company is making three weeks' delivery on its standard type of outdoor substations and six weeks' delivery on special equipment. Some of the more recently designed special equipments include outdoor switching stations for handling 110,000-volt energy supplied to portable transformer stations of the Southern Power Company.

MOTOR TRUCK SALES ACTIVE

Reports from the manufacturers of motor trucks indicate that the sale of gasoline power wagons has been especially active this summer. The White Company of Cleveland, for example, cites the sale during six weeks of more than 100 motor trucks to be distributed among thirty-nine public service companies. This company has a department devoted to the design of special truck and body equipment suitable for electric railway operating and constructing uses, as well as for other public utility uses.

Examples of economy to be obtained from the use of motor trucks, particularly for line and emergency outfits, have prompted engineers carefully to study the possibilities in the electric railway field and to apply the trucks in many new and interesting ways. The results of these investigations are reflected in orders for specially designed motor equipment to meet individual requirements of different properties.

The types of gasoline motor equipment used by public service corporations include line repair trucks, emergency trucks, cable pulling power-winch trucks, power trucks, wrecking trucks, ash removal trucks equipped with power dumping bodies, delivery trucks, and in some instances electric railways use buses for providing branch feeder line passenger service.

Recent orders have been placed with the White Company for motor trucks to be delivered to the Public Service Corporation of New Jersey; the Panama Traction Company, a new organization at Jamestown, N. Y.; New York State Railways; Des Moines City Railway; Columbus, Delaware & Marion Railway; Charleston Consolidated Railway & Lighting Company; Yonkers Railroad Company; Republic Railway & Light Company, Youngstown, Ohio; Stone & Webster Management Association; Chicago Surface Lines; Georgia Railway & Power Company, and the Grand Rapids (Mich.) Railway.

SALES OF EXPANDED STEEL POLES

A new use for the expanded steel pole is reported by A. J. Bates of the Bates Expanded Steel Truss Company, Chicago. These steel trolley type poles are being employed for supporting outdoor high-tension switching and lightning arrester stations. The Central Maine Power Company has a large wire tower built of these poles and the Delta-Star Electric Company has purchased poles for five outdoor substations.

This type of pole has been on the market less than a year and consequently many of the orders received have called for poles for demonstration purposes. Repeat orders are

now reported. The largest number of Bates poles so far sold to an electric railway went to Des Moines, where the Des Moines City Railway is completing the erection of more than 1100 expanded steel truss trolley poles. Other orders have been delivered to the Chicago, Ottawa & Peoria division of the Illinois Traction System, the Aurora, Elgin & Chicago Railroad, Chicago & Joliet Electric Railway, Hudson Valley Railway, Public Service Company of Oklahoma, Oklahoma City Railway, Intermountain Railway, Light & Power Company, Lamar, Col., and to a substantial number of central stations and transmission companies in various parts of the country. Several foreign orders have been delivered, and recently a repeat order was received from a property in Cuba. The manufacturing capacity of the plant has reached 300 poles a day; deliveries on standard trolley poles can be made at once, and 70-ft. combination poles can be shipped in ten days. The price of poles advanced somewhat in July, but the officers of the company state that their reserve of steel is such that they can now furnish steel poles at a price but little above the present price of raw steel.

WIRE AND CABLE ORDERS LARGE

Manufacturing conditions in the weatherproof wire and cable industry have improved greatly during the last few months. The Standard Underground Cable Company, for example, has five plants now all in full operation. Delivery on weatherproof trolley feeder cable and wire is normal at two months, but the manufacturers point out that such roads as may be planning for the installation of weatherproof feeders and cable in the early months of next year should consider ordering very shortly. The biggest buyers of cable are now placing contracts for exceptionally large amounts. They are placing orders far in advance, and this may embarrass the manufacturers in making normally prompt deliveries of smaller orders.

ROLLING STOCK

Goldsboro (N. C.) Electric Railway is in the market for two open cars and one closed car.

Jackson Railway & Light Company, Jackson, Tenn., is in the market for two one-man car bodies.

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., has ordered two cars from the Southern Car Company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, is in the market for ten additional cars for city service.

Charleston (W. Va.) Interurban Railroad is reported to have placed an order with the Cincinnati Car Company for two all-steel double-truck interurban cars.

North Jersey Rapid Transit Company, Hohokus, N. J., is reported to be contemplating the purchase of one-man light weight cars to replace present equipment.

Long Island Railroad, New York, N. Y., is inquiring for prices on forty-five trail cars for use on its electrified divisions and for fifteen coaches and ten baggage cars for steam operation.

Indianapolis Traction & Terminal Company, Indianapolis, Ind., noted in the ELECTRIC RAILWAY JOURNAL of March 18 as considering the purchase of twenty-five all-steel double-truck cars, has ordered this equipment from the Cincinnati Car Company.

Wheeling (W. Va.) Traction Company is in the market for fourteen double-truck city cars. This new requirement is in addition to the eight 30-ft. body double-truck cars which have just been delivered by the Cincinnati Car Company. The latter cars are equipped with four Westinghouse motors and with Allis-Chalmers air-brake equipment.

Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., noted in the ELECTRIC RAILWAY JOURNAL of Aug. 12 as considering the purchase of additional equipment, is in the market for five interurban motor cars. This company has just received from the Westinghouse Electric & Manufacturing Company two new single-phase freight locomotives weighing 72 tons each.

TRADE NOTES

Miller Trolley Shoe Company, Boston, Mass., has received an order for forty-eight trolley shoes from the Lehigh Valley Transit Company.

Railway Improvement Company, New York, N. Y., has received an order for anti-climbers for the fifty cars recently ordered from The J. G. Brill Company by the Boston Elevated Railway.

Consolidated Car Fender Company, Providence, R. I., has received, through its general sales agent, Wendell & MacDuffie Company, an order from the Wheeling Traction Company for fifty H-B life guard equipments.

Page Woven Wire Fence Company, Monessen, Pa., has appointed W. T. Kyle as Eastern sales manager, with offices at 30 Church Street, New York. For some time Mr. Kyle has been connected with the Okonite Company in the sales department and previously was Eastern sales manager of the Duplex Metals Company.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order from the Jackson Light & Traction Company for two equipments of Westinghouse 515-X motors and five equipments of Westinghouse 512-Z motors; the first mentioned to be used in two new light-weight one-man cars now being built and the last to be used in replacing old-type motors.

Peter Smith Heater Company, Detroit, Mich., reports the recent receipt of the following orders for heaters of the forced-ventilation type: Wichita Railway & Light Company, seven; Kansas City, Kaw Valley & Western Railway, four; Ashtabula Rapid Transit Company, three. This company has also received an order from the St. Joseph Valley Traction Company for two hot-water car heaters.

National Tube Company, Pittsburgh, Pa., has announced that a new steel pipe mill will be built at once at Gary, Ind. The plant will be located near the works of the Indiana Steel Company and will make pipe from the ore to the finished product. It is pointed out that so far as electric railways are concerned this new plant will place the company in a much better position for the delivery of steel trolley poles and power plant steam piping.

Cleveland (Ohio) Fare Box Company has recently made the following sales of its locked fare boxes: Fifty for the Clement C. Smith Companies at Winona, Minn.; Green Bay, Wis., and Evanston, Ill.; 265 to the Pittsburgh Railways, sixty to the New York State Railways, fifteen to the Buffalo & Lake Erie Traction Company, and fifty to Detroit United Railway, to which company an order for eighty boxes has just been delivered. That the fare box business is particularly active is evident by the statement that the Cleveland Fare Box Company has now unfilled orders on its books for more locked boxes than it sold during the entire year of 1915.

ADVERTISING LITERATURE

Ohmer Fare Register Company, Dayton, Ohio, has issued a booklet on the Ohmer system, entitled "Power."

Searchlight Company, Chicago, Ill., has issued Catalog No. 12 on Searchlight welding and cutting equipments. This company is also distributing a circular illustrating its equipment and some of the work done by it.

White Company, Cleveland, Ohio, has circulated several new bulletins on the service now being rendered by White motor trucks in use in the electric railway industry and also in other divisions of the public utility fields. Illustrations in these bulletins show special types of bodies designed for line and track work. One bulletin is devoted to tower trucks for electric railway service.

The paint and varnish manufacturers report a considerable increase in electric railway business for 1916 as compared with former years. The Sherwin-Williams Company, Cleveland, Ohio, has done over 25 per cent more electric railway business during the year ending Aug. 31 than it did in the previous year. This company, due to war conditions, has built a dye manufacturing plant and is at present turning out daily a ton of red dye. The dye-making equipment is soon to be doubled in capacity.