

# Electric Railway Journal

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No. 26

**HIGH COST OF LABOR IMPOSES NEW PROBLEMS** The higher the unit cost of labor the more important is the need for using it economically and supplementing it with mechanical devices. At present labor is probably more expensive than it has ever been before, and the chances for material reduction in its cost, at least in the near future, are not very bright. All who are responsible for the expenditure of labor must, therefore, consider most carefully every means for reducing it. In general, human labor is, considered purely as a matter of mechanics, very expensive. To illustrate, we may assume that by working continuously a man could not produce more than a kilowatt-hour per day, which if drawn from an electric circuit would cost the railway from 1 cent to 3 cents. It is true that the ancient Egyptians, Chinese and other peoples accomplished wonderful mechanical feats with human labor by employing armies of men. The Chinese, for example, were able to transport objects of great weight by means of elaborate wood framework which could be grasped by the requisite number of men. They were able thus to do the same kind and magnitude of work as is accomplished by a modern crane or derrick. In the early days, however, slave labor was very cheap, the time element in work was not seriously considered, and there were few devices for utilizing nature's stores of energy. With these primitive peoples low labor cost was coupled with a prohibitive cost of mechanical energy from other sources, whereas at the present time we have expensive labor and cheap energy.

**REPLACING HUMAN LABOR WITH MACHINES** In any mechanical operation we pay for brains, manual skill and mechanical energy. These are utilized in varying amounts depending upon the nature of the operation and the intelligence with which the work is laid out. In this there is much to be learned from the manufacturers, who have long recognized the advantage of doing everything possible with the aid of machines. To be sure manufacturing is different from railway work, but wherever operations can be concentrated and standardized manufacturing conditions can be approximated. With the conviction that much more can be done on electric railway properties to reduce the consumption of labor, and thus offset the rising unit cost of labor and materials, the **ELECTRIC RAILWAY JOURNAL** has endeavored to bring out all possible information regarding labor reducing practices. An article by R. C. Cram appearing in this issue is an example. Mr. Cram shows how track and road materials can be handled most cheaply. The same principles apply in other departments. It is possible that the present short-

age and high cost of labor, combined with the unsatisfactory character of much that is obtainable, will drive home the lesson that we have been buying very expensive energy in the past. If some of the money thus spent can be invested in skill and brains the result will be a good return and better working conditions for the men. Many a way engineer or master mechanic has asked for a machine or tool which he knew would save money only to be refused because first cost rather than ultimate saving influenced the decision. One lesson in all of this is that if the present organization of departments of the electric railway employing much labor is not conducive to the use of machinery, this organization should be changed if possible in the interest of economy.

**STUDYING POWER ACCOUNTING** A. E. Dedrick, according to C. E. R. A. A. paper on "Electric Light and Power Accounting," abstracted elsewhere this week, believes that electric railway accountants would be better officials for knowing about accounting methods in a field so closely connected with electric railways, and in this we concur. Such knowledge, of course, is essential for accountants of combined lighting and transportation companies. Knowledge of lighting and power accounting should also be sought by accountants of interurban lines that are adopting the plan of selling power to consumers along their routes. Only as a result of an intimate acquaintance with the principles of power cost accounting are the charges for such service likely to include a proper demand allowance covering the investment cost, as in the case of separate electric companies. Aside from its usefulness in such cases, however, a working acquaintanceship with the theory and practice of electric light and power accounting would be another excellent example of that wider vision that characterizes the modern accountant. The main reason for the rise of electric railway accountants to a position of vital importance in company organizations has been the fact that they have not been satisfied to remain mere bookkeeping clerks but have become students of finance, law, transportation and accounting and to some extent engineering. For the progressive accountants who are still seeking to broaden their knowledge, however, no better field could be found than the general accounting work of closely allied industries. The electric lighting and power field in particular is one of phenomenal growth and progressiveness, and many a hint as to improved methods and general efficiency might be found by the electric railway accountant who does not keep his interest narrowed down to the confines of his own field.

**THE PLACE OF DEFINITENESS IN ASSOCIATION WORK** In last week's issue of the *ELECTRIC RAILWAY JOURNAL* brief reference was made to the new organization of the executive committee of the Transportation & Traffic Association, under which committee work in groups will be supervised by members of that body. The essentials of this plan, which appears to us to be a very commendable one, are definiteness of object, plan and schedule on the one hand and provision for supervision on the other. Definiteness or concreteness of purpose is essential to success in any line of work, the first question to ask being: What are we striving to accomplish? Next in order is a concrete, intelligible and workable plan involving these questions: What is to be done? and When is it to be done? Given a definite object and a comprehensive plan, it is necessary to supplement this with effective supervision. Without such supervision any work is sure to suffer and particularly general work such as that of a national society. The work of the American Association has undoubtedly suffered in this particular in the past, and this was perfectly natural. Committee members are busy men; they would not have been selected for their responsibilities otherwise. Chairmanships are likely to be occupied by men busiest in the work by which they earn their daily bread. These men are accustomed to follow-up schemes in their business, and they expect and appreciate similar systems in association work. It is particularly appropriate that the Transportation & Traffic Association should promulgate a plan for more systematic committee work. The specialty of the transportation officer is schedule making and checking. Under the direction of President L. C. Bradley this association expects to set an example of thoroughness and promptness this year. Properly supported by the companies which have permitted themselves and their employees to be honored by committee appointments, the association cannot but have a profitable year's work.

#### A THOROUGHLY BAD BILL

A serious tax upon the spread of intelligence and upon the extension of business efficiency in this country was proposed in Washington on Dec. 9, when the House committee on post-offices voted to include in the current post-office bill a rider which places second-class mail matter on the zone basis. The present second-class mail rate, as most of our readers know, is 1 cent a pound, but if the proposed change is made, this charge will apply only to the first 300 miles. For the next 300 miles the charge will be 2 cents a pound and the rate then increases by stages to 6 cents a pound, which is the charge for postage when the distance is more than 1,800 miles. This is an increase to subscribers living more than 1,800 miles from the place of publication of 5 cents a pound, and, in the case of the *ELECTRIC RAILWAY JOURNAL*, would mean for such subscriptions an increase in postage over that at present of from \$2 to \$2.50 each per year. As there is no increase to subscribers within the 300 mile zone it is obvious that the effect of the added clause will be confined almost entirely to publications of country-

wide circulation such as the national literary and scientific reviews, the proceedings of the technical associations and the business papers like this journal which are devoted to the effort of increasing business efficiency in some selected industry. The daily papers will hardly be affected partly because most of them use other means of distribution than by mail and partly because the greater part of their circulations, especially of the small papers, is within the proposed 300-mile limit.

Now there are very serious objections both to the discriminations thus made between publications of different character and to the unscientific rate of charges adopted. One of these objections is that the tax is laid upon the very class of periodicals which it should be the purpose of the national government to foster. The engineer, the physician, or the railway manager, who is distant from the large centers of population and supply, is handicapped sufficiently by being out of personal touch with the progress made in his line of work and should not be obliged to pay more for the information which will lead to higher professional skill or greater business efficiency than those more favorably situated. Again, the proposed plan tends toward sectionalizing the intelligence and thought of the country and defeating the spirit of unity in national affairs and uniformity in progress in material affairs which the federal government above all should stimulate. The principle here is entirely different from that in the parcel post charges. In that instance, a uniform postal rate for distance might enable the big mail-order houses in the larger cities to compete very seriously with the smaller distributing houses in local centers. The national periodicals, however, from the very nature of things, must always be published in the large centers of population and for that reason there is no small dealer to protect.

Another defect in the bill, as will immediately be recognized by all transportation men, is the unscientific nature of the proposed charge. It is based on the theory that the cost of mail transportation varies with the distance traveled and ignores entirely all terminal charges. Actually, when mail in New York is placed in a pouch marked San Francisco it probably has to be handled no more times or sorted than if it had been sent from New York to Hackensack, N. J., or to any other point within the 300 mile limit, and it is the sorting and distribution of mail rather than its actual transportation after it is placed on the railroad train that is expensive. In this respect the proposed bill differs from the parcel post law, which recognizes a terminal charge.

Altogether the bill is about as bad as any which has ever been seriously proposed for our postal service, and it has not even got the redeeming feature that it might be considered necessary to eliminate a deficit, because Postmaster-General Burleson, within a few days, has reported that his department had earned a surplus during the last fiscal year. Those subscribers to this paper who would be affected by the proposed bill can well make their protest heard in Washington.

## What Does the H in Your Name Stand For?



For Heaven's Sake Tell Him Where to Put the H

**W**HAT is the public attitude toward the electric railway company in your town? Is it friendly, unfriendly or indifferent?

When a controversy arises affecting the railway's interests where does the public (knowing little or nothing about the merits of the case) usually stand?

All of us hear of people and institutions that we don't like and about which we are willing to believe the worst.

Then we get to know these people and institutions and find to our surprise that they are not so bad after all.

This sort of thing is due largely to lack of knowledge and partly to that inclination of the human mind illustrated in that story about "Gath."

George Alfred Townsend told a ministerial dinner companion that the first three letters of his pen name were his initials and that the H stood for where he was going.

"Oh, don't say that!" the clergyman exclaimed. "Heaven is within reach of all."

"Gath" once said that he had tried this psychological experiment on 4000 people, of whom 3996 thought that his H prophesied a hot destination.

Why the clergyman and 999 men out of every 1000 should jump to the conclusion that the H stood

for hell rather than heaven is more or less of a mystery.

But as we know that this is merely the manifestation of a general tendency, it becomes necessary to replace ignorance with information and to tell people that the H in our name, strange as it may seem, stands for heaven.

Otherwise they will go on involuntarily putting it in front of 'ell instead of 'eaven, although it is before the latter (let us hope) that it really belongs.

Any railroad man with the imagination of a mud-turtle can apply all this to his problems without further directions.

**IGNORANCE** is the cause of misunderstanding and distrust.

Add to this the inclination of the human mind unconsciously to think the **WORST** rather than the **BEST**.

And the need to put strong foundations of knowledge under popular opinion about public utilities is too plain to be postponed.

The kind of mason who does this foundation work best is known in the trade as a publicity man.

If his employment is too long postponed the whole house sometimes falls down under the weight of public disapproval.



STORAGE YARDS—FIG. 1—GENERAL VIEW IN SIXTY-THIRD STREET DOCK STORAGE YARD, B. R. T. SYSTEM

## Cutting Costs in Storage Yards

Use of Yard Machinery Conduces to Reduction in Cost of Handling Rails, Ties, Paving Material, Etc.

By R. C. CRAM

Assistant Engineer Way & Structure Department, Brooklyn Rapid Transit System

THE storage yard itself plays an important part in the consideration which should be given to the general subject of cost for handling and storing materials. It should be big enough to permit the purchase and storage of large quantities of materials in advance of actual need, thus allowing time for buying under suitable specifications and guarding against delays due to shortage of materials, to say nothing of the price savings usually effected through buying in bulk.

The location of the yard requires a careful study. In general it should be as nearly central to the system as practicable after proper weight is given to the factors of steam railroad and water connections and value of real estate. The latter item should not be allowed to control the selection of the site in most cases because the lack of proper rail and water connections to facilitate immediate storage will soon offset even very high real estate charges by the extra costs due to secondary hauling charges.

The arrangement of the yard, with respect to location of tracks and the location of the several materials so as to reduce handling to a minimum, should also have close

attention. The need for machinery in yards is quite apparent, but it may not be out of place to emphasize this by referring to the following table of approximate quantities of certain materials handled in 1914 for surface track reconstruction in the Sixty-third Street dock storage yard of the Brooklyn Rapid Transit System.

Material	Tons
Granite paving blocks.....	27,600
Standard yellow pine ties.....	2,540
Paving gravel.....	17,700
Grooved girder rail.....	3,400
Total.....	51,240



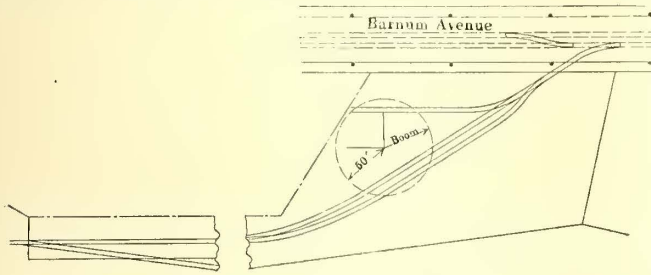
STORAGE YARDS—FIG. 2—STIFF-LEG DERRICK IN STORAGE YARD OF CONNECTICUT COMPANY, BRIDGEPORT, CONN.

There is now a general tendency to equip yards with labor-saving devices, chief among which are the various types of cranes in use for piling, hauling and storing bulky materials. There are four types of cranes which may be used for this purpose, *viz.*, stiff-leg derricks, guy derricks, jib cranes and gantry cranes. The stiff-leg type is the one in most general use, and one or more of these will be found almost indispensable in yards of all but the smallest roads, as the operation is simple, the range of use greater and the cost nominal in proportion to its serviceability. Such a derrick as that shown in

Fig. 2, which has a capacity of 10 tons, can be made and erected complete without motors for about \$500. This includes labor and all fittings. This is a stiff-leg derrick located in a moderate-sized yard, the Summerfield yard of the Connecticut Company at Bridgeport, Conn. It is operated by means of a motor car, hence no other hoisting machinery is required with the derrick itself. The use of the motor car obviates the necessity for the purchase and maintenance of hoisting apparatus. A general plan of the layout of this yard with its steam road connection is shown in Fig. 3. Figs. 2 and 3 are from a photograph and a drawing furnished by W. R. Dunham, Jr., engineer maintenance of way of The Connecticut Company. A 15-ton wooden stiff-leg derrick with iron fittings, the general details of which are shown in Fig. 4, is said to

yard is shown in Fig. 10, which is a general layout of the yard track and derricks of the Sixty-third Street dock storage yard of the Brooklyn Rapid Transit System. In the drawing small arrows marked respectively A, B and C are given to show the points from which the accompanying photographs were taken.

The jib crane will be found useful where it is desired to transfer loads in large bulk from one car to another,

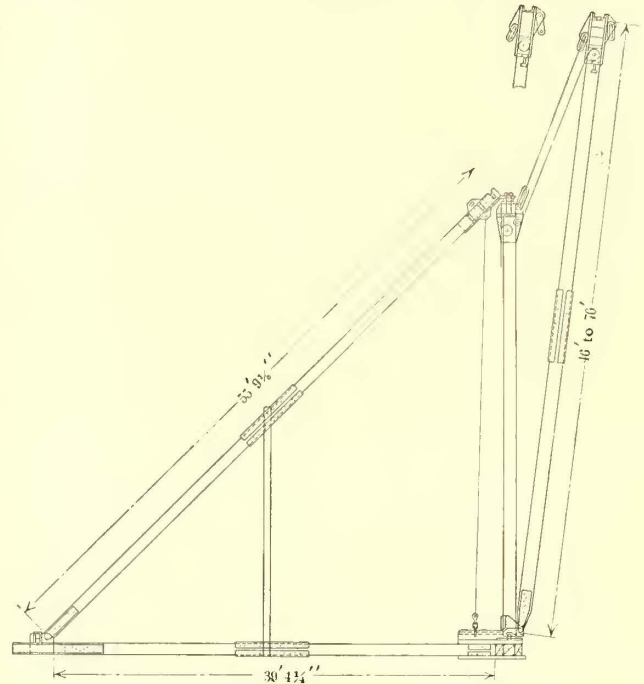


STORAGE YARDS—FIG. 3—SMALL STORAGE YARD OF CONNECTICUT COMPANY, BRIDGEPORT, SHOWING TRACK CONNECTIONS

have cost as follows in 1913: Lumber, \$256.23; irons, \$213.52; paint, \$3, and labor, \$35.25, a total of \$508.

When space is limited the knee type of stiff-leg derrick can be used to advantage. This is illustrated in Fig. 6 which shows a wooden derrick of this type used by the Brooklyn Rapid Transit Company. Fig. 8 is a design, of knee-type full-circle derrick, built by the G. H. Williams Company, Cleveland, Ohio.

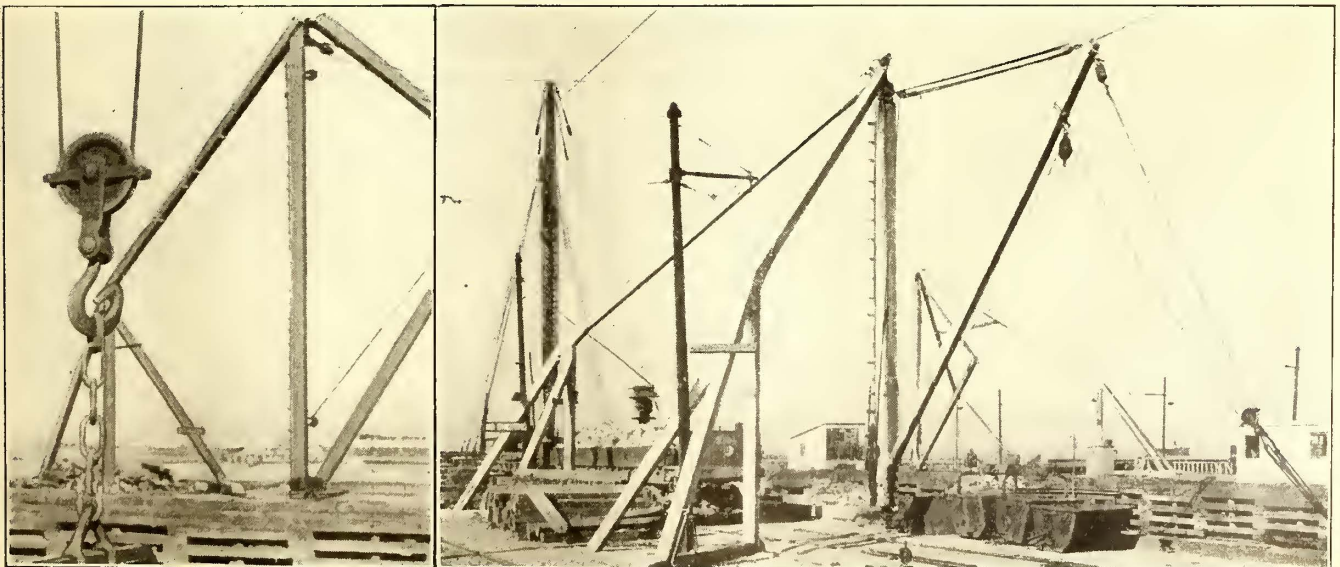
The guy type may be favored where conditions require the maximum range of action. A guy derrick is shown in Fig. 7. The location is such that ample head room for cars and wire is obtained under the guys. Unless sufficient area is available for properly locating the guys to provide such clearances, this type of derrick becomes less useful than the stiff-leg type. The illustration shows a guy derrick in use at a girder-rail storage pile. Its particular location in a large storage



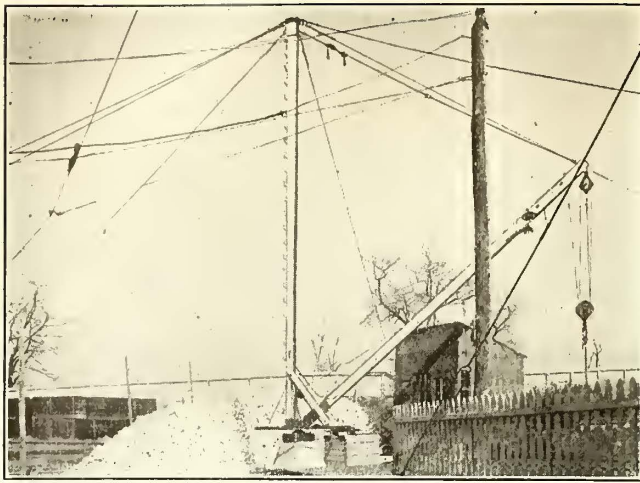
STORAGE YARDS—FIG. 4—FIFTEEN-TON STIFF-LEG WOODEN DERRICK WITH IRON FITTINGS

or for use in a fixed position at a rail pile, especially where ground space required for derrick legs and sills or for guys is at a premium. Such a crane is shown in Fig. 11. It will be noted that this outfit is quite similar to that now coming into favor for use upon crane cars, although the one illustrated is very much larger in capacity.

The gantry crane has had a limited use in yard work owing to the interference of overhead wires, and the writer is aware of only one important installation of

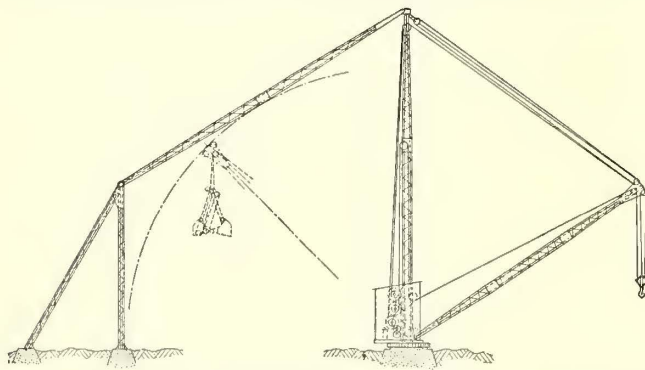


STORAGE YARDS—FIG. 5—SAFETY HOOK USED IN B. R. T. YARD; FIG. 6—KNEE-TYPE STIFF-LEG DERRICK



STORAGE YARDS—FIG. 7—FULL-CIRCLE GUY-TYPE DERRICK

this kind on electric railway property. It is probable, however, that by the use of long cables or some other means of getting power to the cars and eliminating the wires, the advantages of this type of crane could be made more available. The installation referred to is that of the Cleveland Railway Company at its Harvard Avenue shops, which is shown in Fig. 12, made from a photograph furnished by E. M. T. Ryder, engineer main-

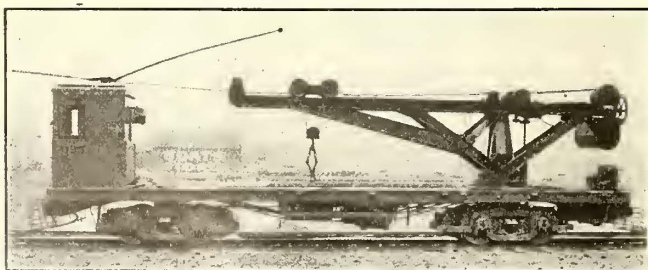


STORAGE YARDS—FIG. 8—FULL CIRCLE STIFF-LEG DERRICK FOR USE WITH LIMITED CLEARANCE

tenance of way Third Avenue Railway System, New York City.

The type of traveling crane running on elevated rails, such as is used ordinarily in shops and power stations, should be applicable to this field. Fig. 13 shows a yard of the D. L. & W. Railroad so equipped, using a Cutler-Hammer electro lifting magnet in addition to a clam-shell bucket.

The derrick car or locomotive crane also has a very wide use for handling materials in yards, and when equipped with the various buckets and devices for handling different materials, there is no doubt but that such a car alone will serve almost any purpose in a com-



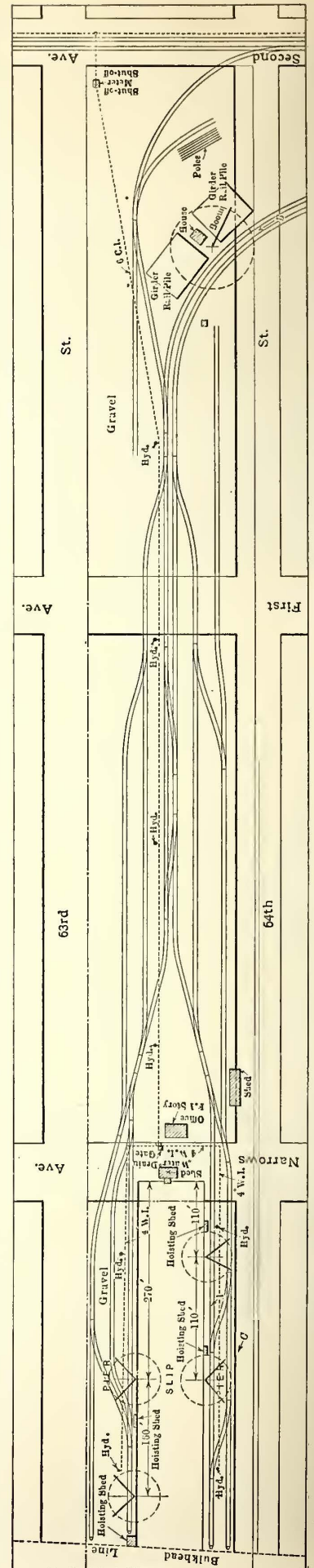
STORAGE YARDS—FIG. 9—JIB CRANE MOUNTED ON WORK CAR

paratively small yard and will be available also for occasional use upon the road away from the yard. Fig. 14 shows a locomotive crane of the Chicago Surface Lines, handling gravel. It is from a photograph also furnished by Mr. Ryder. For yard use only it is probable that a derrick car of the boom-crane type has the greatest range of use, while for combined yard and road use the jib-crane type will be found best. The one particular advantage of the latter in road work is the non-interference with overhead work. A typical jib-type crane is shown in Fig. 9. Both types are, of course, designed for electrical operation. These equipments cost from \$6,000 to \$7,000 complete, ready to run.

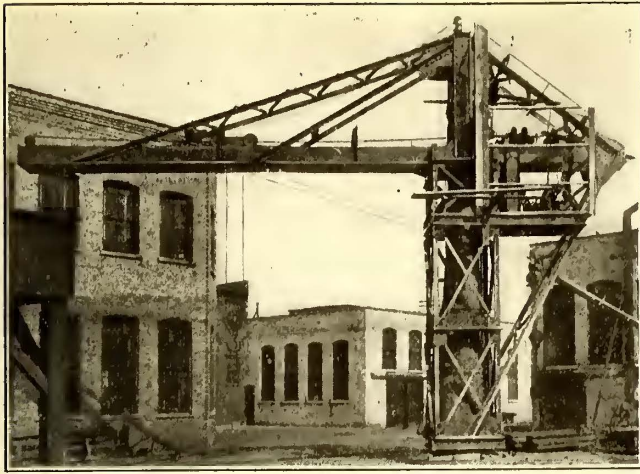
From the table it is evident that the crane has saved more than \$2,200 per year, and therefore paid for itself in a little more than three years. A crane of the boom type has been found to save its cost in one year as compared with manual labor.

AUXILIARY DEVICES

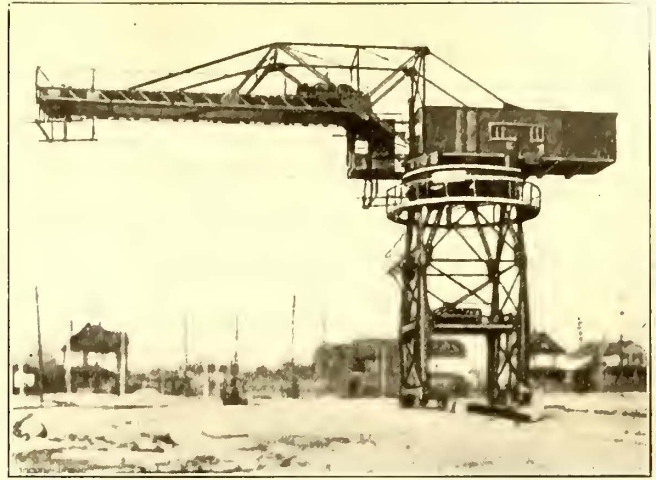
In conjunction with the use of cranes in yards there is a device in use for handling ties with the crane at the Sixty-third Street dock of the Brooklyn Rapid Transit system which reduced the cost of handling from 1 cent to 3 mills per tie, incidentally reducing the handling force from a crew of nine men and one foreman to two men and a crane operator. There has



STORAGE YARDS—FIG. 10—GENERAL LAYOUT OF SIXTY-THIRD STREET DOCK STORAGE YARD, BROOKLYN RAPID TRANSIT SYSTEM



STORAGE YARDS—FIG. 11—JIB CRANE FOR USE WITH LIMITED CLEARANCE



STORAGE YARDS—FIG. 12—FULL-CIRCLE, HAMMER-HEAD SWING CRANE

also been a great reduction in accidents and the ties may be piled much higher, thus saving ground space. The device, which is shown in Figs. 15 and 17, was designed by John Ferguson, dock master South Brooklyn Railway. The cost of these tie-bales is between \$50 and \$60 each.

Another saving effected through the use of machinery has been made in the handling of granite paving blocks. It was found that handling the blocks entirely by hand cost 22 cents per ton, which has been reduced to 7 cents per ton with the aid of machinery.

With respect to reduction in accidents, attention is directed to the safety hook shown in Fig. 5, page 1285, designed for use with derricks. This hook was also designed by Mr. Ferguson, after a fatality had directed forceful consideration to the need for such a device. It

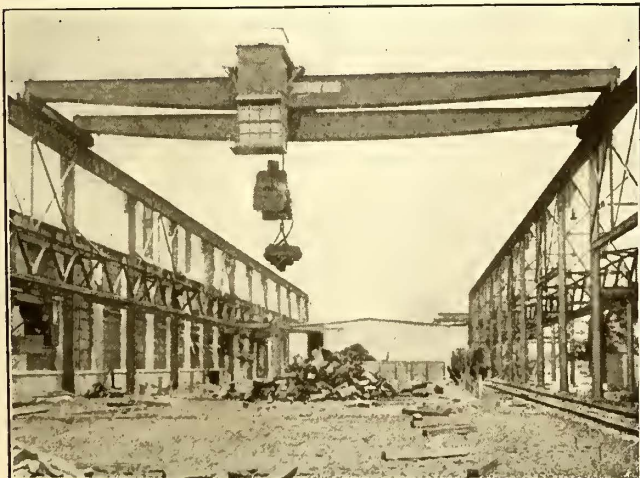
is practically impossible to detach the ring from this hook without deliberate intent. With the ordinary hook a sudden release of load on the fall lines or the fouling of the load in one of several ways would release the ring from the hook, thus creating a constant accident hazard which has been eliminated by the safety hook.

Among the devices coming into use in lifting iron and steel about the yards is the electromagnet. One of these has already been referred to. Figs. 18 and 19 are from photographs furnished by E. H. Berry, engineer of roadway, Cincinnati Traction Company. These show the application to the handling of special work and scrap, respectively. This company has found the magnet very serviceable. This particular magnet was made by the Browning Engineering Company of Cleveland, Ohio, whose crane and grab bucket are also included in the Cincinnati equipment.

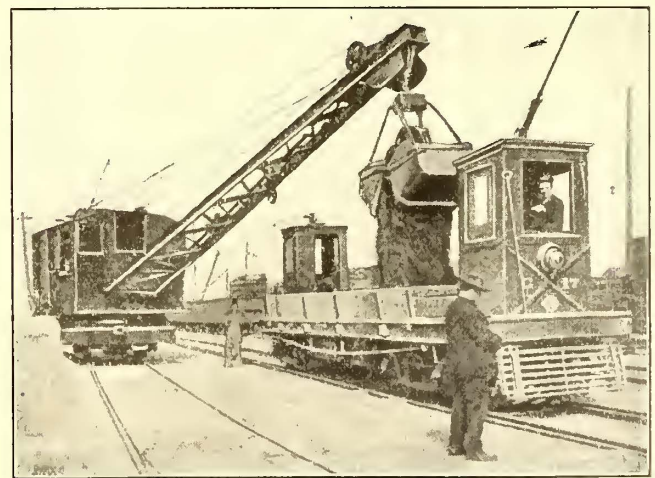
Another item of yard equipment found in some yards is the stone crusher, generally constructed in the portable type, such as that shown in Fig. 16, for convenience on occasions when it may be found advisable to have the outfit out on the work in order to lessen haulage charges. Where the cost of stone or gravel is high, it may be found advantageous to install stone crushers for producing ballast, and concreting material from old cobble granite and brick pavements or from old concrete. However, the installation of a crusher plant must be carefully considered because the maintenance, repairs and renewals of parts are expensive.

SAVING EFFECTED IN FOUR YEARS BY USE OF 3-TON PILLAR CRANE CAR ON ELECTRIC RAILWAY SYSTEM

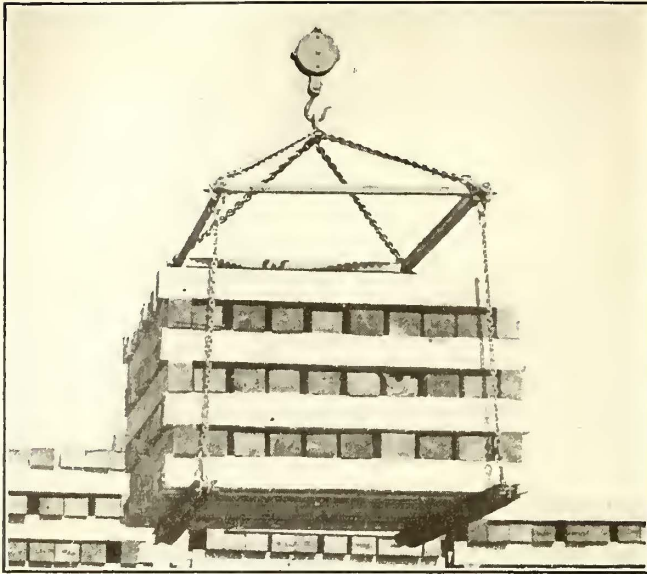
Number of Tons Handled	Cost of Handling		Total Saving
	Without Crane	With Crane	
4000 tons miscellaneous.....	\$1.00	\$0.25	\$3,000.00
3324 tons load on cars.....	.75	.20	1,828.20
3324 tons to yard.....	1.00	.25	2,493.00
6340 tons unloaded.....	.50	.20	1,902.00
6340 tons to job.....	.75	.25	3,170.00
			\$12,393.20
Cost of crane car, ready to run..	\$7,000		
Depreciation 5 per cent, four years	1,400		
Interest 5 per cent, four years..	1,400		
Upkeep 2½ per cent, four years..	700		
			\$3,500.00
Net saving four years, one car.....			\$8,893.20



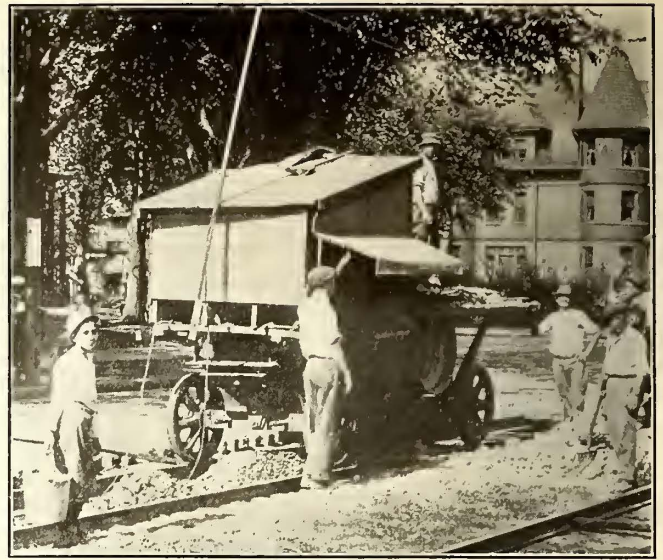
STORAGE YARDS—FIG. 13—OUTDOOR CRANE USED IN STOCKYARD OF D., L. & W. RAILROAD WHICH MIGHT BE APPLICABLE TO ELECTRIC RAILWAY YARDS



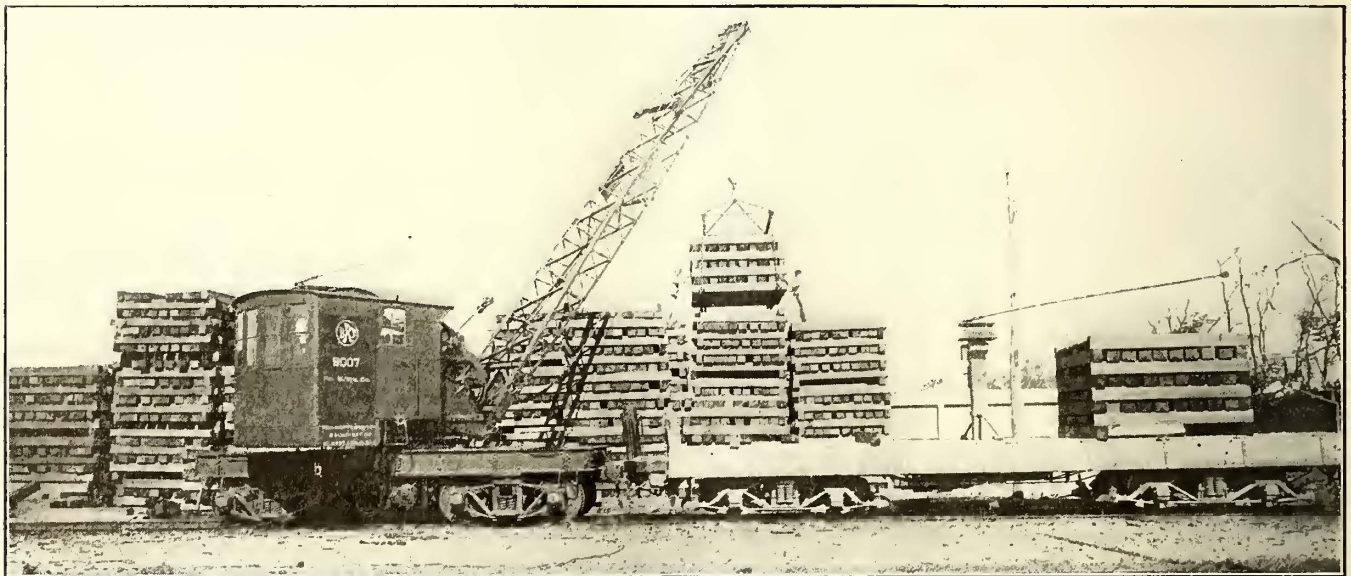
STORAGE YARDS—FIG. 14—LOCOMOTIVE CRANE USED ON CHICAGO SURFACE LINES FOR LOADING GRAVEL ONTO FLAT CARS



STORAGE YARDS—FIG. 15—CLOSE VIEW OF BALE AND LOAD OF TIES, B. R. T. STORAGE YARD



STORAGE YARDS—FIG. 16—PORTABLE STONE CRUSHER IN OPERATION ON STREET IN ROCHESTER, N. Y.



STORAGE YARDS—FIG. 17—LOCOMOTIVE CRANE IN USE IN GENERAL STORE YARD B. R. T. SYSTEM



STORAGE YARDS—FIG. 18—ELECTROMAGNET USED BY CINCINNATI TRACTION COMPANY, LIFTING SPECIAL WORK



STORAGE YARDS—FIG. 19—ELECTROMAGNET USED BY CINCINNATI TRACTION COMPANY, LIFTING SCRAP MATERIAL



## Efficiency and Habit of Mind

Instances Are Given of the Savings Possible in Corporation Expenditures When an Economical Habit of Mind Has Been Developed

BY MAJ.-GEN. WILLIAM A. BANCROFT

Chairman Board of Directors, Boston Elevated Railway

**I**N response to your request for my views upon what might be denominated the psychology of efficiency, the following points appear to me of general interest to electric railways at this time.

In the effort to obtain additional net revenue, electric railways are obliged to practice in the conduct of their affairs the most rigid economy consistent with safe and adequate service. Apart from perfunctory economies there are many ways in which this object may be sought. Latent possibilities exist in the mental attitude of employees toward economy, and the cultivation of a habit of mind favorable to efficient practices is more important than is generally realized.

Every large company employs a considerable number of highly paid and capable persons, whose talents should be able to create more favorable conditions. Operating costs may be too high and revenues too low, in which case every opportunity should be sought to reap the benefits of such minds, encouraging by reason of their intelligence and cleverness such suggestions as will either reduce expense or increase revenue without expense, or do both. Naturally a man's thoughts relate to the particular service in which he is engaged, but in some other branch he may discover an opportunity to add to the company's net revenue.

By planning to have every man working to advantage and so far as possible eliminating waits, as in drawing pay, much can be done to realize the benefits of higher efficiency in the minds of executives of every rank. Fewer people can accomplish a given result if kept busy. A saving may be effected if provision is made so that equipment and tools will last longer and if work is done promptly instead of being put off. The development of new business is another subject worthy of study from the economic standpoint if accompanied by a habit of mind which separates costly from profitable results.

Before the present necessities for closer economy arose, it did not appear necessary in considering a thing to pay much attention to the cost of incidentals, such as stationery, typewriting, telephoning and traveling expense. A complete change in the habit of mind when regarding these matters has become essential. In the past it has not been sufficiently considered, for example, whether the main purpose could not be accomplished without expenditure, or, at most, with only small expenditures. Correspondence can be cut down to the great advantage of all in companies where the economical habit of mind toward incidentals has not been well developed. In other words, the habit of mind has been to consider the main object sought, not its cost, nor even the incidental cost of consideration and study, much less whether the object could be gained with no outlay whatever.

Not enough has been made of existing resources.

This habit of mind must be changed and consideration given to all expenditure, whether small or large. Ingenuity must be exercised, and ways of accomplishment found that will involve little or no expense. Plenty of instances have occurred where this has been done; enough to warrant the belief that it can be done in many other instances. In our own company, the articulated car and the pavement plow are representative illustrations.

Aside from the possibilities in rolling stock, track

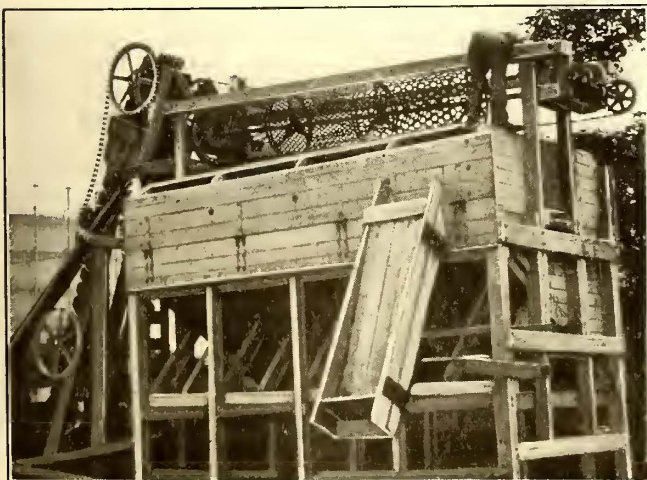


STORAGE YARDS—FIG. 20—STONE CRUSHER IN USE IN YARD OF NEW YORK STATE RAILWAYS, ROCHESTER, N. Y.

The plant is apt to be idle for quite long periods and if the average haul to and from the plant is too long, these factors, combined with operating and maintenance costs, will probably offset other savings to such an extent that it may even be found cheaper to purchase new ballast and concreting materials. Sometimes, where the operation of the plant by the railroad company does not appear economical it may be advantageous to allow an outside contractor to erect a plant at the yard and deliver all of the company's old paving material to him for crushing at a fixed rate based upon a price per cubic yard of crushed material produced. This method effects a salvage for otherwise useless material and the arrangement can be made to profit the contractor because he can also secure supplies from other sources which will keep the plant in practically continuous operation.

Figs. 20 and 21 show a stone crusher in service in the yard of the New York State Railways at Rochester, N. Y. They are from photographs furnished by D. P. Falconer, engineer maintenance of way Rochester lines.

An important part of a storage yard equipment, although it may not be considered as strictly yard machinery, is the track scale. No general yard of any size to-day should be without one, as there are so many bulky materials which require weighing as the most effective method of accounting for the loss materials such as sand, gravel, crushed and paving blocks.



STORAGE YARDS—FIG. 21—CLOSE VIEW OF STONE CRUSHER USED BY NEW YORK STATE RAILWAYS, ROCHESTER, N. Y.

and buildings, the efficient habit of mind includes such matters as abstaining from ordering new stationery if old can be made to answer; avoiding hiring an outside stenographer when one's own can be utilized; refraining from using company stationery and postage stamps for private purposes and from ordering new filing cases,

furniture, utensils, etc., when the existing equipment will satisfactorily answer the purpose.

In short, the efficient habit of mind constantly seeks the avoidance of waste both in material and effort and strives to reduce expenses both in small and large matters by the use of the inventive faculties.

## Insurance and Publicity Discussed

One Session of Pennsylvania Street Railway Association Was Devoted to Papers on Fire, Life and Accident Insurance, and Publicity

IN connection with the proceedings of the convention of the Pennsylvania Street Railway Association, held in Philadelphia on Dec. 12-13, the ELECTRIC RAILWAY JOURNAL published in the issue of Dec. 16 the various papers on lightning protection, electric welding, taxation and jitneys that were presented at the second day's meeting. On the first day the main topic of discussion was insurance, this being taken up along the lines of fire insurance and prevention, life insurance and accident and casualty insurance. The papers that were presented at this session are now printed in abstract. There is included also an abstract of a special address on publicity by George Henry Payne, recently assistant to the vice-president and general manager, Wilkesbarre (Pa.) Railway.

### Publicity and the Ills of Street Railways

Publicity, Now Practised by Most Large Companies, Is a Logical Development

BY GEORGE HENRY PAYNE

SO many nostrums that are offered as cures turn out so frequently to be fatal that an analysis, or diagnosis, of any proffered panacea seems but reasonable. Just at the present time there seems to be a general belief that publicity is the cure for all the ills that have grown up, and the manifestations of that belief would have shocked the good old souls who fifty years ago saw the beginning of corporate and transportation development in this country. We can all imagine what the blunt old J. Pierpont Morgan would have said if he had read, as we now occasionally read, that "the press agent for the house of J. P. Morgan said yesterday, etc." I sometimes drop into the New York Central Building to see an able gentleman there who directs and guides all things in relation to public matters—the polite title for the press agent, and I wonder as I pass the corridor of the president of the road what the irascible old Commodore Vanderbilt would have said to these modern efforts in publicity, when to a complaint from the public fifty years ago his reply was "the public be damned!"

Only the other day we read in the papers that the heads of the five biggest industrial establishments in America had held a conference on business conditions, especially in relation to labor, and it was decided or recommended that hereafter every big business firm have a vice-president whose business alone would be to look after the welfare of the employees. One of the biggest banks is paying its publicity man \$25,000 a year, a salary that a generation ago would have been ample for a bank president himself. The National City Bank, I am informed, has made it an unwritten rule that no one hereafter shall be elected a vice-president unless he is able to make a speech. The newly-appointed executive assistant to one of the big railroads here in the East

was being introduced to the heads of the departments when a young man in charge of some minor department, thinking to make light and pleasant conversation, exclaimed. "Glad to meet you, Mr. Blank. Glad to meet anyone who can talk to reporters. I had one bothering me this morning—I gave him hell."

"The next time you give a reporter hell, you give me your resignation," said the president, and the dumfounded young man wandered away wondering what had come over the spirit of the "Old Man" who was known in his day as having among capitalists the long distance record for throwing a reporter.

John D. Rockefeller told a friend one time that not until he was put to it did he realize that after all a reporter could be a friend and from that time on he took a page out of the book of his friend Andrew Carnegie. Carnegie, long before the idea was popular, had a press agent and with true Scotch canniness saved the salary and was that press agent himself, and one of the best this country ever knew. The one-time popularity of the New York Central Railroad was undoubtedly due to the geniality and personal cleverness of its president, Chauncey M. Depew. It is now the fashion, more or less and, in fact, has been in recent years, to decry the ability of Depew, who at one time was prominent as a possible candidate for president. But men much less in ability and worth have been president, and few men have lived in this country who through sheer force of good-will and love for fellow kind have created about them an atmosphere that was a help to all that came in contact with them.

The inevitable question is: Why is this so? The answer is, it has been found to be "good business." It has been found that it pays. The answer I don't think is satisfying. The mere acceptance of a condition is not the best preparation for future conditions. In every healthy mind there is a genuine desire to understand the fundamental causes, the first cause, and aside from the real pleasure of having firm mental grasp and thorough understanding, there is the fact that after all it is only the historical method, this tracing of the evolution of things, this searching into the origin of things, that is going to guide as to the future. And surely in this day no one can say, when the future in so many directions looks so dark, that we should ignore or overlook any help that may seem at hand.

The emphasis on publicity to-day, the absolute necessity for it in many departments of the industrial world, is the logical development of the movement that began a little more than 100 years ago—the government of nations by public opinion. There were democracies in the world before ours, but they were democracies for a limited number, as with the Greeks, the Romans and the governments of the Italian cities in the Middle Ages. Under Jefferson, this became a government, the first of its kind in the world, where all citizens had a share in its privileges and where almost everyone was a potential

citizen who was not already in jail—a remarkable experiment in the history of the world, unquestionably, and foredoomed to failure by European critics.

But along with the development of this government there grew up, also for the first time in the world, an extra-legal, an extra-constitutional check, as it were, both on the government and the citizens, the force of public opinion. And public opinion to-day rules the government, rules the nation but doesn't always succeed in ruling the source whence it comes.

It was public opinion, led by Greeley in the *New York Tribune*, and William Lloyd Garrison in the *Liberator*, and other great Americans who brought about the fight for the freedom of the slave and the election of Lincoln. It was also Greeley's desire to conduct the war that led to his cry "On to Richmond," with the result that Lincoln was obliged to send his untrained troops into the field, and the defeat of Bull Run followed.

After the Civil War there was a great development along material lines, and the native ability that had shown itself so conspicuously in the Greeleys, the Lincolns and the Swards in the moral awakening before the war, now showed itself in the industrial giants who girdled the continent with railroads and drew out of the earth wealth up to that time more fabulous than that of Ormus or of Ind. The country was prosperous and happy when new leaders appeared, leaders of public opinion. From 1885 to 1905 there was a terrific agitation against every form of corporate wealth. The captains of industry who had once been our proudest possessions were the excoriated of the land; and I remember fifteen years ago a banker telling me at dinner that he had once been proud of his profession, but the thing that was worrying him now was how he was going to explain to his children when they grew up the terrible way in which he earned his living.

During the last ten years, or rather the last seven years, there has been a change, not a change on the part of those who were attacking corporations and capital, but a change on the part of the attacked. They have gone over, not in a body but in large numbers, to the other side, and have joined in the attack on capital. The son of one of the men who was most vehemently attacked throughout the country during the early years of the fight on capital is the financial backer of a Socialist organ whose most distinguished contributor once described his father as a malefactor of great wealth. A former member of the largest banking house in America is the financial backer of another magazine with similar, if not so strongly developed inclinations.

So, we have the philanthropists at the top and, what J. Pierpont Morgan called the anarchists, at the bottom. But between philanthropy and anarchy there is the great division of the middle class corporations and Americans who haven't enough money to join the one class and don't belong with the other. In their dilemma they are looking to publicity as a means of checking the ills that have grown up, along with the seemingly accepted idea on the part of a large part of the public that there is such a thing as definite evil and virtue in our industrial relations—the evil all on the side of capital and the virtue all on the side of labor. And in that seeking I think they are right, but the times I believe call for more than publicity of the "watch your step," "safety first," "don't cheat the poor subway" variety. They call for thought; they call for dispassionate scientific investigation. It is well and it is necessary that you have business leadership among business men, but you must have also intellectual leadership, leadership that will by force of its intellect and its thought command not only the respect of those to be led but the respect of those to be opposed.

A great financial institution of New York for years boasted that it did not advertise and would not advertise, until it saw other financial institutions of less reputation and stability encroaching on its domain. Then, it woke up, and two years ago, aside from the \$50,000 or \$60,000 spent in other channels of publicity, spent \$20,000 alone in furnishing free advice to those who were perplexed by the provisions of the income tax law. Now that great institution boasts that it would rather have the good-will of the public than its deposits.

Publicity, yes, if it is publicity that commands respect and drives home thought. Not long ago, a traction company in a city not far from here in appealing to a more or less somnolent citizenry to awake and stop open—I might say official—outlawry and rioting, used in one of its advertisements a verse of Shakespeare dwelling on the value and power of truth and justice. A week later the rioters had a public parade, and one of the signs bore the taunt "Shakespeare never saw a trolley car." But there's where they made their mistake. Shakespeare did see a trolley car, for he seemingly saw everything that was in the heart and mind of man, and he saw and he knew that men and generations and centuries and eons would come and go, and whether men were evil or races failed, the principles of right and justice and truth would prevail. He had visions—the details of the inventions that were to come after are in accord with these visions.

And the visions that were fundamental in him were fundamental in the men who founded this government. They were of the very prophetic soul of the fathers.

## Group Insurance for Electric Railway Employees

Most Profitable Investment in Handling of Employees—Has Great Value as Medium for Publicity

BY WILLIAM F. CHAMBERLAIN

Superintendent Group Insurance Division, Travelers Insurance Company, Hartford, Conn.

COMPENSATION insurance and group insurance manifestly differ in objects and results. Compensation insurance obviously provides compensation for employees only for accidental injury or accidental death occurring at occupation and during the hours of employment. Group insurance supplements compensation insurance, giving indemnities to employees for loss of time resulting from accidental injuries which occur away from employment or for any disease, and providing mortuary benefits to the dependents of a deceased employee without regard to cause, time or place of death. Group insurance can be written to afford protection for loss of time resulting from accidents at occupation as well as away from occupation. Where compensation insurance prevails it is unnecessary and undesirable to duplicate indemnities by group insurance.

Group insurance has proved by experience to be in many respects the most profitable investment in the modern method of the management of employees. It is a most satisfactory kind of welfare work because its results are observable. The aims and results of group insurance may be briefly stated as establishing good-will between employer and employee, cementing relations, discouraging misunderstanding and preventing industrial disturbances. It presents a most practical means for employers to show a personal constructive interest in their workers; it is an expression of interest which cannot be conveyed in so great a measure by other branches of welfare work.

Group insurance is a solution of the transient prob-

lem, especially when the contract is so written as to recognize individual worth and service by continued increase in the insurance. This adhesive influence is accentuated in the employee's home, where the dependents realize the value of the provision for their needs in event of the death of the wage earner.

Moreover, there is a publicity value resulting to the employer. This, of course, is a by-product, but it is of especial importance to utilities where favorable public sentiment is a desirable and valuable asset. A loyal satisfied employee renders the public a better and larger service. The public is interested in everything of economic significance which pertains to large numbers of persons.

There is also a monetary saving to the employee. A comparatively small percentage of industrial employees is insured for either life or accident insurance, for where insurance is purchased by the operative it is usually at a very high cost. Some employers believe that there rests on them the responsibility for arranging for these necessities either in whole or in part by group insurance. This cannot be counted as a substitute for wages, but with adequate wages it may properly be considered as an increase in remuneration.

## Co-operation in Fire Insurance

If Electric Railway Fire Insurance Were Controlled by One Central Body the Cost Would Be Reduced

BY E. W. BOWMAN

Supervisor of Insurance Philadelphia (Pa.) Rapid Transit Company

THE subject of co-operation in fire insurance matters was brought to the attention of the American Electric Railway Association in September, 1913, and recommended for consideration at that time. It seems, however, that no action and probably but very little thought was given to it, as it does not appear to have been mentioned in any of the annual reports since that date.

The success of New England men in establishing factory mutuals seems never to have been duplicated elsewhere. Any number of mutual companies have been organized, mostly for the purpose of taking general risks, which for the lack of co-operation in fire prevention and general upkeep have proved practically failures. But no special class of manufacturers or public utility plants has attempted to follow in the footsteps of the New England pioneers.

Statistics from eighteen electric railways in Pennsylvania show the following results for the last five years: Total insurable value, \$42,556,404; total premiums paid, \$897,460; total fire losses, \$90,208, and percentage of losses to premium, 10.05 per cent. If these eighteen Pennsylvania companies had agreed to co-operate at the beginning of this five-year period and had paid the same premium to an insurance board representing all the members the results would have been as follows: First year premium (average), \$179,492; less expense (say 15 per cent), \$26,924, and fire loss (10.05 per cent), \$18,039—\$44,963, or a net reserve the first year, \$134,529. For the five-year period they would have a net reserve of \$672,646, plus interest of \$85,154, or a total of \$757,800. These figures are based upon the payment of the full premium for the entire five years, after which time a sufficient reserve would have been established to warrant a return dividend at the end of each current year.

It might be said that there is no provision here for

a catastrophe which might wipe out all funds on hand. If this fear is dominant, it would seem wise to take another course; *i. e.*, carry the first loss and re-insure all over that amount. Under these conditions large risks are carried at less than one-half the regular rates. The results on this basis, assuming a first loss of \$200,000 and a rate of approximately 15 cents, would at the end of the five-year period be a net reserve of \$353,473 plus interest of \$44,748, or a total of \$398,221.

For large quantities of any article better figures can be obtained. This prevails in the matter of insurance as well as in any other commodity. If all the electric railways in Pennsylvania were under one central control in so far as concerns upkeep, fire prevention and general supervision, there would be a prestige and a volume of business which would compel consideration by the rate making bureaus. The reputation for general care having once been established, the insurance companies would soon acquire that confidence which would without doubt result in a lower rating to all interested.

One more point should be mentioned. There is room for a closer co-operation between the mechanical department and the insurance department. All repairs to cars or buildings, all remodeling or building of cars should conform to the rules of the underwriters, even if by doing so the cost is slightly more. It is also well to establish a spirit of co-operation between company engineers and the insurance department whereby the true values of properties can be more nearly obtained. These values, once obtained, will through the application of a unit for depreciation and appreciation produce the real insurance value, which value should be the amount of insurance carried. By the same spirit of co-operation between the insurance department and the insurance adjusters, this unit can easily be arrived at before any loss occurs, thereby preventing any disagreements or delays at the time of loss by fire.

## Safety Crusades

How the Work Is Carried On in Philadelphia—Safety Patrol Is Most Efficacious Means

BY BEATRICE V. CLINCH

Safety Bureau, Philadelphia Rapid Transit Company.

AT the Ad Men's convention, which was held in this city this year, I learned that it is the spectacular which attracts attention. Hence I have brought with me this afternoon the safety banner which I display in every school room that I visit. Safety first was not meant to tickle one's wits, but to set them to working.

Perhaps the first industrial campaigns were accused of being conducted principally because of the great financial economy to be attained. A safety campaign in the schools has been a gradual but natural development from the industrial phase of the work, and may be an economical procedure in one sense, but its great human side cannot be questioned. The youth of Philadelphia is being trained to caution and not fear and to recognize the dangers on the streets and the perils of modern life. There has been adopted by the Board of Education of Philadelphia this fall a course of civics for children below the eighth grade. Incorporated in this course is the subject "Safety First"—or fire and accident prevention. With this step accomplished it can truly be said we are nearing the goal of safety—everywhere—always.

During the past four years the management of the Philadelphia Rapid Transit Company has been active in urging the safety movement among the children. "Safety first" literature, blotters and stickers have been

distributed in the schools. Money prizes were offered to the school children for the best stories on accident prevention. In the spring of this year the activities of the company in the interest of the children along this line were extended by having illustrated lectures given in the schools. During the summer months the story-telling hour in the playgrounds was utilized to acquaint the children by means of stories with the perils of the city streets.

Because of the stupendous waste of economic social assets in our city, especially during the summer, due to avoidable accidents, the P. R. T. extended a helping hand to the Play Street Grounds Committee, of which I am a member, which decided upon an aid to the solution of this problem pertaining to children. With the aid of the city departments and the Board of Recreation, play streets were opened. This was distinctly a "safety first" scheme, for it was decided if the children in our city, and especially in the congested districts, could be provided with enough safe places for play there would be fewer accidents on our streets. All people agree that children should play. Still they complain of the monopoly of the street and sidewalks by the children. Times have changed since father was a boy. In his day there were back yards, which meant trees to be climbed, tennis and ball playing, as well as abundance of space for hide and seek. Then there was an occasional stable or shed, which increased the possibilities of a good time tremendously. In the city's congested districts, such a thing as a back yard is almost unknown, there are not enough playgrounds, and the streets are more dangerous than ever before. Owing to the ever increasing traffic, the higher speeds with which vehicles move, the greater multiplicity of street cars and automobiles, and the higher speed of trains, the dangers which confront not only the child, but also the adult, are becoming greater and more numerous. More playgrounds are being opened every year, but until such time as there are enough playgrounds, the Play Street Ground Committee will rope off certain streets to vehicular traffic during the hours from 9 a. m. to 5 p. m. during the summer months. These streets are kept clean and turned over to the children for play. Two experimental streets were opened this year. The apparatus for these two play streets was provided by the Philadelphia Rapid Transit Company, and 21,000 children were entertained under the guidance of teachers. These experimental streets were a tremendous success, and the press of Philadelphia was very enthusiastic about the movement and gave hearty co-operation and splendid publicity.

The future of the safety movement lies with the education of the children. The child of to-day is the patron of to-morrow. The child mind is more impressionable and plastic than the mature mind, and lessons learned have a deeper imprint. At the same time the lessons must be imparted in a way that will appeal to the juvenile imagination. The following is some of the advice and information given to the children:

"To show you how necessary it is to look before attempting to cross in front of a car I will give you an idea of the speed of cars between squares in the city block. In order to enable people to get from one point to another it is necessary for cars to travel fast between squares, as they must slow down or stop at principal streets. Do you know that a street car ordinarily travels at about 12 m.p.h., covering 17 ft. of ground at every tick of the clock?

"It is dangerous to cross in the middle of the square or at small streets as the fast speed of cars at such points will not enable the motorman to look out for you or save you if you dash across directly ahead of

his car. If you do this you alone are to blame if you are hurt.

"Persons passing behind standing or moving cars or vehicles should be very careful to look for objects moving in the opposite direction before attempting to cross the other track. The car or vehicle coming in the opposite direction cannot be seen until you cross to the other track, and this is dangerous, so it is best to wait until the standing car has started away so that you will be able to see the other car while you are standing in a safe place.

"I want to point out some of the difficulties which the motormen have to meet. I want to ask your friendly interest in these men. I am sure those who have never had an experience in operating a car can hardly know how hard it is to operate it on a greasy rail. Let me explain. You know how fast you can go over the ice on the narrow runners of a pair of skates, and how your weight carries you on without movement after you have made the start; it is just the same with the car, which weighs many tons and which has only a 2-in. rail to run on which may be greasy or slippery. When you think of the distance you can go without movement on your skates, you should understand why this much heavier car cannot be stopped in a few feet even if it is running slowly. With sand it is possible to stop quicker than without, but it takes time for the wheels to reach the sand after it has dropped on the rail, and the car moves forward during this time and may reach you before the sand takes hold.

"No matter whose the responsibility may be for an accident, what chance has a man, woman or child who has lost an arm or leg in the battle of life when compared with others who are not so afflicted and who are fighting for places worth while? To whom is the keeping of your body most vital, to you or to the motorman of the car, to you or the chauffeur of an automobile?"

#### THE SAFETY PATROL

Lectures, talks and stories are all good, but the most efficacious means, I believe, is to educate school children through the safety patrol.

The safety patrol consists of from eight to ten boys, selected by the principal of the school, whose duty it is to take up a position assigned them on the sidewalk a few minutes before the assembly in the morning and afternoon; also before dismissal of either session. These boys wear a badge. They are to see that no child leaves the sidewalk except at the main street crossing. This is one way of teaching the children that the main street crossing is the only safe place to cross the street. The patrol members also have duties while children are at play on the playgrounds. They are ever to be alert to aid in the elimination of dangerous practices and unfair play. The benefits of this plan will be the elimination of a great percentage of the avoidable accidents to children, and it will train a citizenry having the safety first movement at heart.

You can help if you will, and even though your part seems tiny to you, all working together it would mean much. The safety first movement is a twenty-four-hour job, and clock watchers need not apply. Also there is no room in the safety movement for the small man, but there is need of the broad-gage man who can see a principle and who is not afraid of his present job. The world was not finished in a day, and the safety first movement will not be concluded in a day. The movement needs many more big men to help, such as those already engaged in the work. Yes, we need more such men, because they are the fellows who believe that the life of the lowliest child is necessary in the onward march of progress.

## Taking Precautions Against Accidents

The Author Points Out Various Points that Are Often Overlooked in Safety Work

BY A. G. JACK

Claim Agent, Southern Pennsylvania Traction Company,  
Chester, Pa.

WHILE there are many accidents over which electric railways have no control, there are others against which precautions may be taken, some of them apparently trivial. Careless or indifferent inspection is one cause of a number of minor claims which in a few years cost an appreciable amount. The innocent little tack and the projecting screw rend the passenger's clothing. A projecting bolthead catches the skirt of an alighting passenger and she is thrown off her feet. A shopman forgets to remove the impress of his greasy hand from the car seat, and it is shortly transferred to somebody's garment. An insecure grab-handle yields to the stress of a weighty person. Trap-door rings and floor screws, unless closely watched, stick up and catch the prevailing high-heeled shoes with danger of a spill. Stopped-up sand boxes and faulty gong-taps have contributed to more than one accident. The faulty controller has been a fruitful source of injury and consequent damages. These and similar oversights could readily be avoided by closer attention.

In this connection attention is called to the hazard of a metal roof on steel cars. Even though provided with a wooden foot board, the possibility of current contact through a misstep is always present to employees obliged to go on the roof for trolley trouble. A wooden roof is a much safer construction and should be provided.

The average trackman, while he may have a good eye to the general condition of his track, is often proverbially blind to many minor details of safety. Ruts along the rails should not be allowed to exist until a horse catches his foot or a wheel gets twisted. The projecting ends on an unused track should be so protected that a wheel could not get caught. Unsafe culverts should be repaired before something goes through. Temporary crossings over track construction should be made "fool proof," and all openings should be guarded. On bad grades all grass should be cleaned from track, leaves kept off and track sanded regularly in the autumn if the topography makes dangerous conditions. At all regular stops plank or cinder platforms to make a safe landing are a paying investment. A wooden marker, painted white, placed at either end of platform to indicate the position of the front of the car when at rest, aids the motorman so to stop his car that passengers alight safely. A desirable safeguard, especially for new men, is a white band painted on poles a certain distance from curves and switches.

A conductor does not have to learn any long set of rules to avoid accidents for which he is responsible, but only has to have present always the thought, "Watch your step and watch the bell." Similarly, passengers can be injured by the acts of the motorman in only one of the two ways, either by being thrown in the car by careless operation or by collision. Therefore, if the motorman heeds the admonition, "Watch the controller and look out for curves," he will eliminate injuries to passengers from the first cause. As to collisions, carelessness alone is responsible for most of the rear-end and right-angle ones. The only precaution possible is the knowledge acquired by experience and practice. In the case of the front-end collisions there enters the human element, over which there is no control. This

would seem to be a situation where precautions are unavailable.

The question of precaution against vehicular accidents is one of the most serious problems. The placing of warning signs at railway crossings should be more general. Furthermore, municipalities regulate by ordinance the speed of vehicles on the streets and often prescribe a certain speed for trolley cars at intersections, while the state makes a certain speed legal on the highways. Why, then, should not certain requirements as to the speed of vehicles at all track crossings be made a state law? Such an enactment would be the most efficacious precaution that could be taken.

One contributing cause to many vehicular accidents is the pronounced indifference of motormen to use the gong or whistle. In many cases no alarm is sounded until just as the collision is about to occur, and then it is too late as a precautionary measure. Another contributing factor is the proneness of trainmen to discuss affairs at the front of the car, so that in an emergency the motorman is not on the job until too late.

## A Safety-First Week Held in Richmond, Va.

Under the auspices of the Boy Scouts, a safety-first week was conducted in Richmond, Va., from Nov. 6 to 11, according to the plan mentioned by C. C. Johnson of the Virginia Railway & Power Company, at the National Safety Congress. This was referred to in an article in the *ELECTRIC RAILWAY JOURNAL*, Oct. 23, 1916.

The scouts patrolled every busy corner, distributing circulars and helping old people and small children across the streets. About 75,000 circulars were given out, among the most effective being a list of "Little Tragedies" comprising epigrammatic stories like the following: "He speeded up to see if he could beat the train to the crossing. He couldn't." "The man struck a match to see if the gasoline tank was empty. It wasn't." The school children were given circulars, and lectures with moving pictures were presented at the high schools, including a demonstration, by members of the fire department, of the correct method for sending in an alarm. The Virginia Railway & Power Company aided the work extensively by placing signs on the cars, distributing pamphlets and devoting the week's issue of their publication, *Public Service News*, to safety-first topics. The police department adopted a new system of traffic regulation at corners, lines being painted across the street to indicate the proper path for pedestrians and the proper stopping point for vehicles. The Richmond Automobile Club contributed to the work by pasting on the wind shields of all cars paper pennants bearing the safety-first motto. The newspapers indorsed the movement and helped to impress the public with its important purpose.

## Standardization of Electric Motors

Among other activities of the Electric Power Club, through which the manufacturers of electric motors work toward standardization, a table of shaft diameters, keyways and certain tolerance limits for machining dimensions of large power motors was recently adopted as a standard for future design. A table of brush standards has also been adopted. The specifications for nameplate marking for large power motors were revised so as to include temperature and overload guarantees, and the allowable change in speed due to heating on fully inclosed direct-current motors was put at 15 per cent as compared with 10 per cent which is allowed for open or semi-inclosed machines.

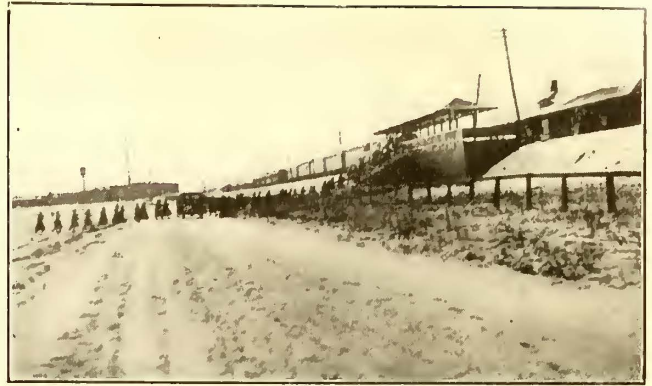
## Transporting the Third Wisconsin Infantry the Electric Way

Chicago, North Shore & Milwaukee Railroad Carries 762 Troops from Fort Sheridan, Ill., to Milwaukee, Wis., with Comfort and Without Delay

**I**N open competition with the steam railways interested, the Chicago, North Shore & Milwaukee Railroad obtained the contract by the quartermaster, Central Department, United States Army, for transporting troops of the Third Wisconsin Infantry from Fort Sheridan, Ill., to eleven points in Wisconsin in conjunction with the Chicago, Milwaukee & St. Paul Railway beyond Milwaukee. The electric line was the low bidder on these eleven points out of seventeen destination points in Wisconsin, on which bids were called for in the general circular of Dec. 6, advertising for sealed proposals in supplying transportation to this government. In all, the electric line handled 762 out of 1036 officers and troops, requiring twenty-one passenger cars and nine cars of baggage. The latter was moved principally on the night of Dec. 13, in advance of the troop movement on Dec. 14, when a train of seven box cars of baggage and a caboose with an escort were hauled to Milwaukee by an electric locomotive. Two cars of baggage followed the next morning.

The troops were handled with no delay or crowding in the all-steel and best equipment owned by the company. Only forty men were carried per car in order that there might be plenty of extra seats in the fifty-passenger cars for the luggage and equipment of the troops.

The troops were paid off in the quartermaster's department at Fort Sheridan and released a company at a time. They marched by companies out to the station and boarded the cars, and as fast as a three-car train was loaded, it was pulled away and dispatched to Milwaukee. This eliminated all delay, so far as the electric line was concerned, for the soldiers were carried on their way as rapidly as released. But three cars to the train were run, since this number could be taken to the unloading point in Milwaukee without breaking up into sections. The troops were unloaded from the cars on the sidewalk only one-half block from the St. Paul depot in Milwaukee and the cars were removed as rapidly as unloaded so that no delay resulted to following trains or regular traffic. That the movement was prompt and conveniently suited to the rate of mustering out of



A COMPANY OF THE THIRD WISCONSIN INFANTRY MARCHING TO STATION TO BOARD ELECTRIC TRAINS FOR MILWAUKEE

service is indicated by the following table giving the time the various three-car sections left Fort Sheridan and arrived at Milwaukee:

Left Fort Sheridan	Arrived at Milwaukee
10:02	11:30
10:35	11:51
10:54	12:36
11:35	12:47
12:30	1:59
12:54	2:20
1:51	3:35

The handling of baggage was facilitated at Fort Sheridan by the use of two motor-truck moving vans supplied by the electric railway company to transport the baggage from the fort to the railroad. The basis of competition to the railway company for the transportation was \$1.15 per capita less 8 per cent, and the distance from Fort Sheridan to Milwaukee was approximately 60 miles. This represented a substantial saving to the government over the lowest bid of the steam railroads.

Negotiations between the electric line and the War Department were conducted by F. W. Shappert, traffic and industrial agent.

Particular significance is attached to the securing of this business, as it is said to be the first time an electric line has been able to run the gantlet of opposition and break down the barrier which has apparently been placed between the regular army officers and the electric railways.

When interviewed by a representative of the ELEC-



SEVEN-CAR TRAIN OF BAGGAGE WHICH PRECEDED THE TROOPS ON HOMEWARD TRIP

TRIC RAILWAY JOURNAL, A. D. Kniskern, colonel, and K. J. Hampton, major of the Quartermaster Corps, Central Division, United States Army, responsible for the troop movement, said that the service had been entirely satisfactory, that the movement had been made smoothly and with no delays and that so far they had received no adverse comment in regard to the movement of the troops from any of the field officers.

## Second Annual Convention of Safety First Federation of America

C. Loomis Allen Reported for Committee on City and Interurban Railways and James R. Pratt Presented the Street Railway Point of View

UNDER the auspices of the Safety First Society of Baltimore, Md., the second annual convention of the federation was held in that city Dec. 7-9, 1916. There was a business session on the morning of Thursday, Dec. 7, a discussion on street traffic on the afternoon of that day, a discussion on the railway trespass evil on Friday morning, and a discussion on fire prevention on Friday afternoon. The Saturday morning session was occupied with several topics including that of city and interurban railways, which was covered in a report by C. Loomis Allen, chairman of the committee on this subject. James R. Pratt, assistant general manager The United Railways & Electric Company, Baltimore, Md., also addressed the convention on "The Safety First Movement from the Street Railway Point of View."

### REPORT OF COMMITTEE ON CITY AND INTERURBAN RAILWAYS

Mr. Allen reported that the greatest task before the committee at present is a comprehensive investigation of the following: (1) The laws and ordinances enacted by various municipalities to reduce accidents on and by electric railways, both city and interurban. (2) Means of co-operation between railway companies, civic authorities, and other bodies looking toward the education of the public in the matter of street accident prevention.

The committee recommended that for the ensuing year it take up definitely the following lines of work: (1) Obtaining ordinances and laws governing the movement of electric cars. (2) Careful study and analysis of these ordinances and laws, which should point clearly the desirable features which make for safety of passengers, employees and pedestrians, as well as pointing out the undesirable and dangerous features of these regulatory ordinances. In this study the experience of public officials, as well as operating officials of electric railways should be ascertained. (3) From this study it may be possible to arrive at certain fundamental principles which should govern the framing of codes.

The committee also recommended that as a means of bringing about a better understanding of methods of educating the public it communicate with chambers of commerce, and city and interurban street railway companies which have conducted safety first campaigns, and that, from the data thus obtained there be compiled a simple set of suggestions which might be of service to such organizations in the future.

In gathering data as above, attention should be given to the following: (1) The value of chamber of commerce leadership in this field as compared with leadership by the railway company itself. (2) Use of boy scouts in campaigns. (3) Use of motion picture theaters. (4) Use of local newspapers. (5) Use of schools. (6) Use of posters, blotters, stickers, etc. (7) Actual subjects to be taught, including use of crosswalks, use of safety zones, elimination of "jay-walking,"

elimination of trespassing on interurban railway property, teaching children the danger of hitching on the street cars and other vehicles, teaching children the danger of coasting across tracks, teaching children the danger of roller skating and of using coasters on down-grade streets across which cars operate, and right and wrong ways of boarding and leaving cars.

### SAFETY FROM THE STREET RAILWAY POINT OF VIEW

Mr. Pratt first called attention to the accident risks which are inherent in the use of the street by electric railway cars, illustrating his point with numerical data. In Baltimore, for example, there are at least 1,500,000 boardings and alightings each day. Transportation companies long ago realized the weakness in the average person in failing properly to safeguard his movements while endeavoring to gain a few seconds of time. It therefore devolved upon the companies to surround their patrons with such safeguards as would in a measure offset this carelessness.

Among the many ways in which the electric railways are striving to reduce the number of accidents he mentioned the care with which platform men are selected, instructed and followed up; the safety committees which are endeavoring to stimulate watchfulness; the improvements in car equipment from the safety standpoint, etc. At the same time an endeavor has been made to impress the public with its part in accident reduction.

In illustrating the influence which automobile traffic has had upon street accidents, Mr. Pratt quoted from the Atlantic City paper by H. G. Winsor, in which a statement was made that whereas in 1910 there were 414,678 automobile registrations in twenty-six states, in these same states in 1915 there were 1,186,116 registrations, an increase of 355 per cent. He believed that the prevalence of street accidents from automobiles is due to rapid running over street crossings, and that no vehicle should have a superior right over other vehicles at street intersections, but that all should be required to operate with due regard for the rights of others.

Among other traffic regulations which Mr. Pratt considered would be conducive to safety, the following may be mentioned: In congested districts vehicles should not be allowed to stand on streets upon which street cars are operated except for a very limited time, say fifteen minutes. In such sections, when conditions permit, one-way operation on certain streets should have a good effect. In the licensing of automobile drivers the ability of a person to handle an automobile should be put to a higher test than that of his own judgment. All persons should be willing to supplement the efforts of the employees of the motor vehicle commissioner by reporting violations of the law which come to their notice. Pedestrians should not be permitted to cross public highways in the large cities in the middle of the block but should be limited to street crossings, and should be considered not to have discharged their duty when they have looked in both directions upon leaving the sidewalk, but should be expected to continue to look not only in front, but both to the right and to the left in crossing public highways.

In closing, Mr. Pratt stated that The United Railways & Electric Company has adopted as its slogan the following: "The United spirit stands for safe service—courteous service—efficient service."

### RELATIONS WITH THE NATIONAL SAFETY COUNCIL

While at this convention no final plan of co-operation with the National Safety Council was adopted, the matter was very carefully considered. The federation has expressed its willingness to meet the Safety Council at least half way, and it is hoped that some plan of co-operation may be worked out in the near future.



# Chicago's Traction Commission Report Transmitted to Council Committee

Completed Main Report Places Valuation of Elevated System at \$70,400,916 and Total Purchase Price to City of Elevated and Surface Lines at \$217,876,417—General Plan of Financing Given—Terminable Franchise Recommended with City Council Control and Rate of Return Fixed Between Limits of 6 Per Cent and 8 Per Cent—Traction Fund to Be Put Into Property with Interest Return at 6 Per Cent—New Legislation Recommended as Necessary to Plan

**T**HE main report of the Chicago Traction and Subway Commission authorized by the ordinance of Dec. 20, 1915, was completed and transmitted on the afternoon of Dec. 20, 1916, to Alderman Henry D. Capitain, chairman of the City Council committee on local transportation. The supplement to the report, which will present all the supporting detailed studies and analyses, is not yet finished, but the signed report as presented at this time gives the recommendations and plans of the commissioners as to final conclusions and serves to put the entire matter before the City Council. The final plans arrived at by the commissioners involve and are based on three fundamentals:

1. A physical plan of transit development covering elevated and surface lines and future subways.
2. The unification of these facilities along lines of maximum economy in construction and operation; and
3. A financial plan "based upon the present valuation of the surface lines and the valuation to be made of the elevated lines," which will present to the people of Chicago as accurate a prediction as possible of the probable results to be expected in the future if the commission's recommendations should be acceptable to both the city and the companies and put into effect immediately after the necessary legislative enactments have been secured to effect such a permanent and efficient consolidation.

The report takes up not only the traffic requirements upon which the proposed physical plan of surface line, subway and elevated development is based, but also the existing limitations—legal, financial and operative—with which both the city and the railway corporations are now handicapped in the execution of the desired plan. The commission has also considered the reasonable limitations of excessively rapid development of the transportation facilities in Chicago as compared with other cities, in order that the difficulties elsewhere encountered in transit development and finance may be avoided in Chicago and a reasonable, logical and efficient system be thereby assured for years to come.

The specific recommendations of the commissioners and their findings are intended to form the basis of an enabling ordinance to be passed by the City Council, under which the proposed unification may be carried out in accordance with amendatory legislation to be secured from the State Legislature. It is contemplated that this ordinance will cover in detail all of the provisions necessary to render secure future operation of the plan from both the viewpoint of the city and of the new corporation. This is, of course, in accordance with

<b>PRESENT SYSTEM</b>	
<b>Area covered (within city limits)</b>	.....199 square miles
<b>Miles of track</b> .....	1109.36
<b>Passengers carried per day</b>	4,060,000
<b>Per cent of passengers carried in rush hours</b> .....	Over 50 per cent
<b>Average length of haul on surface lines</b> .....	4.16 miles

the City Council's instructions that the commissioners "shall consider fully the financial, economic and engineering aspects of the problem, having in mind the present and future transportation needs of the city."

The problem confronting the commission presented in some respects unusual difficulties due to the conflict on the one hand of the demands for improved transportation from every part of the city and, on the other, to the great area to be covered and the limitations of revenue from the thinly settled areas. At present, the

199 square miles of area included within the city limits contains 1109.36 miles of revenue single track (surface and elevated), and the normal daily traffic over the elevated and surface lines of the city is 4,060,000 passengers, of which 2,520,000 are cash and 1,540,000 are transfer. In addition, 157,000 steam and electric suburban passengers are carried to and from the suburbs of the city daily. Of the 4,060,000 elevated and surface line passengers, more than 50 per cent require transportation during the morning and evening rush hours, and 25 per cent of these travel to and from the loop district. With these conditions existing, the problem calls for a solution quite different from that which would be possible and practicable in a city more compact and densely settled and developed along a comparatively limited number of transportation routes.

The solution of the problem presented by the commission aims to abate the present loss from duplication which results from the competitive operation of the surface and elevated lines by encouraging a readjustment of traffic which will give to each system the passenger haul which it is best adapted to serve and thus convert the saving into additional service. At present it is found that the approximate average haul on the surface lines for a single fare—4.16 miles—is fully as long as the average passenger haul on the New York elevated lines which are primarily designed for long haul rapid transit.

In the determination of its findings the commission conducted very extensive traffic surveys in order to locate accurately the entire 2,500,000 residential population of the city, the origin of over 350,000 employees in the city's offices and factories, the actual routes of travel followed by over 500,000 elevated passengers, and the approximate routes of 1,500,000 surface line passengers. The destination of about 50,000 electric suburban passengers and 107,000 steam suburban passengers residing within an hour's ride from the center of the city were also located. Having in mind both the results of these surveys and the existing conditions by

which the passengers are more or less arbitrarily directed—along existing routes of travel, as well as the financial and other considerations, the commissioners arrived at the physical plan which was set forth in the *ELECTRIC RAILWAY JOURNAL* of Dec. 9, 1916. The nine-year initial construction program there outlined involved a total expenditure of approximately \$100,000,000.

The development of the financial plan hinges upon the unified operation of surface and elevated lines and subways under one management by a single corporation organized to take over the existing lines and construct future extensions thereto. It is also dependent upon new legislation which will permit the formation of the new corporation comprising all present transportation companies and make it possible for existing companies to surrender all present definite franchises and receive in lieu thereof a franchise to the new corporation terminable at any time by city purchase, by amortization or by forfeiture if the corporation fails to comply with the provisions of the ordinance. Legislation is also required to permit the city to grant such a terminable franchise and to empower the city to purchase the combined properties of the new corporation at any time in the future. Further legislation is needed to empower the city to procure the consent of abutting property owners where needed to carry out the extensions recommended in the report.

The commissioners' recommendations in connection with the financial plan include the provision whereby the partnership management now existing between the city and the surface lines under the 1907 ordinances shall be extended to include the elevated roads so that the city shall have a share in the divisible net receipts of the rapid transit lines on the basis of 55 per cent to the city and 45 per cent to the corporation. The city's traction fund is to be used for the construction of subways which are to be owned by the city in fee from the start. The city's share of future divisible net receipts should be applied in such a way as to facilitate acquisition of the properties by the city. It is planned that the present traction fund and all additions to it shall be invested on the same terms as new capital furnished by the corporation at the same time, except such parts as the city may find it expedient to invest under authorization of a board of control in urgently needed facilities which will not produce directly a definite revenue, such as street openings over or under rivers, railroad yards, parks, public utility galleries, etc.

The commissioners recommend that the corporation should receive 6 per cent on its present certified investment, consisting of a combined valuation of the existing surface and elevated properties as fixed and specified in a new ordinance to be drawn and based upon the commission's valuation of the elevated lines and the existing purchase price of the surface lines. This investment is to be ultimately reduced by amortization or otherwise under the financial plan adopted. On new money, the corporation should receive the actual interest paid by it on all obligations issued to raise such new money as may be authorized by a board of regulation and control, this provision applying to refunding as well as to existing and new securities.

Provision is made for the establishment of an amortization fund which will act to reduce progressively the outstanding valuation or purchase price to the city, comprising both old and new investments. This fund would be increased from time to time by such portion of the traction fund as was not required for new construction, and by any excess of the corporation return over 8 per cent, as described below.

The rate of return to the railway corporation is planned to be confined between the limits of 6 and 8 per

cent on its then investment in road and equipments by an automatic provision in the financial scheme which provides for cumulative reductions in the corporation's interest and share so that its return shall never exceed 8 per cent. Any excess that may be earned over and above 8 per cent is to be paid back into the amortization fund. Such use of the traction and amortization funds is recommended as will establish a practical and feasible method of ultimate acquisition of the entire local traction system by the city, without necessarily burdening the taxpayers with additional mortgage indebtedness for transit construction.

The financial plan provides that on the new capital to be furnished only the interest actually paid is to be allowed. The commissioners recognize that the ordinary commercial risk of the business is, of course, one that falls on the railway corporation, and that there must be an opportunity for profit as an incentive to economical operation and for a margin to provide against catastrophe. It is accordingly recommended, in order to furnish protection against other risks, that the franchise should provide no burdens, such as orders for the construction of new lines, the imposition of additional taxes, or any other requirement on the part of the city, which would so reduce the corporation's share of the divisible net receipts that it would fall in any one year below 1 per cent of the gross receipts. If any deficit results, either to the city or to the corporation in the payment of their respective shares of the divisible net receipts, this deficit is to be carried forward and made up to the city or the corporation out of the subsequent divisible net receipts of following years, after the payment to the corporation of its minimum of 1 per cent of the gross receipts. In the event of such a deficit, the recommendations provide that it shall be the duty of the board of regulation and control to impose an increased charge for transfers between the surface and the rapid transit lines sufficient to make up this deficit. This charge may be reduced or abolished by the board of regulation and control when, in its judgment, the earnings have so developed that the full minimum payment of their respective shares can be paid to both the city and the corporation.

The full details of this financial plan and careful analysis of its operation are withheld for a later issue of *ELECTRIC RAILWAY JOURNAL*, when the final checking shall have been completed. The plan comprises some new and extremely interesting features which will be later carefully treated.

The necessity for new enabling legislation arises from the fact that the elevated roads and the surface lines are organized under state and city authority respectively, and consequently cannot be merged without new legislative grant. Also, the existing legal conditions whereby a single property owner has the power indefinitely to obstruct needed public improvements by refusing frontage consents, even though the work may be an essential element or link in an improvement affecting a large part of the city, makes legislation in this respect necessary.

Further, in order to enable the railway corporation to raise the large sums of money needed for the recommended improvements and to sustain its credit to permit the financing of future extensions, it is recognized that the franchise situation must be placed upon a more assured basis than at present. With the surface lines' franchises expiring in ten years and the elevated franchises expiring in various periods from thirteen to twenty-eight years, and in view of the uncertainty of the city being able to purchase the surface line properties in 1927 without further legislation, the commissioners recommended as the most practicable course open the surrendering of all present franchises and the

issuance of a new franchise in which the equalization of franchise terms would be automatically brought about. The terminable type of franchise was determined upon by the commissioners as the only one which would avoid the financial embarrassment usually encountered at the end of a short-term franchise, or at some future time near the end of a long-term franchise, and at the same time secure to the city the legal right whenever it elects to take over the properties at any time upon a basis fair and equitable to both parties, should the city desire to acquire the properties or should the companies fail to fulfill the terms of the franchise grant.

The commissioners have recognized that the value of the purchase clause is in effect nullified to a large degree when the city finds itself unable to pay the agreed purchase price by reason of the debt limit imposed upon it by law. This is the situation which confronts Chicago at the present time, and unless the future debt limit is raised by legislation, it would also be the case in all probability ten years hence when the city would be confronted with the alternative of purchase or extension of the 1907 ordinance term.

#### AMORTIZATION AND REGULATION

These difficulties are believed by the commissioners to be met in the terminable form of franchise grant recommended, when combined with the amortization features above enumerated, which for the first time will then become a new element of the utmost importance in securing the financial and operating stability of the Chicago traction properties. This amortization is brought about in two ways: first, by the regular amortization fund to which annual payments are made prior to the division of net receipts, and second, by the investment back into the traction property of the city's entire traction fund with its annual additions and interest for which no new actual obligations would be issued for it. That is, all traction fund investment by the city representing prior contributions from the revenue fare will continuously operate to reduce the purchase price to the city below the total investment in the traction system, without adding additional mortgage liabilities or burdens upon the taxpayers for construction which would otherwise have to be financed by the companies themselves. The amortization fund alone will retire a very considerable proportion of the outstanding investment within the next twenty years. Thus it appears that Chicago's foresight in establishing and conserving a traction fund, which by the time the actual subway construction begins will approximate \$21,500,000, will result in the possibility of automatically transferring to the city within a reasonable term of years the entire equity of the entire Chicago traction properties, including subways and further extensions, so that acquisition by the city will eventuate in fact as well as in theory.

The commission finds that "a reasonable forecast of the results obtainable under this financial plan indicate that by about 1937, or at the end of twenty years, there will have been amortized actually or in effect nearly \$120,000,000 of investment, or about 30 per cent of the then total investment in combined properties. The continuation of this forecast indicates that about 1947, or in thirty years, not only will all of the additional capital furnished by the corporation as contemplated in this report be paid off, but the operation of the amortization fund and the city's traction fund will probably begin to reduce the original 1916 valuation of the combined properties; and \* \* \* possibly by the year 1960 the whole of the corporation's then investment will have been retired. The city of Chicago would then become the actual owner in fee of a combined system of subway, surface and elevated railroads which, in accordance with

the orders of a board of regulation and control, and the provisions of the ordinances, will have been maintained at full efficiency and will have cost about \$490,000,000, which the city can then operate or lease to an operating corporation as public opinion at that time will determine."

After considering various methods of insuring the city its full rights in all administrative matters, the commission concluded that a non-political board of regulation and control, organized largely along the lines of the existing board of supervising engineers (under the 1907 ordinances), but with added duties and powers, would best fulfill the needs of the situation in carrying out the provisions of the proposed ordinance. This board would also be empowered to administer the manifold details of finance, organization, construction, service and extensions, "reserving to the City Council such general authority as it should retain." This board, thus clothed with the necessary powers of enforcement would order into execution and supervise the various steps in the construction plan outlined in the report or such amendments thereto as the development of the city might require. It would ascertain and certify to the cost of the corporation's investment, pass upon the obligations issued therefore, certify to the city's investment, supervise plans and specifications, exercise general powers of supervision and audit over the corporation's account, regulate the transfer charge, order on its own initiative such expenditures for road and equipment as necessary or appropriate for furnishing proper service, and report to the City Council on request as to the reasonableness of service ordinances which might be pending therein. The commissioners contemplate that the enabling ordinance specifying the powers of this board will confine its provisions to the fundamental questions covering construction, operation and administrative matters of a contractual character, leaving to the board the decision on all points, the character of which necessarily will vary from time to time.

In making the historical study of the values of the elevated system, the commissioners were largely confined to the book accounts of additions, extensions, betterments and rehabilitations since the beginning of actual operation. In the absence of the original cost of acquiring the rights-of-way, it was impossible to trace the financial development of the properties from the beginning of operations to the present time. The only direct course open, therefore, was to determine and start with the cost to reproduce new the properties as they exist to-day and then deduct the accrued depreciation to arrive at the present value. By this process, and omitting many details which will be presented later upon the completion of the supplement to the report, the commission arrived at the valuation for the elevated properties as they exist to-day, and placed the figure at \$70,400,916. This is recommended as the "agreed purchase price" to the city to be combined with the purchase price of the surface line properties which is \$147,745,501, as of June 30, 1916, in both cases, to make the total purchase price for all local traction properties to be written into the proposed ordinance \$217,876,417.

"So far as the surface lines are concerned the method of determining the purchase price was fixed by the existing ordinances, and the ordinance appointing the commissioners direct that it accept this valuation." In the financial negotiations between the companies "the commissioners do not attempt to fix the amount of \$70,400,916 as the proper basis of adjustment of values between the companies themselves, but only as a part of the total purchase price to the city of \$217,876,417, the commissioners' function being to see that the total purchase price is fair to the city and not unjust to the companies."

## Light and Power Accounting\*

Interesting Subject, and Electric Railway Accountants Will Be Better Executives for Studying It

BY A. E. DEDRICK

Auditor Mahoning & Shenango Railway & Light Company,  
Youngstown, Ohio.

WHEN it is considered that this paper on electric light and power accounting is presented before a body of accountants identified with the electric railway industry, it assumes an especially important aspect. It is another indication of a growing tendency on the part of various associations to broaden out and absorb some of the things closely akin to their own profession or work that may have been neglected, largely because no particular immediate need has been felt for information along such lines. During the last five years many such changes have been brought about. In the parent association we have as examples various committees, engineering-accounting, transportation-accounting, etc., that were born of the necessity of knowing something more than mere "railway accounting." We must also have, however, a knowledge of "electric lighting accounting," and other companies doing a freight and express business must have accountants of still broader experience in "freight and express accounting." We might even point out that, as a requirement of the future, the far-sighted accountants wishing to progress to the "seats of the mighty" will absorb a fair knowledge of "engineering."

The principal difference between railway and electric lighting accounting was described by one of our collectors of bygone days. He said: "In the railway business you collect your money before you render any service, but in the lighting business you extend the customer liberal credit and then play tag with him until you get him in a corner, and he pays you, usually under protest." This is, no doubt, the viewpoint from the collection department, but it is not the true difference as far as the general subject of accounting is concerned. The same fundamentals apply in both cases, but the details vary.

The old way of computing lighting bills by hand has given way to a more efficient method of comptometer calculating. The ledgers are posted, both debits and credits, by a bookkeeping machine which automatically carries over the unpaid balance. The bills are turned out neatly, quickly and uniformly by the Addressograph and Burroughs billing machines, which print both the body of the bill and the duplicate stub with one operation. The more mechanical the operation, the greater is the efficiency of the operators, a factor that is of prime importance at this time on account of the scarcity of clerical help. Moreover, the more mechanical the work, the lower is the standard of experience required, with a corresponding saving in the cost of operation.

This last may seem like a broad statement, but it can be proved by referring back to the days when all the office work was, with the exception of letter writing, done "by hand," so to speak. The general books were kept by a man, usually one of the oldest in the department, and the young clerk who had the opportunity of posting journal entries, to say nothing of preparing them, after two or three years of service, thought he had reached the pinnacle of fame. At the present time, by the careful selection of employees and the proper routing of work, the thinking element is transferred to suitable clerks hired and trained for the purpose of thinking, while the routine work is turned out by clerks whose efficiency is high because they are not required to puzzle their brains over problems that break into the routine of their work.

The details of light and power accounting are rather more complicated than those of railway accounting. A complete and revised-to-date history must be kept of each consumer, of the dates when the meters were set and removed from his premises, of the make, type, number, etc., of the meters. Similar information must be kept for transformers, some companies handling all data on meters and transformers through the same department.

A customer's file, in which is kept all correspondence and records pertaining to the account, complaints, adjustments, etc., is quite necessary. The data so compiled must be available for instant use, as customers have a habit of calling on the 'phone and asking questions that must be answered or explained at once. If you call up your butcher or grocer about an error or discrepancy in your account, he may safely say that he will have the bill checked and report to you later on, but this procedure will not do for the average lighting customer.

Better results are obtained if the subject in question can be explained at the time the inquiry is made, and the customer made to feel that he is receiving attention and consideration. The company with which the writer is connected makes a typewritten report of each complaint, and when this is adjusted, the full data are attached so that a complete record of the customer may be kept. This permits of comparison of the departments by months and is a valuable guide to ascertain how the different departments are progressing, for it must be borne in mind that no matter how efficient the different units are working within the company's organization, the work is for naught if the customer is dissatisfied.

Meters must be routed and accounts arranged in sequence, so the same account will be read as nearly as possible on the same day each month, and collections must be systematically followed in the same way. Many companies sell washing machines, portable lamps, flat-irons, toasters, vacuum cleaners, etc., on the installment plan, and care must be taken to insure collections on schedule time.

Costs may be kept by groups that will be found of great value in determining whether or not it is advisable to make extensions to serve other groups. Moreover, to comply with many franchise conditions requires accurate and detailed costs, for without full and sufficient data it is a guess as to whether or not the requirements can be met and leave a profit to the company. Many railway companies, too, are supplying light and power to small groups of customers along their lines, and this class of business is expanding very rapidly. The gross income from this class of business in many instances seems hardly sufficient to warrant keeping separate costs, yet if such costs are kept, in accordance with the uniform system of accounts promulgated and issued by the National Electric Light Association, the results will amply repay for the time spent.

The lighting and power business generally requires more statistics and is subject to greater exactions along certain lines than railway accounting, but the basic principles being the same, it is not a serious problem for the accounting officers of interurban roads especially to become familiar with light and power accounting methods and problems. Many of them have use for such knowledge in connection with the extension of lighting service into the small towns in their territory. Aside from being quite necessary in many instances, however, it is an interesting subject to study and electric railway accounting officers are better executives for knowing accounting methods so closely connected with their industry. The lighting and power field offers much for the student in efficiency and office management.

\*Abstract of paper presented at meeting of Central Electric Railway Accountants' Association in Cincinnati, Ohio, on Dec. 9.

## COMMUNICATION

### Converting Indifferent Passengers into Loyal Customers

PHILADELPHIA, PA., Dec. 20, 1916.

To the Editors:

I am glad to notice the attention which you are giving by cartoons and otherwise to the subject of public relations. In this day when manufacturers and merchants steadily strengthening their businesses by improving service to customers, why is it that some electric railway companies still handicap themselves by methods which efficient commercial men have discarded?

To the executives of such railways obviously it is not apparent that they are marketing transportation with an attitude toward their passengers unpleasantly similar to that which prevailed years ago among merchants, namely, "We have the goods, you can't get them anywhere else in town, and the price is so much." Such merchants trained their salesmen to meet customers by acquainting them rather thoroughly with the stock, drilling them on price-ticket symbols and saturating them with fear of a hundred penalties devised to prevent mistakes in sale checks, shortages on inventory and what not. So the railways to which I refer train their conductors by teaching them something about a trolley car's construction, drilling them in handling money correctly and rapidly and impressing upon them a bookful of rules (with penalties) about ringing up fares, seeing that everyone is safely aboard before starting the car and getting the names of at least three witnesses every time the slightest accident occurs. So also do they show the motorman how to operate the car with maximum safety and how to make his time with minimum wear on the expensive machinery.

When a customer of the old-time store expressed dissatisfaction, the merchant's first move was often to see how that complaint could be most skillfully smothered. Railways are still smothering complaints, often politely, it is true, and the "investigator" who can secure signatures of "eye-witnesses" or injured persons to what seems an airtight accident statement is still a valued employee, notwithstanding the ventilation frequently given such statements when a damage suit jury retires to discuss the case.

Well, what has an electric railway—intrenched behind a long-term, exclusive franchise—to gain by spending some money to supply genuine service with its transportation; to wear an every-day attitude toward its passengers like that worn to-day by a great retailing corporation whose president, one afternoon, telegraphed each of thousands of salesmen this amazing question: "Have you said 'thank you' to every customer to-day?"

Mr. Average Citizen can answer the question. Suppose I, the average citizen, depend upon electric cars to ride the 3-mile distance between my downtown office and my home in some attractive residential section. My family must use the cars, and we all ride down to the theaters. We use the interurban when we spend a Sunday with friends in the next town. If the railway company seems to be running cars with reasonable frequency, regularity and speed; if the cars are comfortably warmed in winter and sufficiently lighted on dark afternoons to give me a chance at the evening paper, I probably will stand uncomplainingly when all seats are taken, but I shall feel no interest in the railway company.

Now, suppose my evening newspaper commences pub-

lishing a monthly statement about traffic on the system as a whole—a moderate-sized advertisement over the signature of the railway company's president. The statement is so simple, clearly set and prominent that I cannot help reading it. By figures and interestingly written information I am frankly told about the volume of business done during the month just ended, and why the service given was the company's best.

Likely as not I see that statement shortly before I reach my corner. Its favorable impression lingers as I press the signal button opposite me and start pushing through the crowd toward the rear door. If the conductor holds his car ten seconds for me to get off, instead of starting the moment those who were actually at the door are on the ground, thus carrying me a block past my corner, I cannot help linking that obliging act to the company's advertisement. If he smiles instead of saying sharply, "Lively, please," that, too, makes an impression.

Suppose, also, when I reach home my wife relates how she and other passengers traveling to the next town that day on the interurban were compelled to walk several hundred feet where repair work was in progress, and that the only reason she reached her destination in presentable condition was that a rough plank walk had been built above the mud by the company. Her story recalls to my mind an advertisement in the morning paper announcing that in the interests of safety and time saving the company would commence that day to straighten and renew a certain stretch of track on the line in question, but that meeting schedules and transfer facilities had been so arranged as to give passengers no more than slight delay and inconvenience.

Suppose I continue noticing that this company's employees almost invariably serve as if they felt pride in their efficiency and courtesy; that every little while its president had something to say about its administration; that I learned from a merchant friend how fairly and frankly the company dealt with him in adjusting his claim for a smashed delivery wagon, while not neglecting its own rights in the matter.

Now isn't it reasonable to presume that the average citizen would respond to a railway policy expressed through many such examples as those just mentioned? Often enough he has selected for his patronage one out of several good stores because he likes its policy, and he speaks of it with pride as a credit to his town. Should he not feel the same way about his electric railway system?

Isn't it logical to suppose that, having gained his good-will, the railway company can borrow his money upon proper security and can hold his patronage by its safety and assurance of carrying him comfortably, in all weathers, to his destination when irregular transportation competitors arise? Isn't it likely that his influence will bear strongly enough upon his alderman or State legislature representatives to disarm political or other demagogues having unworthy designs?

Conditions which the electric railway industry will be called upon to meet in future are uppermost in the minds of operators and investors to-day. What is there about the industry to prevent strengthening it by more skillfully cultivating loyalty among its employees and respect among its customers; to do these things systematically instead of just hiring men and giving the public the most economical service that can "get by"; with very little effort made to create public interest and support for so splendid an asset as a good electric railway is in any community?

Free from competition, as a rule, the electric railway can concentrate upon supplying the best service its income affords and upon winning prestige. If its em-

ployees are systematically impressed with their proper importance as the company's representatives in handling customers, have fair wages and working conditions, and some extra competitive incentive for sustained efficiency, and are thoroughly supported when attacked by unjust complaints, they should improve steadily in pride, competence and courtesy to passengers. There is in almost every honest American workman a potential

response to appreciation and support from his employer.

If it be true, as many think, that there is no limit to which regulation of public utilities can be carried if the people so wish, then, conversely, there should be no limit to the good-will which utilities can create by practising frankness with the people and cultivating their interest.

ROBERT HOLMES ELMENDORF.

MID-YEAR MEETING  
BOSTON  
FEBRUARY 16, 1917

## ASSOCIATION NEWS

MID-YEAR MEETING  
BOSTON  
FEBRUARY 16, 1917

Secretary Burritt Announces American Association Committee Appointments—Recent Meetings Indicate General Activity on the Part of the Various Committees—Biographical Sketches of New Company Section Officers—General Company Section News

### American Association Committee Appointments

Secretary Burritt has announced the following appointments to American Association committees. Other committee lists will be announced as completed.

Previous committee appointments as completed were announced in the following issues of the *ELECTRIC RAILWAY JOURNAL*: Transportation & Traffic Association, Nov. 25, page 1115, and Dec. 9, page 1207; Accountants' Association, Dec. 2, page 1162, and Dec. 9, page 1207; Engineering Association, Dec. 9, page 1207, and Dec. 16, page 1252.

*Company Sections and Individual Membership.*—Martin Schreiber, Newark, N. J., chairman; W. J. Flickinger, New Haven, Conn.; C. S. Kimball, Washington, D. C.; E. J. Blair, Chicago, Ill.; H. H. Norris, New York City.

*Compensation for Carrying United States Mail.*—Henry S. Lyons, Boston, Mass., chairman; George H. Harries, Omaha, Neb.; P. N. Jones, Pittsburgh, Pa.; F. R. Coates, Toledo, Ohio; M. S. Sloan, New Orleans, La.; F. T. Griffith, Portland, Ore.

*Constitution and By-Laws.*—George H. Harries, Omaha, Neb., chairman; R. I. Todd, Indianapolis, Ind.; Harlow C. Clark, New York City.

*Education.*—H. H. Norris, New York City, chairman; H. A. Bullock, Brooklyn, N. Y.; Martin Schreiber, Newark, N. J.; W. L. Robb, Troy, N. Y.; D. D. Ewing, Lafayette, Ind.; A. M. Buck, Urbana, Ill.

*Electrolysis.*—Calvert Townley, New York City, chairman; R. P. Stevens, Youngstown, Ohio; L. D. H. Gilmour, Newark; J. E. Woodbridge, San Francisco.

*Federal Relations.*—Arthur W. Brady, Anderson, Ind., chairman; F. W. Brooks, Detroit, Mich.; L. S. Cass, Waterloo, Iowa; H. E. Chubbuck, Peoria, Ill.; E. G. Connette, Buffalo, N. Y.; R. I. Todd, Indianapolis, Ind.; Frank R. Ford, New York City; E. C. Foster, Manchester, N. H.; F. T. Griffith, Portland, Ore.; George H. Harries, Omaha, Neb.; Marshall S. Morgan, Philadelphia, Pa.

*Mid-Year Meeting and Dinner.*—M. C. Brush, Boston, Mass., chairman; C. R. Ellicott, New York City; C. Loomis Allen, Syracuse, N. Y.; Charles C. Peirce, Boston, Mass.; T. S. Williams, Brooklyn, N. Y.; E. L. Janes, New York City; John J. Stanley, Cleveland, Ohio; B. A. Hegeman, Jr., New York City; Myles B. Lambert, Pittsburgh, Pa.; C. P. Dennett, Boston, Mass.; H. E. Reynolds, Boston, Mass.; C. V. Wood, Springfield, Mass.; Harlow C. Clark, New York City; E. B. Burritt, New York City.

*Operation of Motor Vehicles.*—Britton I. Budd, Chicago, Ill., chairman; William A. House, Baltimore, Md.; Henry G. Bradlee, Boston, Mass.; C. L. S. Tingley, Philadelphia, Pa.; Frank Silliman, Jr., Philadelphia, Pa.; A. M. Patten, Topeka, Kan.

*Subjects.*—J. D. Mortimer, New York City, chairman; R. I. Todd, Indianapolis, Ind.; Calvert Townley, New York City; J. H. Pardee, New York City; M. R. Boylan, Newark, N. J.; R. E. McDougall, Rochester, N. Y.; F. R. Phillips, Pittsburgh, Pa.; L. C. Bradley, Houston, Tex.

### Committees Active All Along the Line

During the past few days many association committee meetings have been held. On Dec. 14 and 15 the Engineering Association committee on standards met in New York City; on Dec. 15 the joint committee on block signals met in Newark, N. J.; on Dec. 15 and 16 a largely attended meeting of the committee on schedules and time tables was held in Boston; the American Association executive committee met in New York on Dec. 20. Other meetings were scheduled but reports of all of the meetings held are not yet available. A brief report of the latest meeting follows.

Reports of the other meetings mentioned will appear in a later issue.

#### AMERICAN ASSOCIATION EXECUTIVE COMMITTEE

At the meeting of the executive committee held in New York on Dec. 20, the status of manufacturer members in the association was fully discussed and the representatives of the manufacturers in the executive committee were appointed a sub-committee to consider the carrying out of the recommendation contained in President C. L. Henry's Atlantic City address and to report at the midwinter meeting. These referred to provision for the more active participation of the manufacturers in the management of the association.

Those in attendance at the meeting were as follows: Officers, L. S. Storrs, New Haven, Conn.; T. S. Williams, Brooklyn, N. Y.; J. J. Stanley, Cleveland, Ohio; E. B. Burritt, New York City. Representing affiliated associations, M. R. Boylan, Newark, N. J.; R. E. McDougall, Rochester, N. Y. Past-presidents, A. E. Lang, Windsor, Vt.; C. S. Sergeant, Boston, Mass.; W. Caryl Ely, Buffalo, N. Y.; James F. Shaw, New York City; George H. Harris, Omaha, Neb.; C. Loomis Allen, Syracuse, N. Y. Representing manufacturers: E. W. Rice, Jr., Schenectady, N. Y.; Samuel Curwen, Philadelphia, Pa.; James M. McGraw, New York City. Ex-Secretary H. C. Donecker was also present.



Photo by Harris & Ewing  
**FLAVIUS MORRILL**  
 President  
 Capital Traction Co. Section



Photo by Clinchinst Studio  
**J. E. HEBERLE**  
 Secretary  
 Capital Traction Co. Section



**ARTHUR T. WARNER**  
 President  
 Public Service Railway Section



**FRANK J. DAVIS**  
 Secretary  
 Public Service Railway Section

### Some Facts Regarding New Section Officers

Following its usual procedure, the **ELECTRIC RAILWAY JOURNAL** will give this year some biographical notes regarding the presidents and secretaries of the several sections. Several such sketches are given below.

#### CAPITAL TRACTION COMPANY SECTION

Flavius Morrill is president of company section No. 8 this year. He is roadmaster for all the lines of the Capital Traction Company and was vice-president of the company section until elected president this fall. Mr. Morrill has been in the street railway business for about twenty-eight years, the preceding thirty-one years having been spent on a Michigan farm and in a Missouri grocery store. In 1889 he went to Kansas City to work for Edmund Saxton, a cable road contractor, in the construction of the Holmes Street Cable Road. He accompanied Mr. Saxton to Washington in the same year to assist in the construction of the Seventh Street cable road of the Washington & Georgetown Railroad. Upon the completion of that work he was employed by Henry Hurt, then president of the road, to take charge of the track work of this line. In 1892 when the cable was installed on the Pennsylvania Avenue and Fourteenth Street lines of this road, he was transferred to the Peace Monument and took charge of the auxiliary machinery which operated the short cable from this point to the B. & O. Railroad depot. In 1893 he was made roadmaster for all the lines of the company and was continued in the same position by its successor, the Capital Traction Company.

J. Edward Heberle, the secretary of this section, is a native of Olean, N. Y., and he is exactly one-half the age of the president of the section. He was educated in the Olean parochial and public schools and in West-

brook's Commercial College. He entered the employment of the Capital Traction Company in 1907 and was appointed chief clerk at the beginning of 1916.

#### PUBLIC SERVICE RAILWAY SECTION

Arthur T. Warner, who after effective service as secretary of Section No. 2 was recently promoted to the presidency, was graduated in the electrical engineering course at Lafayette College in 1910. He immediately entered the employ of the Public Service Railway as cadet engineer and completed the full two-year course. Immediately thereafter he was made a traffic investigator, and on Jan. 1, 1916, became traffic engineer. He is attached to the time-table department, in all the problems of which he takes a lively interest. In addition to having been secretary of the company section for two years, was for three years secretary of the Public Service Railway Athletic Association.

Frank J. Davis, report clerk of the company, is Mr. Warner's successor as secretary of the section. Immediately after completing his grammar school course in 1903 he entered the employ of the North Jersey Street Railway, one of the predecessor companies of the Public Service Railway, as mileage clerk. He afterwards completed a secretarial course in a local business college, was appointed as stenographer in the accounting department in 1904, and in less than two years thereafter was made head stenographer in charge of the stenographic and typewriting department.

#### CHICAGO ELEVATED SECTION

E. J. Blair, who is president of Company Section No. 6 this year, is electrical engineer of the Chicago Elevated Railroads. He has been with the Elevated Com-



**E. J. BLAIR**  
 President  
 Chicago Elevated Ry. Section



**M. W. BRIDGES**  
 Secretary-Treasurer  
 Chicago Elevated Ry. Section



**JOHN T. MOFFETT**  
 President  
 Washington R. & E. Co. Section



**R. A. VETTER**  
 Secretary  
 Washington R. & E. Co. Section

panies since his graduation from Cornell University in 1905. At first he was put to work in the car shops of the Metropolitan West Side Elevated Railway and, after spending a few years in the equipment, maintenance-of-way and power departments, he became electrical engineer of this company in 1909. At the time of the consolidation of the elevated railroads in 1911, Mr. Blair became electrical engineer of the several companies. He has been active in the work of the local section since its inauguration and has also devoted much time and energy to the larger work of the Engineering Association. His appointment to membership on the electrolysis and power distribution committees was mentioned in recent issues of this paper.

M. W. Bridges, secretary-treasurer of this section, is chief clerk to the master mechanic of the Elevated Railroads. He has been with the companies for about six years, having started work as timekeeper in the transportation department of the South Side Elevated Railroad. He was later transferred to the shop department as shop clerk and, at the time of the consolidation of the elevated lines, he was assigned to the master mechanic's office and was later made chief clerk. Before going into electric railway work, Mr. Bridges was in the general offices of the Chicago & Alton Railroad.

#### WASHINGTON R. & E. CO. SECTION

Jacob T. Moffett, this year's president of section No. 4, has grown up in the transportation division of the industry, having continued to serve his present employer more than twenty-five years. He rose to the position of superintendent of transportation by the following route: He began as a conductor, but after less than one year of service was promoted to the position of night clerk, and after three years more to that of day clerk in which position he remained until 1899. In this year he became division superintendent and during the following four years served in several divisions, at the end of this time being made superintendent of transportation. He is an enthusiastic company section man and his associates say that he has greatly helped in developing a progressive spirit in the local section.

R. A. Vetter, who is serving his second year as secretary of this section, is law clerk for the legal department, which office is also general counsel for the Washington-Virginia Railway. Mr. Vetter has been in the employ of the company for six years, serving first as clerk in the office of the general manager, and later being transferred to the accounting and treasury departments. When the legal and claim departments were reorganized in 1914, he was assigned to the office of the general attorney. While in the employ of the company he followed an evening law course in Georgetown University, secured the degree of Bachelor of Laws in 1915, and was subsequently admitted to the District of Columbia bar.

#### Connecticut Company Section

Secretary W. E. Jones reports a very profitable meeting of Section No. 7, held on Dec. 14. The papers read were as follows: "Prolonging the Life of Old Rail in Connection with Permanent Pavement," by M. E. Stark, roadmaster Bridgeport Division; "Reminiscences of the Old Horse-Car Days," by John A. Crilly, claims adjuster, Hartford, and "Car Ventilation," by George H. Ford, Automatic Car Ventilator Company, New York. The meeting was preceded by a dinner at the Hotel Garde, New Haven. The company section orchestra played several times and there were also some vocal solos.

In his talk Mr. Ford explained why provision for ventilation is necessary, and he cited many interesting statistics on car ventilation. He also explained how ventilation systems are in most cases expected to perform under the most extraordinary conditions. In view of the fact that at this time of year the public becomes critical of car ventilation, due to the necessary use of closed cars, Mr. Ford's talk was considered particularly appropriate and it provoked considerable discussion.

#### Near-Side Stop Discussed in Denver

With an attendance of 150 the December meeting of the Denver Tramway Company Section, held on the 17th, was one of the most successful meetings of this section. James L. Adams, recently appointed superintendent of transportation to fill the vacancy caused by the resignation of William M. Casey, first addressed the meeting briefly. H. S. Robertson, attorney, then read a paper on near-side stop operation, supplementing it with an explanation of a related important city ordinance which becomes effective on Jan. 1, 1917.

#### "Stunt" Program of Capital Traction Section

Company Section No. 8 held its meeting on the regular date, Dec. 14, but with a decidedly unusual program. About 130 members and guests were present.

The first feature was a talk by W. H. McCarty, master mechanic, on the operations of the mechanical department and the relations of that department to the other branches of the company's organization. Following this there were brief discussions of several phases of the work of the mechanical department, comparing horse-car days with the present. The meeting was then turned over to the entertainment committee, which had provided a number of surprises. A Christmas tree had been set up in the meeting room and Attorney Frank J. Hogan distributed gifts with accompanying appropriate witticisms, convulsing the audience with laughter. Wilson buttons were presented to very good Republicans, hair tonics and combs were distributed in quarters where they were hardly required. Cradles for the newly-weds, rattles for the playful, and a small bowl and shovel for the professional alibi producer were among the gifts. There were also character sketches presented by a local entertainer, and at the close of the meeting a buffet luncheon was served.

#### A Plea for Clean Stations

*Tram-o-Grams*, published by the Denver (Col.) Tramway, contained in a recent issue the following appeal:

"The boy stood in the Tramway Loop, eating peanuts by the scoop; the empty shells he scattered round, four thousand shells to a single pound. There in the Loop the junk lay prone, 'midst remnants of an ice cream cone, cigars, torn paper and banana skins, lacking only tomato tins to make it look like Hogan's Alley after a family reunion rally.

"And then some gink in the Tramway got up nerve enough to bray: 'Perhaps this Loop would cleaner be, more like what we'd like to see, if we put in a big waste can to hold this trash for th' old rag man.' The can is labeled: 'Keep City Clean,' and that is something we take t' mean applies to ice cream cones and shells strewn by the boy from Cheyenne Wells. Help keep the Loop neat, spick and span, by throwing trash in the big tin can. PLEASE!"



## Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

This Week Three Master Mechanics Give Practical Suggestions for Reducing Maintenance Costs—The Power Plant Operator Will Also Find Valuable Information Regarding the Steam Turbine and the Return Tubular Boiler

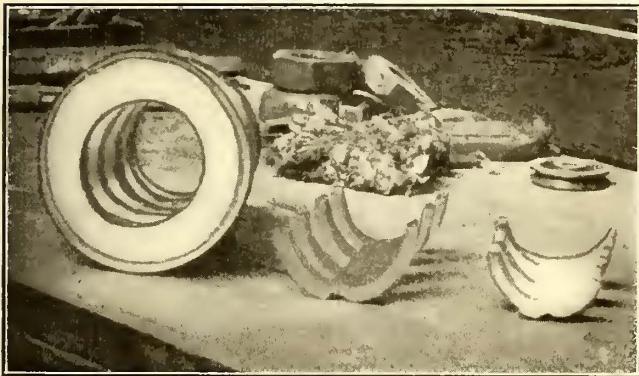
*(Contributions from the Men in the Field Are Solicited and Will Be Paid for at Special Rates.)*

### Bronze Insert for Armature Bearings Saves Stripping

BY A. BLANCHARD

Master Mechanic Boston & Worcester Street Railway

Stripping of armatures by contact with pole pieces on GE-57 motors has been practically eliminated on the Boston & Worcester Street Railway by casting a bronze insert, as shown in the accompanying halftone. This insert is of the same composition as the journal brasses used by the company, and it consists of a casting of ap-



BRONZE INSERT FOR BABBITTED BEARINGS

proximately semi-cylindrical shape, with curved lugs on each side, around which the babbitt is poured when forming the bearing. The usual boring out to diameter with smooth interior surface follows the casting. In case the bearing overheats and the babbitt melts, the armature shaft is held in place and lubricated by the use of the bronze insert, which can be seen in the interior of the bearing as photographed. The bronze insert is of such composition that it will not cut the armature shaft.

### Fireproofing Cables in Manholes

BY "CONDUIT"

In the Nov. 18, 1916 issue of the *ELECTRIC RAILWAY JOURNAL*, page 1068, the writer was particularly interested in the article concerning the use of asbestos listing for fireproofing cables in manholes, protecting them against the explosion of adjacent cables, etc., and he noticed closely this statement: "If water ran in and covered the cables, the silicate (of soda) was dissolved and the asbestos loosened."

While it is true that water might have a slight softening effect on the silicate, nevertheless its softening effect is of very little consequence, and where the asbestos has become unfastened, this is readily taken care of on inspection by the application of a piece of tape.

The writer of the article in question also stated that "when material as expensive as asbestos is used some provision should be made for salvaging the covering when it is removed from the cable." Most of the silicate of soda can be removed from the asbestos listing by the following method:

Make a solution of carbonate of soda by using 10 lb. of soda ash in 100 lb. of water. Do not use a galvanized iron vessel, as the solution will attack the zinc. Iron is best, but a wooden vessel or tank would answer. Keep the solution near the boiling point, which can be accomplished by the use of a steam line. Immerse the asbestos in this solution for about two hours, or until the asbestos is sufficiently pliable, then rinse well in clear water and allow it to dry.

The solution is not expensive to make and can be used over and over until it fails to give results within a reasonable length of time. Workmen should not put their hands in the solution. A wooden stick or iron rod could be used to agitate the solution and to remove the asbestos.

### Exacting Inspection a Good Investment

The Author Describes an Effective Plan of Keeping Oiling and Repair Records and of Placing Inspectors on a Basis Which Promotes Vigilance

BY K. L. WILCOXON

Lately Master Mechanic The Chicago, Lake Shore & South Bend Railway, Michigan City, Ind.\*

Just how far it is feasible to go in the inspection of cars is somewhat dependent on the value of the equipment likely to be damaged as the result of wear which becomes too great between inspections for safety. For instance, the Chicago, Lake Shore & South Bend Railway, with its very large and heavy single-phase motor equipment can afford to be more vigilant in its inspection routine than could a short direct-current road with comparatively much cheaper equipment. If this road by frequent and careful inspection can save one armature in six months from getting down on its bearings and being seriously damaged, the saving will pay an inspector's wages for a considerable period. This is one of the reasons why this company is investing more than the usual amount in keeping an inspector at both ends of its 76-mile line and rigidly maintaining the practice of placing every car over the pit at each end of the line after every trip. As the car comes into the terminal—Pullman at one end and South Bend at the other—it is run over the pit and another car is pulled out of the yard to take the return trip. Each car thus

\*The approving of this article for publication was one of the last acts of Mr. Wilcoxon, who met his death on Nov. 22. A note to this effect appeared in the issue of the *ELECTRIC RAILWAY JOURNAL* for Dec. 2.

**The Chicago, Lake Shore & South Bend Railway Company**  
DEFECT & CAR FAILURE REPORT

Car No. \_\_\_\_\_ Date \_\_\_\_\_  
 Train No. \_\_\_\_\_ Mins. Delayed \_\_\_\_\_  
 Time Inspected \_\_\_\_\_ If defect is O. K., mark here \_\_\_\_\_  
 Motorman \_\_\_\_\_ Conductor \_\_\_\_\_  
 State below defects found on inspection, making a separate report of each defect found on the car and any failure of equipment while car is in service.

Inspector \_\_\_\_\_ At \_\_\_\_\_

FIG. 1—FORM USED BY INSPECTORS FOR REPORTS

lays over one hour while the inspector goes over it, makes out his report and "O.K.'s" it for the next run.

The complete inspection system includes one inspector at each end of the line for light repair work, and a crew of four inspectors at the centrally located shops at Michigan City, where each day's program includes the thorough general inspection, oiling and cleaning of three motor cars and two trailers, this number of cars coming in each day on a 1000-mile inspection basis. With these three points of inspection on the system, a plan has been evolved whereby the two ends are worked against the middle, so to speak, as the work of the shop inspectors is a check on the two end-of-the-line inspectors, and these two are also a check on each other, all reports clearing through the master mechanic's office. This is brought about by requiring each man to send in a signed report card covering his inspection of each car. Certain minor defects which are allowed to be passed by the Pullman and South Bend inspectors must appear in the reports of all inspectors, if their work is as thorough as it should be, and any failure to make such report by one, when it is reported by another, gives the master mechanic evidence of the grade of work being done by the several men involved. The system in detail is as follows:

The men at South Bend and Pullman have as their duty the finding of any trouble or near trouble, but not its removal unless it involves such light repairs as the replacing of a brakeshoe, a motor brush, etc., They look out for the brake adjustment, armature clearance, hot bearings, etc. As they go over the car they write out a separate report on the form Fig. 1 for each defect, and note if any supplies, such as signal fuses, markers, lanterns, etc., are missing and replace them. This same form serves the trainmen to make their

trouble reports on. These reports are sent in to the master mechanic's office at Michigan City on the last car at night. The next morning the four inspectors in the Michigan City shops go onto the cars which are in for general inspection and any defective car, and their report when turned in to the master mechanic gives a check on the work of the men at the ends of the line by comparison of the several reports. This arrangement puts the men in competition with each other and thorough conscientious work obtains.

The general inspection on the 1000-mile basis in the shops is divided between the four men in the crew. They go onto a car, each inspecting certain parts of it and making his report on the car inspection record, Fig. 2. The report of all four men is put on the one card, and each signs his name, checking off as O.K. his part of the work as he finds it in good condition or makes repairs. On the back of this same card is printed a list of all material likely to be used, and the men check off on this what they use and note the quantity. With these signed cards, it is a very simple matter to check back the source of negligence among the shop men in case a car goes out and fails on the road. When the

REPORT OF MISCELLANEOUS CAR TROUBLES

	January	February	March	April	May	June	July	August	September	October	Total
Armatures rewound.....	1	0	0	0	0	1	0	0	1	1	4
Armature trouble.....	0	3	0	0	0	3	1	0	3	3	15
Motor field trouble.....	1	0	0	2	3	1	0	0	1	2	11
Brushholders broken.....	0	0	0	0	0	0	0	0	0	0	0
Transformers and wiring.....	0	0	0	1	0	0	1	1	0	1	4
High-tension cable.....	1	2	0	0	1	2	1	3	1	0	11
Pantograph and trolley ins.....	2	2	0	2	3	5	2	4	1	0	19
Reversers and wiring.....	1	0	0	0	1	2	1	0	0	0	5
Switch group.....	2	1	1	0	0	0	0	0	1	0	5
Line switch.....	0	0	0	0	0	1	0	0	0	0	1
Air compressors.....	0	0	0	1	3	0	2	0	0	0	6
Hot bearings.....	2	2	2	6	3	2	9*	0	1	1	28
Head light.....	1	0	0	0	0	0	0	0	0	0	1
Broken gears and pinions.....	0	0	0	0	0	0	0	0	0	0	0
Car bodies damaged.....	0	2	1	2	0	0	3	1	2	2	13
Motor truck trouble.....	0	0	0	1	0	0	0	1	0	0	2
Speed relay.....	0	0	0	0	0	0	0	0	0	0	0
Preventive coil.....	0	0	0	0	1	0	1	2	1	0	5
Control wiring.....	0	1	1	1	1	0	0	0	0	0	4
Pantograph trouble.....	1	0	0	0	0	0	1	2	1	1	6
Flat wheels.....	0	0	1	0	0	0	0	0	0	0	1
Total failures.....	12	11	6	16	16	17	22	17	13	11	141

\*High number caused from a run of defective bearing metal.

work of the four men is completed on a car, the foreman writes in on the card the time O.K.'d for service and the number of miles run since the last inspection, signs his name and turns the card in to the master mechanic's office.

The oiling on the system being done on the 1000-mile basis, naturally goes hand in hand with the general inspection. This is done entirely at Michigan City. It is entrusted very largely to a man old in the company's service, who is paid a trifle more than usual for this class of work in order to keep him interested. The oiling of the cars is governed entirely by gaging the amount in the wells and the amount put in each bearing is recorded by this oiler on a card, Fig. 3, for record and file in the master mechanic's office. The packing of axle, armature and journal bearings is left to the oiler, who keeps a record on a blackboard ruled for the purpose and placed on the wall out in the shop. A space on the blackboard is provided for each car and the car number painted in the space. Opposite the car number the oiler writes in the date he packed the bearings so that the next time the car is in he can refer to the board to know just what attention he gave it on the previous return.

These several inspection and oiling record cards used on the system are filed in the master mechanic's office in two pigeon-hole cabinets fastened on the wall, one for the oiling records and one for the inspection re-

Form 10-14 1M Form P3-14

**CAR INSPECTION RECORD**

CAR No. \_\_\_\_\_

INSPECTION TO BE MADE DURING  
24 HOURS, ENDING AT 6:00 P. M. ON \_\_\_\_\_

Car Miles Run Since Last Inspection \_\_\_\_\_

We hereby certify that we have carefully inspected all parts of the car opposite our respective signatures and have left said parts O. K.

Armatures.....	Control.....
Brush Holders.....	Batteries.....
Brushes.....	Motor Gen. Set.....
Motor Covers.....	Reversers.....
Motor Leads.....	Line Switch.....
Und. Hoisting.....	Light Circuit.....
Axle Cap Bearings.....	Head Light.....
	Gen. Signal.....

Pinions.....

Holders.....

Center Plates.....

Pantagraph.....

Trrolley.....

Remarks.....

Car O. K. for Service at \_\_\_\_\_ M. on \_\_\_\_\_ 19\_\_

Form S-315

Oiling Record at \_\_\_\_\_ Date \_\_\_\_\_

Car No. \_\_\_\_\_

Journal No. 1.....	Journal No. 2.....
Journal No. 3.....	Journal No. 4.....
Journal No. 5.....	Journal No. 6.....
Journal No. 7.....	Journal No. 8.....
Armature No. 1.....	Armature No. 2.....
Commutator.....	Commutator.....
Pinion.....	Pinion.....
Armature No. 3.....	Armature No. 4.....
Commutator.....	Commutator.....
Pinion.....	Pinion.....
Motor No. 1, Axle Caps.....	Motor No. 2, Axle Caps.....
Commutator.....	Commutator.....
Pinion.....	Pinion.....
Motor No. 3, Axle Caps.....	Motor No. 4, Axle Caps.....
Commutator.....	Commutator.....
Pinion.....	Pinion.....
Compressor.....	Blower.....

Grease, No. lbs. to each Motor.....

Remarks.....

Oiler.....

FIG. 2—FORM FOR 1000-MILE INSPECTION REPORTS; MATERIALS RECORD ON BACK; FIG. 3—FORM FOR KEEPING CAR-OILING RECORD

ports. In these, a pigeon hole is allotted to each car and the car number painted on the front.

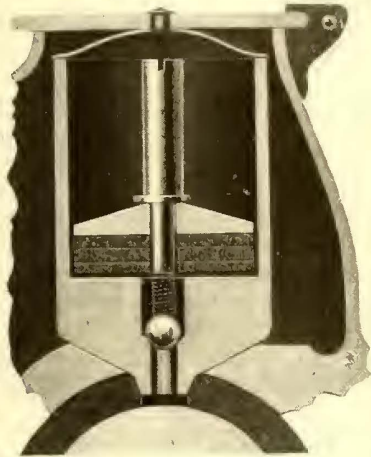
The result of this rigid inspection work is reflected in the table on page 1306 of equipment failures during the ten months ending Oct. 31, 1916, and also by the knowledge that during last summer the inspectors at the ends of the line caught a number of armatures low on their bearings which would have been damaged by another trip were it not for this frequent inspection. The mileage of the cars during these ten months was 1,231,338 and the miscellaneous car troubles which developed were as listed in the table.

### Oil Cup for Lubrication of Old Type Motor

BY E. W. ELGEE

Master Mechanic Cumberland County Power & Light Company, Portland, Me.

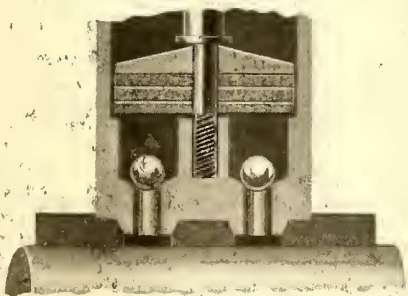
For the purpose of permitting the use of oil instead of grease for the lubrication of the armature bearing of a G.E.-80 motor, the oil cup shown in the accompany-



OIL CUP FOR OLD TYPE ARMATURE BEARINGS

ing illustrations has been devised by the writer, and it is in successful operation on this road.

This oil cup consists of a cast-iron square box in the bottom of which is a felt pad through which the oil works into the two wells which form part of the bottom of the box. The flow of oil through the pad is regulated by means of a threaded screw and a heavy iron



LONGITUDINAL SECTION SHOWING DETAILS OF OIL WELLS

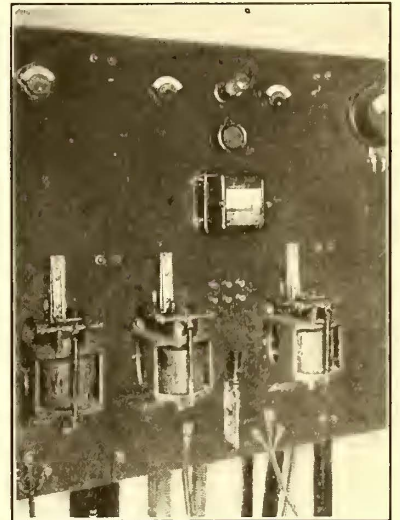
washer which rests on the felt pad. Varying the pressure on the pad by turning the screw changes the flow of oil, since the more the felt is compressed the slower the oil can work through it. From the wells the oil drops on to the bearing through two ports which are closed by steel balls when the motor is still. The move-

ment of the motor displaces these balls and allows the oil to reach the bearing. The oil cup rests on the bearing and is held in position by a flat spring which presses against the top lid of the bearing housing.

### A Constant-Current Arc Welding System

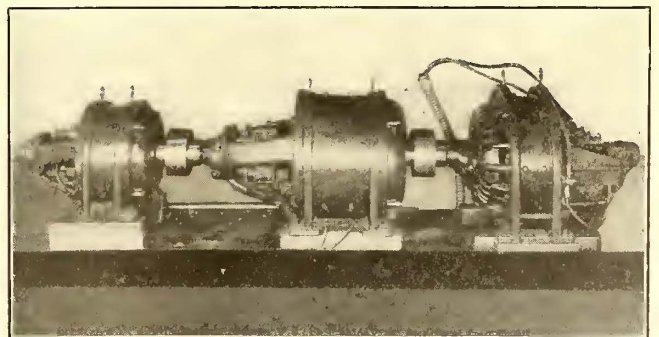
Regulator Is Used to Maintain Constant Current and Prevent Overheating at the Weld

In an attempt to reduce the waste of power and improve the conditions at the arc for welding, a new system has been brought out by the Electric Welding Company of New York. This company has been in the welding business for a number of years. The welding arcs are wired in series and power is supplied from a motor-generator set, which includes a regulator for maintaining the current at any predetermined value. At each arc is an automatic regulator which performs two functions. In the first place, it maintains the continuity of the circuit, and, in addition, controls the amount of heat which can be put into the arc. The controller operates by automatically adjusting resistance in shunt with the arc, utilizing the variation in voltage across the arc as the ultimate controlling element.



AUTOMATIC ARC HEAT CONTROLLER AND INSTRUMENTS

In the series circuit switches are located at such points as may be suitable for welding and an arc controller is plugged across a switch when welding is to be done at any point. The accompanying illustrations show the regulator and generator driven by the motor, and also a panel containing the controller and switch together, with the measuring instruments.



SELF-REGULATING GENERATOR FOR ARC WELDING

The manufacturers claim for this equipment that not only are the usual large losses in ballast and distribution lines eliminated, but the arc does better work because it is steady and cannot be drawn out to excessive lengths. It can also be extinguished by short-circuiting. For the purpose of extending the use of this apparatus

a special company known as the Arc Welding Machine Company, New York, N. Y., has been formed quite recently.

## Steel Lockers Reduce Fire Risk

Wooden lockers are unsanitary and, since greasy overalls, waste and similar materials as well as the mechanic's smoking supplies are often crowded into them, they are the cause of serious fires. Steel lockers are a great improvement. Besides being fireproof they are more easily kept clean, ventilation can be readily provided, and they are proof against rats.

The accompanying illustration shows one of the lockers made and used in the shops of the Galveston (Tex.) Electric Company of which M. B. Osborne is master



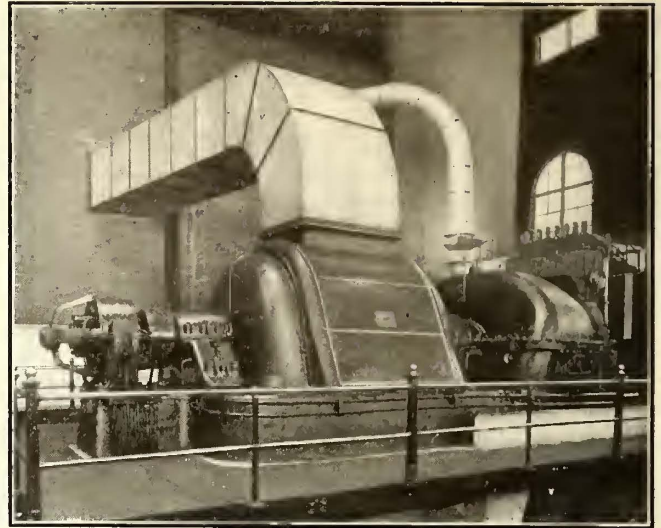
STEEL LOCKER BUILT AND USED IN THE RAILWAY SHOPS, GALVESTON, TEX.

mechanic. It is built of heavy iron screen supported by a steel frame and tilted so that the doors will close themselves. The use of the screen insures good ventilation, and practically everything in the locker is visible without opening the doors. Three of these lockers have been built by this railway, one for the head machinist, another for the blacksmith, and the third for the storage of lubricants.

## Largest Steam Turbine in Virginia Was Rapidly Installed

The Reeves Avenue power plant of the Virginia Railway & Power Company, Norfolk, Va., formerly contained three 4000-hp. turbines and one 2000-hp. turbine, all of the vertical Curtis type. The foundation of the 2000-hp. unit had been so constructed as to permit the installation of another 4000-hp. unit in its place. The appearance of the section of the turbine-room containing the 4000-hp. units is shown opposite. As light and power demands increased it became necessary in 1915 to add to the capacity of the plant. An order was therefore placed with the General Electric Company, for a horizontal turbine of modern design to be rated at 12,000 kw. to replace the 2000-hp. unit, and to occupy practically the same floor space as the small one which was to be removed. The rapid progress of the installation is shown in the following table:

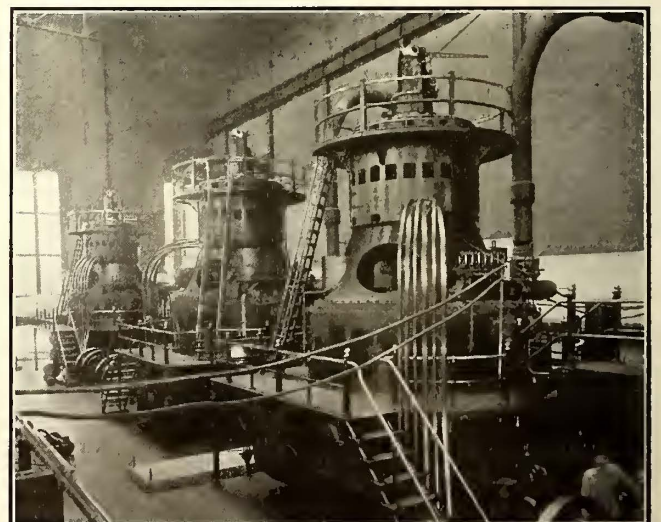
Contract for turbine signed.....	Sept. 2, 1915
Removal of old turbine begun.....	March 15, 1916
First car of machinery arrived.....	July 6, 1916
First turbine parts arrived.....	Aug. 1, 1916
Turbine running with load.....	Sept. 13, 1916



12,000-KW. TURBINE WHICH REPLACED OLD 2000-HP. TURBINE, VIRGINIA RAILWAY & POWER COMPANY, NORFOLK, VA.

Just one year and eleven days from the signing of the contract, and one month and twelve days after the arrival of the first car of turbine parts the machine was in operation carrying a load of 9000 hp. In view of the statement made in a recent issue of this paper to the effect that turbines must now be ordered for 1919 delivery the above table is doubly significant.

The turbine is designed for operation at 200 lb. steam pressure and 150 deg. of superheat and is of the condensing type. It is direct connected to a 60-cycle, three-phase alternator rated at 11,000 volts. A view of the new unit as it now stands in the station is given in an accompanying illustration. The condenser has 19,600 sq. ft. of condensing surface. The pump for circulating water is connected on one side to an electric motor and on the other to a small steam turbine, thus being doubly guarded against interruption in operation. The condenser and accompanying apparatus were furnished and installed by the Alberger Condenser Company. The boilers were designed for a larger output than that of the original turbines, and as the efficiency of the machine just installed is high compared with that of the old machines, the boilers proved to be large enough to supply the present demand. With the installation of the turbine a new section of busbar was added to that already in place and the two sections



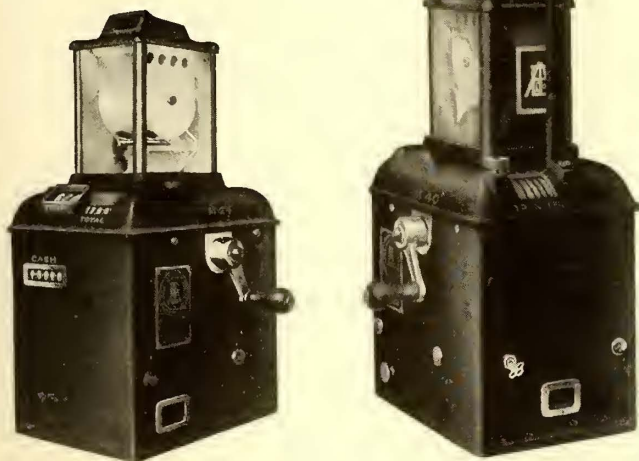
VIEW OF THE THREE 4000-HP. TURBINES IN THE REEVES AVENUE STATION, VIRGINIA RAILWAY & POWER COMPANY, NORFOLK, VA.

were connected in the form of a ring. The feeders were arranged so that they can be supplied from more than one place on the ring. This permits any section of the bus to be cut out for repairs without interrupting the service. J. P. Keeney is chief engineer in charge of the station, and the installation of the new unit, with the related changes in the electrical switching arrangements, was carried out under his supervision.

## Combination Fare Box Registers

### New Design Fare Box Registers and Cancels Tickets and Counts Coin

A combination coin and ticket fare box and fare register has been designed by the American Railways Equipment Company, Dayton, Ohio, which collects and registers coins and paper tickets as received direct from the passenger through a single opening and drops them into the same examination box. The mechanism of the fare box is so designed as to separate the coins and tickets, and register the trip fares and total fares, and the value of the cash fares, separately. It also has a means for registering transfers and all other fares collected over the box. Every fare of whatever class is registered immediately upon being paid. The operation of the registering handle causes the coins and tickets to be discharged simultaneously from the examination box into the coin-registering and ticket-cancelling mechanisms.



FARE BOXES OF NEW DESIGN, WITH AND WITHOUT OVERHEAD TRIP REGISTER

By this same operation the trip-passenger and total-passenger registers are actuated to register one unit with each movement of the handle, serving to indicate at all times on the respective counters the full passenger load and the total registration. The same operation also delivers the tickets through the cancelling mechanism into a locked box and carries nickels and dimes through the coin-registering mechanism, which automatically registers the value of the coins. The latter then pass into a change drawer, where they are accessible to the conductor. Pennies and mutilated coins are segregated from full fare coins and are deposited in a locked box. Each operation of the hand lever causes a bell to ring to indicate a fare registration.

This registration of each fare as it is paid is claimed to prevent accumulation of fares in the registering

mechanism, and also to permit of a complete registration of the full passenger load on each trip, and total passenger registration, without using a separate register. This enables the conductor to give his undivided attention to the fare box upon which all fares, whether collected through or over the box, are registered. The trip-passenger register is so located on the fare box that an inspector upon entering the car and paying a fare can read it at a glance. He can then check all fares paid and all fares registered while he is on the car by observing passengers taken on and by noting the fare box bell. By this arrangement, it is claimed, every requirement of prepayment fare collection is provided for in a simple, single-unit machine which requires but one operation for each fare paid, and which safeguards ticket fares as fully as cash fares by registering and cancelling them through the fare box without intermediate handling.

The construction and appearance of the new fare box are similar to those in present use. The box may be operated by turning a handle or if desired by means of a treadle mechanism. The working parts are of simple construction and made of hardened steel, and the casing is of enameled steel. The fare boxes will be furnished in three types: the complete coin-ticket registering fare box as described, a coin-registering fare box without the mechanism for handling tickets, and a locked-box type, which is the same as the box described, except that the mechanism for registering the value of coins is omitted. The first fare boxes of the different types will be ready for delivery in February, and will be installed at that time in cars of representative railway companies preliminary to filling orders.

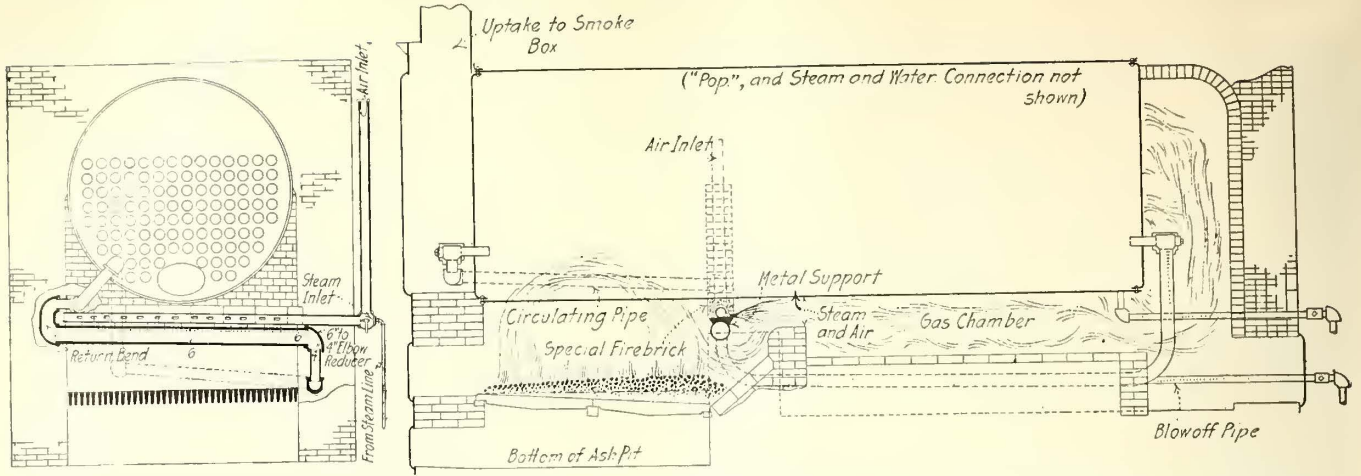
## Increasing the Capacity of Return Tubular Boilers

A furnace system for return tubular boilers, which utilizes a steam jet for furnishing a supply of air to the combustion chamber of the boiler for the purpose of minimizing smoke, has recently been placed on the market by the United Furnace Corporation, 120 Broadway, New York, N. Y. In addition the general scheme includes the installation of circulating piping.

In applying this system one of the tubes is removed and a tee connection is made to the shell, a 4-in. pipe extending to the end of the grate bars, where it is joined to a 6-in. pipe by means of a 6-in. to 4-in. return bend reducer. The 6-in. pipe extends across the grate and is joined to a 4-in. pipe by means of a 6-in. to 4-in. reducer. This pipe runs diagonally across the bottom of the combustion chamber, and through a riser with tee connections at the top and bottom connection is made with the rear of the boiler, completing the circulating system. The cross pipe and that portion of pipe which extends over the grate are directly exposed to the hot flames and gases, thus causing the water to circulate rapidly.

Just in front of the bridge wall a baffle wall is constructed so that the flames will be forced up against the boiler shell at the extreme end of the grate. The air and steam from a header are combined with the gases at the point where they pass over the bridge wall, as shown in the accompanying illustration, and thus produce better combustion than is possible under ordinary furnace conditions.

As shown in the elevation of the boiler at the left of the illustration, the air inlet to a header, which is closed at one end, is tapped at the ell and a connection is made with a  $\frac{3}{8}$ -in. steam pipe in the line of which is a globe valve. Steam is injected at the point from a steam drum or steam line and induces the air flow. This



SCHEME FOR OBTAINING COMPLETE COMBUSTION AND RAPID WATER CIRCULATION APPLIED TO A RETURN TUBULAR BOILER, SHOWING PIPING AND PATH OF GASES

header, which has approximately the area of a 3½-in. pipe and is inclosed in a firebrick cap, has openings facing the bridge wall. It rests on a saddle which supports the baffle wall, the cross pipe being directly below the saddle. The edges of the openings in the header are curved and smooth so that the friction of the air and steam passing through the openings will be small. The amount of air drawn in at the air inlet is controlled by the globe valve in the steam line, and the amount of air and steam which combines with the gases in the combustion chamber is regulated until a smokeless condition of the fire is obtained.

A number of reports of tests have been received showing considerable economies obtained in industrial and municipal lighting and power plants where this system is in use. According to the claims of the maker its use will produce fuel saving of at least 10 per cent and a material increase in the water evaporated per pound of coal. The boiler furnace will also be rendered smokeless, as is required under many city ordinances in localities where bituminous coal is burned.

According to the last report of the American Railway Engineering Association there are in use on fifty-six railroads in this city, 65 per cent of the total, electric motors to the number of 16,992, with an aggregate capacity of nearly 300,000 hp. Of the motors reported those using direct current represent 52.4 per cent in number and 47.4 per cent of the total horsepower. Three-phase motors constitute 39.9 per cent of the total number and 45.3 per cent of the total horsepower.

### Demand Meter Operated on New Principle

A new type of demand meter used in connection with a watt-hour meter, which records graphically the energy consumption during a definite time interval, has been developed by the General Electric Company.

Essentially it consists of a demand-registering element and a timing element. The demand-registering mechanism is actuated when a cam in the watt-hour meter closes the circuit of an electromagnet in the demand meter. The armature of the electromagnet moves forward turning the ratchet wheel by means of a pawl, which may be seen at the right in the accompanying diagram. When the circuit is opened a spring returns the armature lever and pawl to their original positions. The motion of the ratchet wheel is transmitted through gearing to the pointer, moving it forward for each closing of the circuit until the end of the time interval is reached. At this point a cam driven by the timing element causes a trip lever to disengage a sliding pinion from the gear with which it meshes, thus opening the gear train and allowing a spring to return the pointer to the zero position. Further rotation of the cam returns the sliding pinions to its former position and re-establishes the gear train. The mechanism is now in a position to measure the energy consumption during the next time interval. These meters are built both indicating and graphic, a view of each being shown in the illustration below, and for alternating and direct current, with time intervals of fifteen, thirty or sixty minutes.

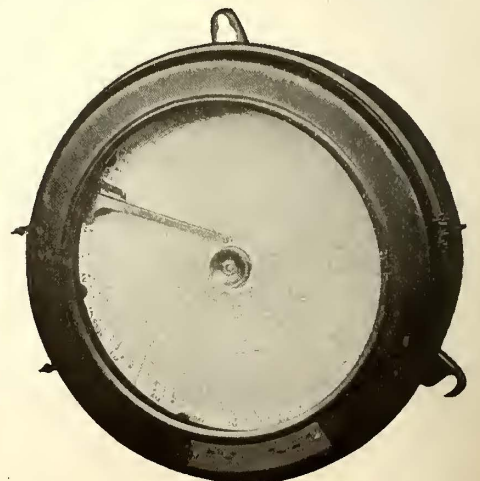
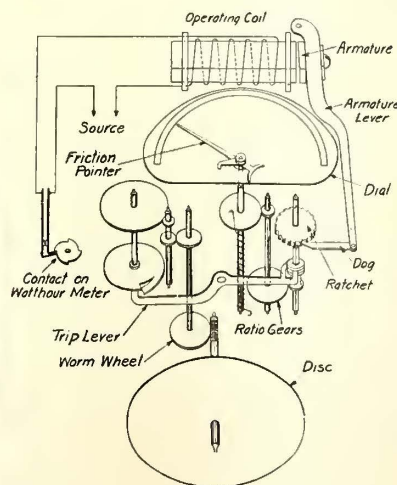
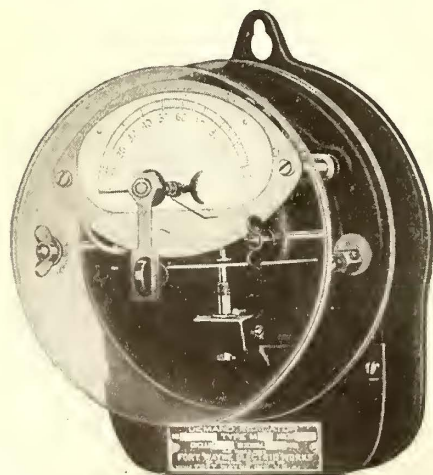


DIAGRAM SHOWING MECHANISM OF INDICATING METER AND VIEWS OF INDICATING AND RECORDING DEMAND-METERS

# NEWS OF ELECTRIC RAILWAYS

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

## OFFER TO ELECTRIFY CHICAGO SUBURBAN LINES Electrification Plans Include Subway Under Grant Park for Joint Use with Local Transportation—Work to Be Completed Within Five Years, Dated from Time Construction Begins on New Twelfth Street Station

An ordinance has been prepared by the Illinois Central Railroad and presented to the Chicago Terminal Commission which proposes the electrification of the company's suburban service from Randolph Street south to the city limits on the main line, and a portion of this beyond the city limits as far as the Matteson Station, and three branches to South Chicago, Blue Island and Kensington. This electrification plan comprises only a small part of the proposed ordinance which takes up the consideration of establishing harbor district No. 3, securing park development, bathing beaches and streets over the tracks communicating with these, and providing for the new passenger station at Twelfth Street, and other public advantages and benefits—points of vital importance to the Illinois Central Railroad in connection with its occupancy of the lake front. The complete ordinance includes concessions on the part of the city and company, among the latter being the electrification plan.

Among the concessions asked of the city are permission to construct a four-track subway not over 100 ft. wide, beneath Grant Park from Twelfth Street north to Monroe Street, and a loop in the territory between Monroe and Randolph Streets, and between Michigan Avenue and the present right-of-way of the Illinois Central Railroad. The right is also asked to construct track for storage of railway passenger equipment within the last-named territory. Provision is then made in the proposed ordinance that any right as to the use of the space beneath the surface of Grant Park between Monroe Street and Randolph Street shall be subject to joint use as a part of any subway system of transportation that may be constructed by the city or its licensees in this territory. The plan for such joint use and the compensation to the Illinois Central Railroad for the use of its track are to be agreed upon between the city or its licensees, the park commissioners and the Illinois Central Railroad.

The electrification plans are not made to include the through-train service coming into the Twelfth Street Station, for the reason that it is considered vital to the possibilities of the new Twelfth Street terminal, that provision be made whereby other railroads may use this new station. It is expected that some of the railroads now using the Dearborn and La Salle stations will use the new lake front station, but if the service into this station was completely electrified, this would prevent these roads from coming in, at least for a number of years, or until complete electrification of railroads around Chicago was consummated. For this reason the proposed ordinance of the Illinois Central Railroad plans that the through trains will still be brought into the station under steam power.

## GALVESTON CAUSEWAY RECONSTRUCTION DECIDED

Galveston County, the Galveston-Houston Interurban Railway and the three steam railroads entering Galveston, Tex., over Galveston Bay will soon award contract for the restoration of the Galveston Causeway, destroyed in the storm of August, 1915. The new structure will be of concrete-arch construction all the way across the bay, and the work will be done at an estimated cost of \$1,500,000. The style of architecture to be employed was decided on by a board of arbitrators as agreed by all parties at interest. The members of the board were: George F. Swain, Boston, selected by Galveston County and the interurban railway;

Arthur N. Talbot, Urbana, Ill., selected by the three steam railroads, and Lincoln Bush, New York, chairman of the board, who was selected by the other two members. The type of construction will be similar to the concrete portion of the causeway that was left standing after the 1915 storm. The length of the portion left standing is 2446 ft., making the total length more than 8000 ft. Of the estimated cost of \$1,500,000, the three steam railroads will pay 55 per cent, Galveston County will pay 33 per cent and the Galveston-Houston Interurban Railway 22 per cent.

## OFFICIAL STATEMENT REGARDING RUMORED BALTIMORE CHANGES

In connection with the recent reports concerning the possibility of an election of a new president of the United Railways & Electric Company, Baltimore, Md., to succeed William A. House, so much has been said in the press of Baltimore that is entirely incorrect that, after conferences with George J. Jenkins, of the Jenkins interests, and C. E. F. Clarke, of Aldred & Company, the management of the company through B. Howell Griswold, Jr., a member of the banking firm of Alexander Brown & Sons, Baltimore, made public on Dec. 20 a statement in regard to the situation. This statement follows in part:

"It seems to us that many people have failed to recognize the fact that Mr. House has been for many years a very hard working and loyal official of the United Railways. He has given the best that is in him to its service and has been on the job night and day. The directors have recognized this fact and from time to time have cautioned him, but it was not in his temperament to share his work or responsibility. The result has been that at times he has been under very severe nervous strain.

"It is only natural, then, that some suggestion should be made in his interest, as well as that of the company, which would compel him to give up the detail work which is now wearing him down and at the same time reserve the benefit of his long experience and activity for the company. We say it is not surprising that such a suggestion should be made, but we want to repeat that no such suggestion has been adopted.

"The story grows out of the creation of a committee appointed by the board for the purpose of bringing the company into closer touch and better relationship with the public and with all public officials. This committee has not yet reported. When we say that the committee has not yet formulated its report, that it does not know that the report when formulated will be adopted by the board, it will be seen how purely conjectural are all of the somewhat positive statements which have been made about what is going to be done in the United Railways. It can be positively stated that the presidency of the United Railways has not been offered to anyone.

"As for the statement often made recently that Mr. Aldred dominates the policies of the United Railways, anyone who really knows the situation knows that this is incorrect. His interest in the United is proportionately small. Since his election to the board and executive committee Mr. Aldred has attended very few meetings, owing to the pressure of duties elsewhere. There has been nothing but the most complete harmony in the board. The company, since the fire of 1904, has spent many millions of dollars for the improvement of its service. These improvements were inaugurated by and carried out under the supervision of the board which, practically without change of membership, has directed the policies of the company for many years past. This board is fully alive to the recent developments in our city and can be relied upon to further in every way the city's development."

### WILKES-BARRE STRIKE SETTLED

#### Fourteen Months of Terror Ended by Employees Accepting Terms Secured by the Mine Workers

The Wilkes-Barre strike, in progress since Oct. 14, 1915, is at an end. The settlement was brought about by the men formerly in the employ of the Wilkes-Barre Railway voting to accept the terms of settlement proposed by the mine workers. Two ballots were necessary. At the first the men rejected the proffered terms by 111 to 108. There was a further parley, and after T. A. Wright, vice-president and general manager of the company, had consented to a few minor changes the men voted again on Dec. 16 and then made unanimous their decision to accept the terms of settlement. These terms follow:

"1. That 190 trainmen be taken back at once; of this number as many as possible, not less than 130, be given regular runs, the remainder to be placed on the extra list, and of the latter, those reporting twice daily for work to receive one dollar a day, and more if earned.

"2. That the remainder of the trainmen who were in the employment of the company at the date of suspension of work, except as hereinafter stipulated, shall be placed on a waiting list to be called for as vacancies occur, and to be given fifteen days' notice in which to return.

"3. The company to agree with Division No. 164 of the Amalgamated Street Railway Association that a committee representing said employees be permitted to divide the time of those men who are taken back and given regular runs with those men who are taken back and placed on the extra list, provided, always, that such substitution shall be arranged for not less than one week at a time.

"4. No new men to be employed until all of the old men taken back have been offered regular runs.

"5. The men to be taken back and given regular runs and put on waiting list shall be given runs upon such divisions as may be designated by the general manager, and the men to agree to accept such runs on such designated divisions. The seniority rights of the men so taken back and assigned to said divisions shall be maintained upon said divisions as such rights have been defined by former contracts between Local No. 164 and the company. It is understood that full seniority rights shall be accorded the men April 1, 1917, provided that at that time the general manager of the company shall decide that it is for the best interests of the company that such rights ought then to be restored. If seniority rights are not restored on April 1, 1917, the company to agree that such rights shall be restored as soon thereafter as in the opinion of the board of directors such restoration can be made to the best interests of the company and its employees.

"6. The wages to be paid all of the men taken back and given regular runs, from the time of their return until Jan. 1, 1917, shall be those which were paid the men by the company on Oct. 1, 1915.

"7. All suits against members of the labor movements and the injunction proceedings to be dropped by the company.

"8. No men to be taken back who by their personal acts have made themselves objectionable for re-employment. Objectionable personal acts shall not be held to mean mere membership in the Amalgamated Association or official connection therewith or membership on any committee.

"9. As of Jan. 1, 1917, a three-year working agreement in line with the agreement of Jan. 9, 1915, except as to Section 8 therein, and except as herein agreed, fully executed by the respective parties attached hereto shall go into effect.

"10. Wages to be paid for the three years from Jan. 1, 1917, to Jan. 1, 1920, to be 25 cents for first-year men, 26½ cents for second-year men, and 28½ cents for third-year men and over.

"11. When employing new or additional trainmen for car service that during the first two weeks of training they shall be paid the sum of \$1 a day and during the third week shall be paid \$2 a day. It is understood that applicants are not finally accepted for service until the expiration of the three weeks and only if then qualified.

"12. The men upon settlement to call off every action in opposition to the company and Local No. 164 by resolution to ratify the action of the executive committee in calling

off the strike, and, also, by resolution to request the people to patronize the road and the men to use their honest efforts to restore riding upon the cars. The company to agree that there shall not be any prejudice held against any man taken back who went out on strike, nor any discrimination against such a man, nor any interference with or against him for his membership in the Amalgamated Association, and the men agree not in any manner to interfere with the present employees."

The terms of the peace pact were drawn up by the United Mine Workers. They are the ultimate in concessions that could reasonably be expected from the company, and the mine workers, looking at the matter from the third-party standpoint and realizing this, are said to have threatened to withdraw support, unflinchingly given for months to the men on strike, unless they accepted the peace proposal as contained in the agreement which was signed.

#### REVIEW OF CONTROVERSY

In all struggles similar to this that extend over any considerable length of time the original issues are submerged and lost sight of in the light of subsequent developments. Thus, in the Wilkes-Barre case the chronicle of events after the first few days turned from the main issues at stake to the disorder that followed, the boycott and its effect on trade, and other issues growing out of the struggle. For months now there has been nothing to report except such developments as concerned the local parties in interest, and on that account the strike has not been referred to in the ELECTRIC RAILWAY JOURNAL for some time past. The present account of the settlement, however, would hardly be complete without at least a brief review of the attending circumstances.

The corporation and its employees were bound by a working agreement that expired on Dec. 31, 1914. The company paid the men a flat wage scale of 24 cents and permitted a man to work as long per day as necessary. As the time for the termination of the agreement approached Dennis McCauley, president of the local union; Thomas Hatch, treasurer, and other members of a committee conferred with the railway representatives regarding the renewal of the contract. The men declared that they could not work under the terms of the old agreement, but wanted 32 cents an hour as a wage scale. After threatening to strike unless their demands were honored, the employees and the company finally reached a basis of settlement on Jan. 9, 1915. A new working agreement was drawn, in which both sides to the controversy decided that the men should be worked in shifts of nine hours, and that no motorman could work more than nine hours a day, unless conditions compelled the extra labor. The new pact also provided that when a man was suspended or discharged he should be permitted to ask for an investigation. He should have the right to be present personally and to have the charges against him made fully known to the employee. After this hearing the general manager was to decide whether or not the man was at fault. If guiltless, he was to be reinstated and paid for the time that he had lost through discharge or suspension. In case, however, that the decision of the general manager failed to meet the approval of the employees' committee asking an investigation, conciliators could be selected who would rule on the question. These mediators, it was determined, should be provided by the Secretary of Labor at Washington and the State Bureau of Labor and Industry. The matter of a wage scale was referred to arbitration. The new agreement was to exist for three years.

The decision to submit the wage scale to arbitration afterward became the nubbin of the controversy. It was distinctly provided in the agreement that "the decision of the board of arbitrators, or a majority of them, shall be final, and without appeal, and shall be binding and conclusive upon the said Wilkes-Barre Railway and said employees of said company."

The selection of the umpires was a matter that languished over months. The railway company chose Samuel D. Wariner of Philadelphia, president of the Lehigh Coal & Navigation Company. The men selected Thomas D. Shea, a lawyer of Wilkes-Barre. It was incumbent upon these arbitrators to select the third. Here came the hitch. Although several hundred names were submitted by both sides



for the third umpire, none of these seemed to suit. This failure to agree on the third member bred an acute situation, which resulted in the men going on strike on April 1. Meanwhile the negotiations were pending. Finally John Price Jackson, State Commissioner of Labor and Industry, was chosen as the third arbitrator. The board was organized, and on April 10, 1915, the strikers returned to work. The arbitrators heard both sides to the controversy. Finally, on July 10, 1915, the arbitrators handed down their decision. All this while, pending a decision by the umpires, the men remained at work and accepted the old wage scale for the time.

The arbitrators' decision provided a sliding or graduated scale of wages. It stipulated that the carmen should be paid on the following scale: First-year men, 24 cents an hour; second-year men, 25; third-year men, 26; fourth-year men, 26½, and fifth-year men, 26¾ cents an hour. In addition, the men were to participate in a profit-sharing plan with the passenger revenue per car hour for the fiscal year ended Dec. 31, 1914, as the basis on which this new income was to be computed. This was \$2.786. Under this decision from each 2½ cents additional revenue the motormen and conductors were to receive an additional compensation of one-fourth of a cent per hour.

This arbitration was retroactive and went into effect as of Jan. 1, 1915. The first two weeks of July were paid on the new scale, and on July 27 the corporation had a special payday, which gave to the men the increase to which they were entitled from the new year to the first of that current month. This amounted to \$10,949.

Shortly after completing their duties, however, Samuel D. Warriner, the arbitrator for the company, received from Commissioner Jackson a lengthy letter, in which the latter declared that the arbitrators had not fulfilled their functions legally. The plaint of the local union men, it appeared, was that no sliding scale could be adopted by the umpires, as such a decision was not germane to the questions raised. In other words, as the old agreement provided for a flat scale, the arbitrators in determining whether or not the carmen were entitled to an increase could only have provided such an agreement as would have increased the wage scale based on the old flat rate.

Mr. Warriner replied that he agreed with none of Dr. Jackson's deductions, and that even if he were in accord with the commissioner's views the umpires were powerless to take further action. Mr. Warriner based this statement on his belief that once the arbitrators submitted their scale and findings, and these were accepted, the board automatically ceased to exist. For that reason any further consideration of the controversy would only be *ex parte* and have no judicial foundation or legal value.

Dr. Jackson then conferred with Attorney Shea, the umpire chosen by the men. On Oct. 1 they announced it as their unofficial opinion that the men should get 27 cents an hour for a flat scale. This was only a recommendation, the former umpires were compelled to state. For three days after the unofficial act the employees' representatives and the officials of the railway dickered over the matter and neither yielded. On Oct. 14, 1915, the strike was declared. To the company the whole issue lay in the refusal of the trainmen to abide by the arbitration.

#### SEATTLE COUNCIL ACTS AGAINST COMPANY

The City Council of Seattle, Wash., has passed a bill directing the corporation counsel to begin an action against the Puget Sound Traction, Light & Power Company to compel it to comply with the terms of its franchises, and pave its right-of-way at the time and with the same material as the rest of the street. Since the company petitioned the Public Service Commission of Washington to be relieved of certain of its franchise obligations because of impaired earnings, due in part to jitney competition, planking has been substituted for paving, pending a hearing on the petition. The 2 per cent gross earnings tax, from which the company also prayed to be relieved, has been paid under protest. The action of the Council in passing the bill directing the action stated is expected to be resisted by the company. The hearing on the part of the Public Service Commission of the original petition has been delayed because the commission has not completed the valuation of the properties of the company.

#### CINCINNATI TRAFFIC REPORT PRESENTED

##### More Than 25,000,000 Passengers Will Use Proposed Rapid Transit Loop Annually

Frank S. Krug, chief engineer, submitted to the Cincinnati (Ohio) Rapid Transit Commission on Dec. 15 a report of the traffic survey, made last August to secure information relative to the location and construction of the proposed loop. Mr. Krug estimates that 25,266,734 passengers will use the rapid transit loop annually.

Included in the survey is the area served by the Cincinnati Traction Company and the Ohio interurban lines entering Cincinnati, covering the city of Cincinnati, Norwood, St. Bernard, Elmwood Place, Cheviot, Wyoming, Reading, Lockland and Glendale. It is estimated that the traffic on all lines and interurban lines is 118,234,483 passengers of whom 106,629,830 are city surface line passengers and 11,234,483 are interurban passengers. The additional area that will be brought into the thirty-minute time zone from Fifth and Walnut Streets is greater than the area at present within that zone under existing conditions. The area of the territory now within the zone is 9242 acres and the population is 297,044, while that of the additional territory is 10,363 acres with a population of 59,876. Mr. Krug prepared a table showing the average time saving from the various sections to the intersection of Fifth and Walnut Streets, as compared with the present service. He pointed out that points where no time will be saved are within the loop and that here passengers will use the surface cars.

The report estimates that 51.2 per cent of the passengers using the loop will ride only on the east side of it; 39.4 per cent will ride only on the west side; 5.1 per cent will ride between the east and west side at the south end, passing through Fountain Square, and 4.3 per cent will ride between the east and west side at the north end between Paddock and Greenlee stations. A table is included in the report which gives an estimate of the rapid transit and interurban passengers boarding cars daily at rapid transit stations for both directions of operation from Fountain Square.

The estimate of interurban passengers who will ride annually in interurban cars over the loop is 1,854,644 for the east side of the loop, and 2,800,335 for the west side of the loop, making the grand total 4,654,979.

In making the estimates Mr. Krug assumed that the rapid transit cars will be operated locally at high speed and in train units of such length as the traffic may require, and that the interurban cars from all lines will be operated over the loop line to Fountain Square.

The final joint session of the Rapid Transit Commission and the conference committee from the Council committee on street railroads was held on Dec. 13. The question of whether it is necessary to receive competitive bids for the lease of the proposed loop was discussed. The opinion that the Cincinnati Traction Company should operate the loop seemed to prevail, in order that there should be a unified system. W. L. Woodward, chairman of the transportation committee of the Federated Improvement Association, also expressed this belief.

Attorney Henry Bentley insisted that competitive bidding was out of the question unless the City Council fixed a price on the property of the Cincinnati Traction Company. Mr. Bentley said he represented himself, but that a bid would be made if the terms were open to competition. Walter Draper, secretary of the Cincinnati Traction Company, said that a price would be made on its property, if Mr. Bentley wished to buy it. Charles Mayer, a real estate man, made a proposition to lease the east half of the loop and operate it at a rate of seven tickets for a quarter. He said the west half could be operated by the Cincinnati Traction Company in connection with the surface lines.

Chairman Edwards of the commission stated that he would begin the preparation of a proposition to the Cincinnati Traction Company at once, but first he would submit a list of questions in order to secure information needed in formulating the proposition. Mr. Draper informed him that the company was ready to consider a proposition and that action would be taken upon it as quickly as possible. He said the company had followed the discussions closely and already many of the points had been decided. If possible the lease will be submitted to referendum vote in April, 1917.

## ST. LOUIS PREPARES COUNTER PROPOSAL

### Summary of Unofficial Terms Which the City Feels Should be Imposed in the Traction Settlement

The counter proposition of the city of St. Louis, Mo., to that of the United Railways looking toward the settlement of all the differences between them was formulated and adopted by the committee on public utilities of the Board of Aldermen on Dec. 12. It will be submitted to the joint committee composed of city officials and representatives of the company at a meeting to be held in the near future.

It was not intended that the conditions as adopted by the committee should become public, but the newspapers secured and printed what purported to be an outline of the counter proposal of the city. These reports said that it was intended to limit the proposed new franchise grant to the company to twenty-five years for all lines; to determine the actual value of the property and limit the return to the company upon the basis of a fixed percentage on that valuation; to include in the grant a provision for the future acquisition of the company's property by the city; to dispose of any surplus earnings of the company over and above that needed for the guaranteed return to the company by dividing them between the city and the company, by allowing the employees to share in them, by placing the sum in a fund for the future development of rapid transit, by using it to accomplish a reduction in fares or by disposing of the surplus by some combination of the methods just mentioned; to limit the board of directors to twelve members with five from the city; to give the director of public utilities of the city general control over the service and operation of the company; to require the company to report to the city in accordance with conditions prescribed by the city; to charge in as operating expenses of the company all expenditures made by the city in connection with the affairs of the company; to continue the mill tax, the tax up to Dec. 31, 1916, with accrued interest to be paid to the city in annual instalments.

The committee on public utilities, which will make the above report, is composed of the following: Aldermen Eugene B. Gregory, chairman; William F. Otto, Adam Reis, Otto A. Hampe, Barney L. Schwartz, Gus A. Baur and Alfred Bergmann. Together with Louis P. Aloe, president of the board, and Richard McCulloch and Murray Carleton of the railways company, they were appointed a sub-committee, Nov. 22, by Mayor Kiel, to consider the proposition made by the company's officials to the board of estimate and apportionment and the public utilities committee.

Mr. Gregory, the chairman of the committee, was greatly displeased with the publication of the alleged terms of the tentative counter proposal from the city. He called off the meeting of the committee set for Dec. 14 and refused to be quoted as to when the committee would meet next.

Richard McCulloch, president and general manager of the United Railways, refused to discuss the report of the committee. He said that the matter had not come before him officially, and that to discuss it before such time would be an act of discourtesy to the committee. He did, however, discuss some of the details necessary for a readjustment of the capital liabilities of the company without the need for receivership and foreclosure.

In this connection, it is being urged in certain quarters that the present market value of the securities of the company which are outstanding furnish a good criterion as to the value of the company as a going concern. At present the United Railways and its constituents have outstanding more than \$57,000,000 of bonds, \$16,383,200 of preferred and \$24,913,800 of common stock. As against these par values, however, current market quotations give these securities the present market value: Outstanding bonds, \$36,450,000; preferred stock, \$3,100,000; common stock, \$1,000,000. Thus the securities outstanding with a par value of about \$100,000,000 have a market value of only \$40,500,000.

Ephrim Caplan, a member of one of the committees appointed in the interest of the security holders of the company, returned to St. Louis on Dec. 18 from New York after conferring with representatives of the North American Company, which controls the United Railways, through ownership of approximately \$18,400,000 of the com-

mon stock of the company. Mr. Caplan announced that Horace Havemeyer, New York, and Charles C. Harrison, Philadelphia, had been added to the committee of which he is a member. The other members are August Heckscher, New York, and Charles S. Farnum, Philadelphia. Mr. Caplan said the committee represented nearly 30 per cent of the outstanding preferred stock. Included in the plan of the committee as laid before the North American Company, Mr. Caplan is quoted as saying, was the following program:

1. That the mill tax question should be settled in some manner.
2. That the franchise question should be adjusted.
3. That a radical change in the legal department of the United Railways must take place.
4. That fullest publicity and examination must be made of the power contracts to which the United Railways is a party, and that these contracts should be readjusted squarely for the benefit of the company.
5. That preferred stockholders should have representation on the board of directors.

The St. Louis *Post Dispatch* is publishing for the benefit of its readers brief reviews covering the terms and conditions of the recent traction settlements in Chicago, Kansas City and other places.

### RAILWAY OFFICIAL LOST IN ADIRONDACKS

All the efforts have proved unavailing which were made to locate Carleton Banker, superintendent of the electric division of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., who disappeared on Nov. 10 during a short hunting trip in the Adirondacks such as he was accustomed to take. On Nov. 7, in company with F. A. Bagg, chief engineer of the Fonda, Johnstown & Gloversville Railroad, and four other hunters, Mr. Banker went on a trip to Truman Lawrence's camp at Piseco Lake, Hamilton County, N. Y. On Nov. 10 Mr. Banker and Mr. Bagg packed into the "Foxy" Brown's camp, some 6 miles distant, to enjoy a few days in the company of Mr. Brown, with whom Mr. Banker had hunted and fished for twenty years. Friday morning, Nov. 10, the three men started to hunt, walking from 7 a. m. until about 3.30 p. m. Mr. Banker then complained of being very tired and was left by the other two at a certain spot, while they were to tramp around the northwest end of the Lun-kazu Mountain, on which they were to make a drive to Mr. Banker.

After making the drive and returning where Mr. Banker had been left, Mr. Bagg and Mr. Brown found no trace of him and presumed that he had either returned to camp because of his fatigued condition or had followed the trail of a deer or bear. As darkness was fast approaching, Mr. Bagg and Mr. Brown returned to camp, staying for about an hour. They then started out to search for Mr. Banker, thinking perhaps he had become turned around and would signal to them. They roamed the woods where he was last seen, and fired signal shots until 11 p. m., but without getting a response of any kind to their signals. Mr. Bagg then walked to Piseco and gave a general alarm. Within a few hours searching parties to the number of 150 men had started in all directions. The searching extended over a period of six days, but was without result. To those who know the Adirondack wilderness, it is easy to understand how a man lost through straying, and overtaken by some physical ailment, brought about by fatigue, might lie almost within sight and touch and still be missed by the most painstaking searchers.

Carleton Banker was born in Fonda, Montgomery County, N. Y., fifty-six years ago. He was educated in the schools of that town and until he was about twenty-three years of age lived on the Banker farm at Fonda with his parents. He then went to Staley, Neb., which was at that time located on what was known as the Burlington & Missouri Railroad. His position with that company was as station agent and he remained in railroad work in the West until 1893, when he returned east to take up a position as general bookkeeper of the Cayadutta Electric Railroad, operating between Fonda and Gloversville. In 1903, Mr. Banker was made superintendent of the electric division of the Fonda, Johnstown & Gloversville Railroad upon the merging of the Cayadutta Electric Railroad with the Fonda, Johnstown & Gloversville Railroad. He was married and had two daughters.

## CHARGE AGAINST EDITOR AND PAPER SUSTAINED

The United States Circuit Court of Appeals at Cincinnati, Ohio, handed down a decision on Dec. 15 sustaining the decision of Federal Judge John M. Killits of the Northern Ohio district against the Toledo Newspaper Company, publishers of the Toledo *News-Bee*, and against N. D. Cochran, editor of the paper, on the charge of contempt of court. The newspaper and its editor were charged with having written and published articles and editorials calculated to interfere with the court's rulings in connection with a temporary injunction to prevent the enforcement of a 3-cent-fare ordinance passed by the City Council of Toledo and affecting the Toledo Railways & Light Company. The decision of the Court of Appeals states that the articles in question tended and were intended to provoke public resistance to an injunction, if one should be made, and one of the findings is to the effect that they constituted an attempt to intimidate or, at least, to influence the District Judge with reference to the decision in the matter pending before him. The court held that it is of no importance in such a case that the effect that may have been produced in the Judge's mind was irritation instead of fear, as had been claimed in the hearings. Judge Killits assessed a fine of \$7,500 on the newspaper company and \$200 on Mr. Cochran. The case will be appealed to the United States Supreme Court.

**Cleveland Car Type Unsettled.**—Fielder Sanders, of Cleveland, Ohio, street railway commissioner, made an effort to have the City Council on Dec. 18, approve an all-steel trail car as the permanent type to be used. Council is undecided as between this car and the semi-steel car with center entrance which is now used. The Cleveland Railway favors the present type of car and the street railway committee had recommended its adoption as a permanent model.

**Accident in Boston Elevated Power Plant.**—A piston rod on a vertical cross-compound Westinghouse engine in the Lincoln power station of the Boston Elevated Railway broke on Dec. 19. As a result service had to be shut down temporarily on the Atlantic Avenue elevated line. An employee at the station was injured from escaping steam. The breakage of the piston rod was followed by the blowing out of a cylinder head, which fell upon a steam main carrying 180 lb. pressure. Services by additional equipment was restored in about ten minutes at the third rail.

**Recommended That Station Be Scrapped.**—The board of arbitration, to which the dispute between the Cleveland (Ohio) Railway and the city of Cleveland over a proposed power contract was submitted, announced on Dec. 12 that the Cedar Avenue power station should be scrapped and that a new substation should be built. The points yet to be decided are how the value of the power station shall be charged off and from what source the company shall receive its power supply. The company desires to close a contract with the Cleveland Electric Illuminating Company, while the city insists that the municipal light plant furnish the power necessary to take the place of the old station.

**Increase in Wages in St. Louis.**—The United Railways, St. Louis, Mo., has announced a 5 per cent wage increase, effective on Jan. 1. It is estimated the increase will cost the company \$150,000 a year and will give each motorman and conductor about \$50 a year more. The old scale was 23 cents an hour for first-year men and 1 cent more an hour for each additional year's service until six years, after which the scale stood stationary at 28 cents. Under the new scale first-year men will receive 24 cents an hour. One cent an hour increase will be paid in each year after the first until the seventh year, when 29½ cents will be paid. Thirty cents an hour will be paid the eighth year, 30½ cents an hour in the ninth year and 31 cents an hour in the tenth year and thereafter. Since 1904 the company has increased the wages of its trainmen 37 per cent.

## PROGRAM OF ASSOCIATION MEETING

## Central Electric Railway Association

The annual meeting of the Central Electric Railway Association has been changed by letter vote of the executive committee from Feb. 22 and 23, 1917, to March 8 and 9, 1917, at Indianapolis, Ind.

## Financial and Corporate

## ANNUAL REPORT

## Chicago Elevated Railways Collateral Trust

The combined statement of income, profit and loss of the Metropolitan West Side Elevated Railway, the South Side Elevated Railroad and the Northwestern Elevated Railroad, which are controlled by the Chicago (Ill.) Elevated Railways Collateral Trust, is as follows for the years ended June 30, 1915 and 1916:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross operating revenue	\$8,435,908	100.0	\$8,045,264	100.0
Operating expenses:				
Way and structures	\$184,837	2.2	\$163,679	2.0
Equipment	459,679	5.4	334,927	4.2
Power	991,533	11.8	911,093	11.3
Conducting transportation	2,270,081	27.0	2,042,388	25.4
Traffic	20,610	0.2	6,479	0.1
General and miscellaneous	408,321	4.8	411,737	5.1
Total operating expenses	\$4,335,061	51.4	\$3,870,306	48.1
Net operating revenue	\$4,099,947	48.6	\$4,174,958	51.9
Taxes, city compensation and other items	722,115	8.6	700,243	8.7
Operating income	\$3,377,831	40.0	\$3,474,715	43.2
Non-operating income	*135,694	1.6	*117,905	1.4
Gross income	\$3,513,525	41.6	\$3,592,620	44.6
Deductions—interest and rents	*2,247,407	26.7	*2,188,409	27.2
Net income	\$1,266,118	14.9	\$1,404,211	17.4
Dividends	1,135,543	13.4	1,105,373	13.7
Surplus	\$130,576	1.5	\$298,837	3.7

\*Intercompany rentals deducted.

The combined gross operating revenues of the three controlled companies increased \$389,744 or 4.8 per cent. The operating expenses, however, increased \$464,755 or 12 per cent, so that the combined net operating revenue for the last year showed a falling off of \$75,011 or 1.8 per cent. All the operating expense divisions except general and miscellaneous showed increases, the largest being \$124,752 or 37 per cent in maintenance of equipment and \$227,693 or 11.1 per cent in conducting transportation. Taxes and income deductions also increased, with the result that the net income for the year suffered a loss of \$138,093 or 9.1 per cent as compared to the preceding period. The net income secured in the last year was equal to about 305 per cent on the \$36,292,500 of pledged capital stock of the controlled companies.

The report of the Chicago Elevated Railways Collateral Trust, which is for the calendar year 1915, states that the combined net earnings of the three controlled companies for 1915 showed a decrease of \$252,344 as compared to the previous year. For the first ten months of 1916, however, the combined gross earnings of those companies increased from 9 to 10 per cent as compared with the corresponding period of 1915, and it is expected that the net earnings for 1916 will show an increase of from 8 to 9 per cent over 1915.

In 1915 the collateral trust received dividends on stocks owned amounting to \$1,027,045 and interest amounting to \$125,585, making a total income of \$1,152,630. Interest charges were \$1,120,000 and general expenses \$26,212, making total disbursements \$1,146,212. The net income, therefore, was \$6,417, which practically meant nothing available for dividends on the preferred certificates of the trust. In the year preceding the net income was \$484,698, permitting dividend disbursements of \$480,000.

During the year the trustees acquired the following securities classed as current assets: \$73,000 of joint 5 per cent equipment trust certificates, series B, issued by the Metropolitan, Northwestern and South Side companies, dated Aug. 1, 1914; \$254,000 of receiver's certificates, issued by the receiver of the Chicago & Oak Park Elevated Railroad; \$16,000 of 6 per cent equipment notes of the Chicago & Oak Park Elevated Railroad and \$5,362 of 5 per cent mortgage note secured by mortgage on property of the Chicago & Oak Park Elevated Railroad.

## CAPITAL TRACTION COST ADJUSTED

## Company and Commission Compromise on \$10,996,214 as Main Reproduction Cost—Some Items Excepted

A formal agreement to adjust the differences in the reports of their two sets of engineering experts on the reproduction costs, which varied less than 5 per cent, has been reached by the Capital Traction Company, Washington, D. C., and the Public Utilities Commission of the District of Columbia. The established cost of reproduction is only one element of fair value, but it affords a working basis for further valuation determinations.

The agreement provides that the Capital Traction Company will accept the adjusted figures, *i.e.*, \$10,996,214, as representing the total reproduction cost of that part of its physical property which is included in the commission report of Charles L. Pillsbury, as estimated under conditions named in said report, excepting land, interest, taxes and insurance on land, and working capital. The amount mentioned represents the estimated cost of the reproduction of the physical property referred to as of June 30, 1914, the Capital Traction Company reserving the right later to introduce evidence showing changes in such cost since that date.

The figure of \$10,996,214 was arrived at by an increase of \$754,039 in the figures in the revised report of Mr. Pillsbury, dated Nov. 22, 1916. This amount was derived by making the following adjustments:

1. By the acceptance on the part of the commission of the estimate for materials, tools and supplies on hand included in the J. G. White Engineering Corporation report for the company.

2. By the acceptance by the commission of the differences in base figures, this concession of the total net difference in base being made after a comparison of the detail figures between Mr. Pillsbury's report and the report of the J. G. White Engineering Corporation, made jointly by Mr. Pillsbury and the company's engineer, in furtherance of the adjustment next mentioned. This difference, amounting in all to \$386,740, is an increase of 4.97 per cent over Mr. Pillsbury's figures.

3. By mean adjustment between the methods of applying localized costs and general costs resulting in an additional increase in Mr. Pillsbury's figures of \$274,646, accompanied by a reduction, amounting to \$274,646, in the localized and general costs as shown in the J. G. White Engineering Corporation report.

The agreement, however, makes a specific reservation that the adjustments above stated do not carry with them the acceptance on the part of the Capital Traction Company of the land values as submitted in Mr. Pillsbury's report. Nor do they in any wise affect the right and privilege of the Capital Traction Company to put in evidence items of physical cost which may or may not have been referred to in Mr. Pillsbury's report, but which items are not included in the total estimated cost of reproduction as reported by him.

The land values, etc., in Mr. Pillsbury's report to which exception is made amount to a total of \$783,934. These include land, \$618,116; insurance on land, \$1,236; taxes on land, \$12,362; interest on above items, \$44,220, and working capital, \$108,000.

**Arkansas Valley Railway, Light & Power Company, Pueblo, Col.**—The Arkansas Valley Railway, Light & Power Company is negotiating the purchase of the business and system of the Ordway Electric Light & Power Company, which serves the communities of Ordway and Sugar City, Col., electrically.

**Ashland Light, Power & Street Railway Company, Ashland, Wis.**—P. W. Brooks & Company, New York, N. Y., are offering an additional amount of first mortgage 5 per cent gold bonds of the Ashland Light, Power & Street Railway Company, making the total outstanding amount of such bonds \$761,000.

**Carolina Power & Light Company, Raleigh, N. C.**—An initial dividend of one-half of 1 per cent has been declared on the common stock of the Carolina Power & Light Company, this being payable on Feb. 1 to stockholders of record on Jan. 16.

**Interstate Railways, Camden, N. J.**—John A. Rigg, president of the Interstate Railways, has issued a statement, saying in part: "There was mailed recently by the Real Estate Title Insurance & Trust Company, Philadelphia, trustee, to the holders of United Railways 4 per cent gold trust certificates and Interstate Railways 4 per cent collateral trust gold bonds a circular letter notifying such holders of a proceeding in equity to have the tripartite agreement of Dec. 20, 1902, declared terminated and ended and of the right of such holders to intervene in the equity suit and defend the same, inclosed being copies of the bill in equity and of the answers of the Interstate Railways and the Real Estate Title Insurance & Trust Company, of Philadelphia. The holders of United Railways 4s and Interstate 4s, we are assured by United Power & Transportation Company, need have no apprehension concerning their securities, for the purpose of the proceeding is not to impair their value in the least, but really to prevent a recurrence of the difficulties through which Interstate Railways passed from 1907 to 1910."

**Iowa Southern Utilities Company, Centerville, Iowa.**—The bond department of the Chicago Savings Bank & Trust Company, Chicago, Ill., is offering for subscription at 101 and interest, yielding more than 5.90 per cent, \$550,000 of first mortgage sinking fund 6 per cent bonds of the Iowa Southern Company. The bonds are dated Oct. 2, 1916, and are due Oct. 1, 1933, but are callable on any interest date at 105 and interest. They are part of a total authorized issue of \$2,500,000 and are followed in order by \$200,000 of 6 per cent serial debenture mortgage bonds, \$300,000 of 7 per cent preferred stock and \$500,000 of common stock, all outstanding. The Iowa Southern Utilities Company was organized under the laws of the State of Maine in 1905, under the name of Centerville Light & Traction Company, and owns and operates the public utility properties serving Centerville, and a street railway serving the city and extending to the town of Mystic. The company has just acquired all the property of the Centerville, Albia & Southern Railway, which operated a passenger and freight electric railroad between Centerville and Albia. D. C. Bradley, the president of the company, in his statement to the bankers, outlines as follows the purposes of the financing: "Up to the present, the above properties have been financed by the owners from their own resources and from earnings. The rapid growth of the business, however, and the desirability of providing for acquisitions of a number of neighboring public utility properties have made it advisable to finance the corporation along customary lines. The present financing will provide for the retirement of existing floating indebtedness and will furnish the company with ample working capital."

**Lake Erie, Bowling Green & Napoleon Railway, Bowling Green, Ohio.**—As stated in the *ELECTRIC RAILWAY JOURNAL* for Aug. 26, page 375, the Lake Erie, Bowling Green & Napoleon Railway was sold on Aug. 5. The report subsequently became current that the road was entirely dismantled. This is not the case. That part of the road between Tontogany and Bowling Green, and between Pemberville and Woodville is entirely dismantled. The balance of the road namely, between Bowling Green and Pemberville, 11½ miles, was taken over by the Toledo, Fostoria & Fremont Railway and will be operated by that company.

**Montreal (Que.) Tramways.**—Coffin & Burr, Boston, Mass., are offering jointly with N. W. Harris & Company, New York, N. Y., \$2,000,000 of first and refunding mortgage gold bonds of the Montreal Tramways dated July 1, 1911, and due July 1, 1941. The bonds are in the denomination of \$500 and \$1,000 each registerable as to principal. Interest is payable on Jan. 1 and July 1 in New York, Chicago or Montreal, or in London at the fixed rate of 4.86%. The Harris Trust & Savings Bank, Chicago, Ill., is trustee of the issue, with the National Trust Company, Ltd., Montreal, as co-trustee. Previous issues of the bonds are listed on the New York, Montreal and London Stock Exchanges and application will be made to list the present offering. The price at which the bonds are being offered is not given in the circular describing the issue.

**New York State Railways, New York, N. Y.**—A dividend of 1 per cent has been declared on the \$19,952,400 of common stock of the New York State Railways, payable on Jan.

2 to holders of record of Dec. 22. In October last 1¼ per cent was paid on the common stock of the company. The regular quarterly 1¼ per cent on the preferred stock was also declared payable on Jan. 2.

**Northern States Power Company, Chicago, Ill.**—The directors of the Northern States Power Company have declared the usual quarterly dividend of 1¼ per cent on the preferred stock of the company, and have declared a dividend of 1¼ per cent on the common stock, which is an increase of one-quarter of 1 per cent. The preferred stock dividend is payable on Jan. 15, and the common stock dividend is payable Jan. 20, to stockholders of record Dec. 30.

**DIVIDENDS DECLARED**

American Cities Company, New York, N. Y., 1½ per cent, preferred.

Asheville Power & Light Company, Asheville, N. C., quarterly, 1¼ per cent, preferred.

Bangor Railway & Electric Company, Bangor, Me., quarterly, 1¼ per cent, preferred.

Carolina Power & Light Company, Raleigh, N. C., quarterly, 1¼ per cent, preferred; one-half of 1 per cent, common.

Columbus Railway, Power & Light Company, Columbus, Ohio, quarterly, 1½ per cent, preferred A.

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

Eastern Texas Electric Company, Beaumont, Tex., 3 per cent, preferred; 2½ per cent, common.

Elmira Water, Light & Railroad Company, Elmira, N. Y., quarterly, 1¼ per cent, first preferred; quarterly, 1¼ per cent, second preferred.

Illinois Traction Company, Peoria, Ill., quarterly, 1½ per cent, preferred.

New Orleans Railway & Light Company, New Orleans, La., quarterly, 1¼ per cent, preferred; one-fourth of 1 per cent, common.

New York State Railways, New York, N. Y., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.

Reading (Pa.) Traction Company, 75 cents.

Union Passenger Railway, Philadelphia, Pa., \$4.75.

Utah Power & Light Company, Salt Lake City, Utah, quarterly, 1¼ per cent, preferred.

Virginia Railway & Power Company, Richmond, Va., 3 per cent, preferred.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., quarterly, 75 cents, preferred.

Wisconsin Edison Company, Inc., New York, N. Y., \$1.75; 75 cents extra.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

**CITIES SERVICE COMPANY, NEW YORK, N. Y.**

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Nov., '16	\$1,328,388	\$20,021	\$1,308,367	\$244	\$1,308,123
1 " " '15	490,622	15,537	475,085	40,833	434,252
12 " " '16	9,071,718	236,868	8,834,850	299,479	8,535,370
12 " " '15	4,352,412	167,112	4,185,300	490,000	3,695,300

**PHILADELPHIA (PA.) RAPID TRANSIT COMPANY**

1m. Nov., '16	\$2,361,936	\$1,321,399	\$1,040,537	\$814,174	\$226,363
1 " " '15	2,136,746	1,192,258	944,488	815,532	128,956
5 " " '16	11,369,858	6,307,726	5,062,132	4,073,313	988,819
5 " " '15	10,203,500	5,722,268	4,481,232	4,080,296	400,936

**PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.**

1m., Nov., '16	\$43,452	\$20,840	\$22,612	\$12,545	\$10,067
1 " " '15	40,460	19,065	21,395	12,490	8,905
12 " " '16	511,227	244,122	267,105	150,555	116,550
12 " " '15	456,354	219,905	236,449	147,426	89,023

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

1m., Nov., '16	\$479,367	\$199,073	\$280,294	\$225,605	\$54,689
1 " " '15	455,165	208,850	246,315	224,196	22,119
12 " " '16	5,453,454	2,521,251	2,932,203	2,692,578	2,239,625
12 " " '15	5,542,899	2,534,331	3,008,568	2,748,004	260,564

**REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO**

1m., Nov., '16	\$344,942	*\$196,083	\$148,859	\$72,643	‡\$76,465
1 " " '15	289,151	*167,266	121,884	57,200	‡65,184
11 " " '16	3,614,204	*2,092,146	1,522,058	773,321	‡754,567
11 " " '15	2,800,427	*1,706,191	1,094,235	618,169	‡477,856

\*Includes taxes. ‡Includes other income.

**Traffic and Transportation**

**BROOKLYN CAR AND SERVICE ORDER**

**B. R. T. Directed to Purchase 250 Cars in an Order by the Public Service Commission Censuring the Company for Over-Crowding.**

The Brooklyn (N. Y.) Rapid Transit Company has been directed to purchase at once 250 additional cars for operation over its lines. The order was issued by the Public Service Commission for the First District, following the adoption of an opinion by Commissioner Travis H. Whitney, in which Commissioner Whitney censured the line for overcrowding its cars and for insufficient equipment. All of the new cars are directed to be in service by Feb. 1, 1918. It is ordered that the new cars shall be of the center entrance stepless type so-called, having a seating capacity of fifty-eight passengers each. Cars of similar type are now in use on the lines of the Brooklyn system.

In his opinion Commissioner Whitney found that it is impossible to regulate street car service in New York City by means of so-called health ordinances. He states that while such ordinances provide additional accommodations for a few passengers, the rest are denied accommodations, altogether, and the ordinance is thus regulating the public and not the street railroads. He finds other objections to such regulations. Commissioner Whitney finds that the present practice of the company of maintaining a balance of only 4.8 per cent reserve of cars for repairs and other exigencies must cease, as he holds that at least 8 per cent reserve is necessary. He states that any street railway in discharging its functions must provide not only sufficient cars for immediate needs, but must make ample provision for the near future. He criticizes the practice of the company in utilizing many cars seating only from twenty-four to thirty-eight passengers each, whereas he states if the company operated larger cars, it would be able to get more passengers past a given point in the rush-hour period, thus increasing accommodations materially. The opinion also disagreed with the contention of the company that it is a reasonable standard of service to operate surface cars during rush-hour period with a standing load of from 60 to 100 per cent.

Among the charges made by Commissioner Whitney are:

1. That overloading and inadequate service are largely due to insufficiency in equipment.

2. That the company is not doing its duty if it is not prepared to keep up with the development or growth of the community.

3. That the company contemplates opening four new surface lines without being prepared to meet the service needs.

4. That ninety of the present cars having a seating capacity of twenty-four to twenty-six passengers each have become obsolete and are unsuited for a community with a population of 1,800,000. The cars should be retired.

5. That the principal lines during rush hours show excessive overloading, in some cases of more than 100 per cent during an interval of an hour.

6. That the company, when it argues it is not getting a proper return, is attempting to reverse the existing law, which is that a fair return is predicated upon adequate service.

7. That the percentage of standees claimed by the company is not proper.

8. That heating and ventilation are inadequate.

9. That the company admits the inadequacy of the service and the superintendent of transportation asked for 100 additional cars, which he did not expect before 1917 or 1918.

10. That the company "no doubt still contemplates the continued maintenance of the percentage of overload" which it has adopted as a standard for operation.

With respect to the increase in traffic in Brooklyn Commissioner Whitney said:

"The increase in traffic on the Brooklyn surface lines from 1900 to 1915 inclusive, is shown by the following table:

Year	Brooklyn Surface
1900	204,106,397
1901	209,119,668
1902	216,594,408
1903	223,433,771
1904	233,184,407
1905	242,780,611
1906	265,204,811
1907	262,460,253
1908	274,766,791
1909	275,038,827
1910	289,308,085
1911	305,977,350
1912	322,321,981
1913	345,321,401
1914	351,905,234
1915	354,700,113

"The number of closed cars controlled by the Brooklyn Transit System including the Coney Island & Brooklyn Railroad, during the period from 1908 to 1915, inclusive, has been as follows:

Year	No. of Closed Cars
1908	1,823
1909	1,823
1910	1,841
1911	1,841
1912	1,841
1913	1,943
1914	1,943
1915	1,943

"It appears, therefore, that the percentage of increase in traffic has been far greater than the percentage of increase in cars necessary to transport the traffic, and, unless the facilities afforded for the traffic transported during the year 1908 were in excess of the requirements, the additions made to the accommodations have not kept pace with the requirements of increased traffic. It is an historical fact that the accommodations on the surface railroad lines in Brooklyn, during the year 1908, were not in excess of the needs of the time, as the service on the surface as well as on other lines in Brooklyn was, during that period, the subject of repeated complaint and criticism.

"It does not, however, follow that the number of cars should increase in exact proportion to the increase in the number of riding passengers. More frequent operation of cars might accommodate in part the traffic increase. Limiting points of operation where the maximum operation has been reached may prevent an increase in the number of cars, although the situation may be remediable through the substitution of cars of greater capacity.

"According to the testimony in this case, the companies now operate during the rush hour period 95.2 per cent of their total number of cars, leaving a balance of 4.8 per cent only for repairs and reserve. This reserve the commission considers insufficient and is considered by the companies as a very narrow margin. The incidents and exigencies of operation must be taken into account in rendering reasonable and adequate service. The commission is of the opinion that 8 per cent of the total number of cars used is a safe margin to be kept in reserve for repairs and emergencies. Upon the basis of 1,943 cars now operated, the companies should provide sixty-two additional cars of thirty-seven passenger capacity or thirty-nine cars of fifty-eight passenger capacity to allow such 8 per cent reserve. If the total number of cars to be operated be increased, the reserve would correspondingly increase. The commission finds that at least thirty additional cars of fifty-eight passenger capacity should be provided for the purposes of reserve."

Of special interest in this connection is the action of the Board of Health of New York on Dec. 16 in passing seven amendments to the sanitary code to take effect immediately with a view of enabling Health Commissioner Emerson to prosecute the railways for failure to relieve overcrowded conditions on the various lines. The action of Commissioner Emerson's predecessor, Dr. Goldwater in connection with the car-full order made by him before the recent reorganization of the personnel of the commission resulted in raising the question of jurisdiction as between the two sets of authorities and Dr. Emerson's plans as just announced have naturally called forth condemnation from Public Service Commissioner Whitney as noted in the present Brooklyn case. The amendments to the sanitary code will also give the commissioner the power to commence criminal proceedings for infractions of the law requiring cars to be properly heated, ventilated, and lighted.

#### ST. LOUIS DAMAGE EXPENSES AVERAGE 4.98 PER CENT OF GROSS RECEIPTS FOR SIX-YEAR PERIOD

The special report of the United Railways, St. Louis, Mo., for the first six months of 1916 abstracted in the ELECTRIC RAILWAY JOURNAL for Sept. 23, page 550, contained the following table showing the relation between the damage expenses of the company and the gross receipts since 1910:

Year	Damage Expenses	Percentage of Gross Receipts
1910	\$468,325.82	4.05
1911	505,528.46	4.24
1912	607,237.88	4.96
1913	702,703.71	5.53
1914	740,606.43	5.95
1915	600,534.18	5.14

In commenting on these figures the report said:

"The tendency of people to regard personal injuries as an asset and demand large damages, the tendencies of juries and the courts to allow these claims, the activities of a certain class of the legal fraternity in specializing in these cases, the increasing congestion of city streets, and the increasing use of automobiles by inexperienced drivers, all tend to increase the number and cost of accidents.

"A safety campaign energetically conducted for several years has checked, to some extent, the increasing size of the damage account. The officers of the company deplore the expenditure of this money, and are exerting every effort to minimize accidents and settle damage claims economically. The cost of damages in St. Louis compares favorably with similar expenditures by street railway companies in other American cities of a comparable size."

#### ABANDONMENT OF SERVICE DISALLOWED

The Supreme Court of Ohio rendered a decision on Dec. 12 to the effect that the Hocking Valley Railroad must maintain electric service over its line between Hamden and Jackson, although the company insisted that the line is not profitable. This decision upholds the order of the Public Utilities Commission issued on Sept. 1, 1914. Precedents have been established by other courts to the effect that, before a railroad can change the form of its service because of changed conditions in the community, it must have sufficient experience to establish its claim. This decision follows the rule set forth in precedents in declaring that the Hocking Valley Railroad did not have such experience, as it had not been operating a sufficient length of time after conditions changed. The section through which the line passes was at one time a busy coal mining and furnace region, but of late years many of the mines have been abandoned and the iron works closed. This reduced the patronage and left mainly farmers as patrons. Three years ago the company endeavored to abandon the service, but the people living along the line took the matter to the Public Utilities Commission. In the face of proof that the line had been operated at a loss for ten months, the commission ordered electric service restored.

#### INTERURBAN RAILWAY SAFETY CAMPAIGN

The Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., has issued the following notice:

"The Chicago & Milwaukee Railroad has been recently reorganized as the Chicago, North Shore & Milwaukee Railroad, and it is the desire of the new management to cultivate the good will and secure the co-operation of all its patrons and neighbors in the various villages and cities by giving good service.

"Constant supervision is being given to the conditions affecting the safety of operation. Signals, protective devices and gates are being installed, obstructions to vision cleared, and an organized campaign of safety, under the direction of an experienced safety engineer, has been started among all employees, and we earnestly request that the public co-operate with the company in every way possible in this regard.

"The safety engineers will extend this campaign shortly to include instructive talks to all the school children in the various schools along the line, and to impress upon them the care to be exercised in crossing the tracks or in getting on and off the cars."

**REARRANGEMENT FOR I. T. S. FREIGHT SERVICE**

Option on all the necessary right-of-way for rearrangement of tracking conditions at various points on the Illinois Traction System, Peoria, Ill., has been secured, and work will begin in the spring of 1917 to carry this out in order to facilitate the movement of freight through certain towns. This work contemplates the straightening of curves at Mount Olive and Litchfield, and a belt line at Staunton which will make possible the handling of foreign freight cars in any quantity on the Litchfield-Hillsboro division of the system. At Staunton a branch off the main line will be built at the point where the main line crosses the Wabash Railway tracks to Mine No. 14. From this point the proposed belt line will extend east on private right-of-way for 0.75 mile, and then on Wabash right-of-way for an equal distance to a connection with the Staunton-Hillsboro division.

At present, at Litchfield, the Illinois Traction tracks cross the lines of the Wabash, Illinois Central and Chicago, Burlington & Quincy tracks at grade, making it necessary to flag all three of these crossings. Under the new arrangement the crossing with these railroads will be made at an interlocker some distance south of the present crossing, with new track laid on a private right-of-way from this point in a northeasterly direction and out State Street to the present passenger station. This new right-of-way will cross the Litchfield public reservoir by means of a fill 240 ft. long, with two outlets 48 in. in diameter. This public reservoir has a capacity of 90,000,000 gal., and permission has been secured from the city to make this crossing.

**PRESIDENT BRUSH ASKS CO-OPERATION**

Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, has issued two statements to the public of Greater Boston asking for co-operation in making the car service as good as possible, especially in connection with the holiday traffic. The travel between residential and shopping districts is greater in Boston this year than ever before and the removal of surface cars from Washington Street has tended to increase still further the patronage of the rapid transit lines, especially in the Washington Street tunnel. The company is operating eight-car trains through this tunnel on the shortest headway consistent with safe service, but notwithstanding this, a certain amount of congestion occurs at the various stations during the evening rush hours. His statement points out that to the extent that shoppers consistently can leave the downtown district slightly ahead of the afternoon rush-hour traffic, the handling of the enormous crowds now requiring transportation will be materially facilitated.

The second statement bespeaks the co-operation of the traveling public in giving names as witnesses to employees when requested or by sending to the company statements of untoward occurrences on the cars that might otherwise not come to the attention of the management. The company is bending every effort toward the elimination from its cars of those persons who are under the influence of liquor or are otherwise disorderly. Extra efforts are being made to keep the stations and cars free from objectionable persons. The statement says in part:

"I earnestly urge the co-operation of the entire community served by our company, in the suppression of any disorderly or discourteous acts on any platform or cars under our jurisdiction and nothing will be more conducive to the elimination of objectionable persons than the cordial co-operation of all our other patrons."

**Car Mail Boxes Opposed.**—The Kansas City (Mo.) Railways has notified the post office at Kansas City that it will not consider any proposition, regardless of compensation offered, for attaching mail boxes to the cars of Kansas City. The announcement mentions unfavorable experience as to service to the public in cases where mail boxes have been used on cars.

**Name-Suggesting Contest Closed.**—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has closed the contest for the selection of two names by which two new trains of the company are to be designated.

From thousands of names suggested, the two chosen were the "Second City Limited" and the "Universal Limited." Each of the successful contestants received \$5.

**New Albany Tariff Suspended.**—The Public Service Commission for the Second District of New York, by order of date Nov. 8, suspended from Nov. 25, 1916, until Jan. 25, 1917, unless otherwise ordered, the taking effect of the changes in the fare tariff on the Albany-Troy line of the United Traction Company referred to in the *ELECTRIC RAILWAY JOURNAL* of Nov. 11, page 1040, seeking the elimination of transfers on the Albany-Troy line.

**Car Stop Signs on Poles.**—Experiments are being made by the International Railway, Buffalo, N. Y., with a new stop sign on the Kenmore-Tonawanda division of its interurban line. The sign is an 18-in. white band painted on the poles along the line. The bands are 5 ft. above the ground and are easily seen. In some places the company has been displaying "Cars-Stop-Here" signs on the wire. If the experiment proves a success the system will be generally adopted on the interurban lines.

**Children Carried Free to Safety Conference.**—In order that all the children of Scott County, Ky., may be present at a safety first meeting to be held in connection with a fair at Georgetown, the county seat, on Dec. 22, the Kentucky Traction & Terminal Company, the Frankfort & Cincinnati Railroad and the Queen & Crescent Railroad, announced that they would carry them free from any part of the county. The safety first movement is being carried out by the Kentucky Traction & Terminal Company and will be extended over the whole system.

**Journal Cartoon Reproduced in Youngstown.**—The *Em-An-Ess Electric News*, published in the interest of the employees of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, reproduced in its issue for December the cartoon "Every Employee a Publicity Representative," which appeared in the *ELECTRIC RAILWAY JOURNAL* for Nov. 4. The Mahoning & Shenango Railway & Light Company, adapting the picture more nearly to its own requirements than the text permitted as it appeared in this paper, labeled the cartoon, "Why Courtesy?" and published some pointers to its own men on this topic underneath the picture.

**Drops Handkerchief, Traffic Is Suspended.** *Courtesy Paramount.*—One of the Eugene (Ore.) papers contained the following item in a recent issue: "Eugene street car men are the embodiment of courtesy. Of course everybody knew that, but now and then a concrete example comes to the attention of the public. Just this morning one of these watchful aids in the public service observed a young lady drop her handkerchief. Promptings of courtesy at once asserted themselves, and without a moment's hesitation he stopped his car in the middle of the block, and, hastening after the young lady, called her attention to her loss. When she had recovered the bit of linen, the car resumed its way up Willamette Street."

**Men Complimented for Reduction in Claims.**—The legal department of the Kansas City (Mo.) Railways sent a special message to the various departments in December, complimenting the men on the marked reduction in claims in November. A particularly gratifying reduction was in the number of cases where people had brought suit or filed claims concerning accidents of which the company had no record. Under the present safety practice and custom of the company, the trainmen are required to report every accident or incident which might by any stretch of the imagination become the basis of a claim. There has accordingly resulted a better fund of information to assist the legal department to meet improper claims.

**Railway Employees Urge Jitney Regulation.**—More than 500 office employees of the British Columbia Electric Railway, Ltd., Vancouver, B. C., have organized for the purpose of urging the City Council of Vancouver to pass regulations which will put the jitney under the same regulations as the street railway. Their representatives who called on the Mayor pointed out that the movement is not connected with the management of the company's interests, but is solely for their own protection. They stated that if the jitney drivers claim that further regulations will put them

out of business, the same is also true as regards the employees of the railway, unless adequate jitney regulations are passed. Petitions are being drawn up and will be presented to the City Council.

**Changes in Illinois Traction Fares.**—After Dec. 29 the cars of the Illinois Traction System operated between St. Louis, Mo., and the Tri-Cities in Illinois will be run pay-as-you-leave instead of pay-as-you-enter. It has also been decided by the management that from Dec. 29 six tickets for the Tri-City-St. Louis trip will be sold for 50 cents. A special ticket, good between the hours of 5 a. m. and 8 a. m. and 5 p. m. and 8 p. m., entitling the holder to fifty-two rides, will be sold for \$3. This will effect a saving of \$2.20 over the regular rate, as the 10-cent fare recently allowed by the Interstate Commerce Commission applies to most points on the trip. It has also been announced that there will be one car every seven and one-half minutes, instead of one every ten minutes.

**One-Man Cars in Leavenworth.**—The Kansas City Western Railway, Kansas City, Kan., is rebuilding its Leavenworth city cars for one-man operation, closing the rear door and removing that step; installing sliding double doors on the front vestibule and placing fare receivers in this vestibule. The city objected that one-man operation was not safe for the passengers, but this objection was removed by agreement between the company and the city. The Kansas City Western Railway formerly operated ten cars in Leavenworth. Since the 3500 soldiers, expending \$100,000 a month, have been away from Fort Leavenworth, business has not continued to increase as of old. The company will remodel and operate six local cars. The interurban service of the company has also suffered because of the absence of the soldiers, and schedules have been reduced.

**Within the Law Interurban Lines Are Railroads.**—An accident recently occurred on the interurban line operated by the San Francisco-Oakland Terminal Railways, and suit to recover damages was brought by parties injured in the automobile which collided with the street car. The suit hinged on the question of whether the electric line was a railroad or a branch of a street railway system. If the former, the chauffeur would be required to "Stop, Look and Listen," whereas in the case of a street car line he would be required only to look and listen. Superior Judge Waste ruled that within the meaning of the law an interurban electric railway was a "railroad," and that the same interpretation would apply as in the case of steam lines. The electric railway, therefore, won the case. The rule applies to every crossing of the interurban line, whether or not the crossing is within the city limits. In this particular case it was shown that the driver of the automobile was intoxicated at the time of the accident, and in his decision the Judge recommended that the district attorney enter suit against the man for reckless driving while under the influence of liquor.

**Fort Worth Jitneys Excluded from Business District.**—The City Commission of Fort Worth, Tex., has passed a jitney ordinance which is to become effective on Jan. 1. The new measure will prohibit jitneys from operating on Main and Houston Streets or any intersecting streets between Weatherford and Front Streets, except on Fifteenth and Second Streets. Jitney cars will not be allowed to stand on Fifteenth or Front Streets and will not be permitted to stop on these streets longer than is necessary to put off or take on passengers. No one will be allowed to drive a jitney except the driver named in the original application for a license or subsequently approved. No license may be transferred without approval by the city, and any violation of the ordinance may be regarded as grounds for revocation of license. Jitney men protested to the City Commission that the ordinance excluded them from the business district of the city and would compel them to stop running. Their objections were overruled. The jitney men then undertook to circulate petitions to order a referendum election on the ordinance, but Mayor Tyra and the City Commission took the position that the ordinance was a police regulation and was not subject to referendum vote of the people. The City Commission assigns safety to pedestrians and traffic in general as the reason for ordering the jitneys off Main and Houston Streets.

## Personal Mention

**R. B. Marchant**, treasurer of J. G. White & Company, Inc., New York, N. Y., has been elected vice-president of the company.

**Gilbert E. Porter** has been elected to the governing committee of the Chicago (Ill.) Elevated Railways to succeed Henry A. Blair.

**W. H. Zinsmeister**, formerly assistant auditor of the Empire United Railways, Syracuse, N. Y., has been appointed auditor of the company to succeed S. C. Rogers, whose appointment to the American Pulp & Paper Company is noted elsewhere in this issue.

**Homer Hodson**, former secretary of the East St. Louis Commercial Club, has been appointed head of the safety-first department of the East St. Louis & Suburban Railway, East St. Louis, Ill., in charge of the safety-first advertising campaigns which the company is planning.

**W. E. Rolston**, electrical engineer of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has had his jurisdiction extended and now has control of the shops and equipment of the company, with the title of superintendent of power and equipment. Mr. Rolston has thus taken over the duties that formerly devolved on the late Karl L. Wilcox as master mechanic of the company.

**Fred J. Warnock**, who has been chief claim agent of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, for the last five years, has resigned, effective on Jan. 1, to practice law for himself. Mr. Warnock was born near New Castle. He moved to Youngstown with his parents when he was twelve years old. He began the study of law under Theodore Johnson, dean of the Y. M. C. A. law school at Youngstown, and in his studies was closely associated with R. J. Nicholson, retiring assistant prosecutor of Mahoning County, with whom he will now enter into partnership.

**Joseph F. Collins**, whose appointment as division superintendent of the Mahoning Valley division of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, was noted in the *ELECTRIC RAILWAY JOURNAL* for Dec. 9, has been with the company for more than fourteen years, joining its force on Aug. 4, 1902, when he became freight clerk and assistant to Richard Flannery, dispatcher at the West Federal carhouse. Mr. Collins was located there for four years, acting as extra dispatcher, assisting in the shop. Shortly after the Park & Falls and the Mahoning Valley lines were merged Mr. Collins became night inspector and finally was appointed chief inspector.

**S. C. Rogers**, assistant treasurer and auditor of the Empire United Railways, Syracuse, N. Y., has resigned to accept a position as comptroller of the North American Pulp & Paper Company at Montreal, Can. Mr. Rogers has been connected with the Empire United Railways since May, 1915. Before that he had been, since 1911, secretary and treasurer of the Youngstown (Ohio) Dry Goods Company, which position he assumed after ten years of service with the Mahoning & Shenango Railway & Light Company, Youngstown, and its constituents. Before entering the field of public service accounting and finances he served nineteen years in New York and Chicago with J. M. Young & Company, importers of china, glass and fancy goods.

**Rex D. Billings** has been appointed chief claim agent of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, to succeed Fred J. Warnock, whose resignation is noted elsewhere in this column. Mr. Billings was formerly Mr. Warnock's chief assistant at Youngstown, but for the last three years has been chief claim agent of the Reading Transit & Light Company, Reading, Pa. Mr. Billings was born on Aug. 8, 1888, and was reared in Warren, Ohio. He became connected with the Mahoning & Shenango Railway & Light Company as a claim adjuster eight years ago, and when Mr. Warnock was made head of the claim department Mr. Billings was promoted to the position of assistant chief of claims.



Frank A. Gannon has been promoted to the office of assistant treasurer of the United Railways, St. Louis, Mo. Mr. Gannon entered street railway service in St. Louis twenty-five years ago with the Lindell Railway, when the motive power was Missouri mules. From office boy he was advanced to messenger. Fifteen years ago he was appointed cashier and since that time it is estimated that about \$75,000,000 has passed through his hands. In addition to his official duties with the company, Mr. Gannon is assistant treasurer of the Employees Mutual Benefit Association, which now numbers 4019 members, and is president of the United Railways Dramatic Club, which has a membership of several hundred. He is also a director of the United Railways Savings & Loan Association, which has issued more than \$2,500,000 of stock certificates to employees who are building their own homes. Mr. Gannon was born in Sullivan, Mo., in 1873, and went to St. Louis in 1874. He was educated at Christian Brothers College. He is married and has two sons and two daughters. Mr. Gannon is prominent in civic affairs and is treasurer of the improvement association in the Shaw District, in which section is his home.



F. A. GANNON

Lafayette G. Rudd will continue in charge of the Lyme and Saybrook divisions of the Shore Line Electric Railway, Norwich, Conn. It had been proposed to extend Mr. Rudd's jurisdiction also to cover the New London lines of the company. An official statement says that because of the extent of the territory involved in the consolidation of the New London, Lyme and Saybrook divisions of the company, under a single superintendent, as was contemplated by the promotion of Mr. Rudd to the position, it has been decided by the officials of the corporation that such a change would not be expedient at this time. Mr. Rudd will, therefore, resume his former place as superintendent of the Lyme and Saybrook divisions, and for the present W. C. Callaghan, general manager, will have personal oversight of the New London lines.

E. E. Downs was recently elected president of the Alton & Jacksonville Railroad, Alton, Ill., formerly known as the Alton, Jacksonville & Peoria Railroad. Mr. Downs was formerly vice-president and general manager of the Sterling, Dixon & Eastern Railway and the Lee County Lighting Company, Dixon, Ill., from which he resigned to take the position of general manager for the receivers of the Chicago & Milwaukee Electric Railroad. He remained with the Chicago & Milwaukee Electric Railroad during the term of service of the receivers, when he became general manager of the Elgin & Belvidere Electric Company, owned by Bion J. Arnold. After serving the last-mentioned company three years, he resigned to organize a company and introduce the automatic parcel checking locker system. He takes charge of the Alton & Jacksonville Railroad as the property changes ownership, and expects to make many improvements to better the service and the condition of the physical property.

D. C. Green, for the last year and a half manager of the Salt Lake City division of the Utah Power & Light Company, has resigned that position to become general manager of the Fort Smith Light & Traction Company, Fort Smith, Ark. This property, which is operated by H. M. Bylesby & Company, Chicago, Ill., furnishes the electric lighting and street railway service in Fort Smith and operates an electric interurban railway between Fort Smith and Van Buren. Before taking his position with the Utah Power & Light Company Mr. Green had been connected with the Bylesby company for several years at San Diego, Cal.; Albany, Ore.; Marshfield, Ore., and Everett, Wash. Mr. Green is a graduate of Purdue University, Lafayette, Ind., class of 1908.

Raymond H. Smith, whose promotion from the position of general manager of the Jackson Light & Traction Company of Jackson, Miss., to that of vice-president and general manager of the Sheboygan (Wis.) Electric Company, was noted in the *ELECTRIC RAILWAY JOURNAL* of Nov. 11, was presented, before he left Jackson, by the citizens of that city with a silver loving cup, about 12 in. high, exclusive of base, "in grateful recognition of his public service." Mr. Smith took charge of the local street railway, electric plant and gas plant at Jackson four years ago, and his work brought him in contact with practically the entire population of the city. He rehabilitated the plant, installed one-man cars and reduced operating expenses. For the first three years of his service in Jackson Mr. Smith had to contend with competition in the electric light and power business. The competitor died a natural death, but the question of municipal ownership immediately came up. The people defeated the proposed plan, and Mr. Smith received much credit for his work during the agitation. In addition to his work in the railway and light field in Jackson Mr. Smith improved greatly the operation and service of the gas plant. Many of the citizens of Jackson signed a telegram of protest against Mr. Smith's removal to Sheboygan, but, finally decided that it would not be fair to attempt to deprive Mr. Smith of an excellent opportunity for promotion and did not send the message. Mr. Smith was active in the local Board of Trade at Jackson and at the time of his departure from that city was president of the local Rotary Club. An incident worthy of note is the fact that each member of the Jackson Rotary Club wrote a letter to a member of the Sheboygan Rotary Club in the same business, commending Mr. Smith in the very highest terms. In consequence, at the first meeting of the Sheboygan Club after his arrival Mr. Smith was unanimously elected to full membership without the formality of any investigation.

E. C. Hathaway, whose resignation as assistant general manager of the Virginia Railway & Power Company, Richmond, Va., in charge of the properties of the company at Norfolk, was noted in the *ELECTRIC RAILWAY JOURNAL* for Dec. 16, has been in charge of the companies there for fourteen years and was connected with them in an advisory capacity for two years prior to that. In 1902 he was appointed vice-president and general manager of the Norfolk, Portsmouth & Newport News Company, a consolidation of the railway and lighting companies in Norfolk, Portsmouth, Newport News and Hampton. After the withdrawal of the Newport News and Hampton companies and the



E. C. HATHAWAY

reorganization under the name of the Norfolk & Portsmouth Traction Company, Mr. Hathaway held the same title, and in 1911, when that company was absorbed by the Virginia Railway & Power Company, Richmond, he was retained with the title of assistant general manager. Before coming to Norfolk, Mr. Hathaway was general manager of the Railways & Light Company of America, with headquarters in Baltimore. This company controlled the utility properties in Norfolk, Knoxville, Tenn., Lexington, Ky., and several other places. Mr. Hathaway is resigning at Norfolk because his many other interests require the greater part of his time and attention. His principal outside interest is the Railway Audit & Inspection Company, Philadelphia, of which he is president. This company was organized by Mr. Hathaway about ten years ago and has steadily grown until it has now become necessary for him to devote a good deal of his time to it. He will retain his residence in Norfolk, where he has numerous other interests. His successor at Norfolk will be T. Norman Jones, who is at present chief engineer of maintenance of way of the Virginia Railway & Power Company in Richmond.

## Construction News

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

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

### RECENT INCORPORATIONS

**\*Waterbury & Bristol Tramway, Waterbury, Conn.**—A petition will be presented to the incoming General Assembly for the incorporation of the Waterbury & Bristol Tramway to construct a line between Bristol and Waterbury. Among those interested are Frederick N. Manross, Bristol; Richard Elliott, Southington, and John R. Hughes, Waterbury.

**\*Westfield River Railway, Huntington, Mass.**—The Selectmen of Huntington, Cummington, Chesterfield, and Worthington have petitioned the Legislature to pass a bill incorporating the Westfield River Railway to construct an electric railway along the Westfield River and Major Brook and manufacture for itself and the adjacent towns electric energy for light, heat, and motive power. Capital stock, \$182,000. Leonard F. Hardy, Huntington, is interested.

**Coatesville (Pa.) Trolley Company.**—The Public Service Commission of Pennsylvania has approved the application for a charter for the Coatesville Trolley Company, which proposes to construct a line in Coatesville and in East Hallowfield and Valley Townships. The applicants for the charter are H. I. Schotter, J. V. Pennegar, C. F. Humpton, H. G. Rambo, and W. J. Elliott, all of Coatesville. [Sept. 23, '16.]

**\*Mineral Heights Street Railway, Greenville, Tex.**—Incorporated with a capital stock of \$3,000. Incorporators: J. A. Phillips, J. M. Massey, and W. T. Wright, Greenville.

### FRANCHISES

**\*Globe, Ariz.**—The City Council of Globe has granted the request of C. H. Munson for an option for three months on the local street railway franchise at \$1,500.

**Bridgeport, Conn.**—The Connecticut Company will petition the Legislature in January for permission to extend its tracks on Golden Hill Street, northerly through either Middle or Water Streets or Housatonic Avenue to Congress Street, in an effort to relieve the congestion of traffic on Main Street. The company will also petition for permission to extend its Oak Street line through Madison Avenue to Marion Street.

**Bristol, Conn.**—The Bristol & Plainville Tramway Company will petition the next General Assembly for an amendment to its charter under which the company will be allowed to extend its lines on lower Main Street, South Street, Wolcott Street, and West Street.

**Hartford, Conn.**—The Connecticut Company will ask the Legislature for permission to extend its East Street line from the present terminus on Smalley Street as far as the railroad crossing, and also to extend the Pleasant Street line from the terminus at Fairview and Pleasant Streets into Fairview Street and thence southerly to Kelsey Street, down Kelsey Hill to Rocky Hill Avenue.

**Caldwell, Idaho.**—The Caldwell Traction Company has received a franchise from the City Council of Caldwell to construct a line along Cleveland Boulevard and other streets.

**Urbana, Ill.**—The Kankakee & Urbana Traction Company has received a franchise from the City Council of Urbana giving permission to lay special work so as to make physical connection with the Wabash Railway, the plan being to handle grain shipments from the traction company to the steam railroad.

**Columbus, Kan.**—The Oklahoma & Northern Traction Company will ask the City Council for a franchise to construct a line in Columbus. W. K. Palmer & Company, Kansas City, Mo., consulting engineers. [Nov. 4, '16.]

**Gardner, Mass.**—The Northern Massachusetts Street Railway has asked the Council for a franchise to construct an extension on Parker Street, Gardner.

**Cleveland, Ohio.**—The Cleveland Railway has received a franchise from the City Council to construct an extension on Hough Avenue to East 105th Street.

**Columbus, Ohio.**—The public utilities committee of the City Council recently approved a franchise giving the Columbus Depot Company the right to construct and operate tracks and switches across Town, Front, Rich, Walnut, and Wall Streets, near High Street, and to build a depot over Wall Street. The time for the completion of the depot has been extended to 1919. It was to have been completed by January, 1917.

**Dallas, Tex.**—The Dallas Northwestern Traction Company and the Dallas Southwestern Traction Company have been granted a six months' extension of time on their franchises in which to begin construction on their proposed lines to Cleburne and Denton. E. P. Turner, Dallas, president. [Oct. 21, '16.]

**\*Princeton, W. Va.**—A. S. Hecker, Pittsburgh, Pa., and H. E. De Jarnette, Princeton, W. Va., have asked the Council for a franchise to construct a line to be operated by either steam, electricity, or horse power, from Princeton to Athens, about 6 miles.

### TRACK AND ROADWAY

**\*Fort Smith, Ark.**—Albert Emanuel, president of the Albert Emanuel Company, Schwind Building, Dayton, Ohio, is reported interested in a plan to construct an electric railway between Fort Smith and surrounding towns within a radius of 50 miles. Options on electric power plants in Booneville, Mansfield, Huntington, Hartford, and Greenwood have been obtained.

**Visalia Electric Railroad, Exeter, Cal.**—It is reported that this company may construct an extension from Lindsay to Woodville, 11 miles.

**Pacific Electric Railway, Los Angeles, Cal.**—This company on Dec. 3 began the use of its new elevated line, constructed at a cost of about \$300,000. This new terminal improvement, built to relieve congestion on Main Street, permits the rerouting of a large number of cars to San Pedro Street. The elevated line leads from the rear of the Main Street Station at the second-story level, which is the street level at the front, to San Pedro Street, approximately 2000 ft., and carries practically all outgoing trains and a few incoming. The majority of incoming trains enter the station from Main Street, as before. The new structure is of steel and concrete construction, and carries three tracks completely equipped with automatic signal system. Loading and unloading platforms, supporting reinforced concrete and steel umbrella sheds, parallel the line on either side for a distance of about 1100 ft. Work on the structure was begun in April, upon an order issued in 1915 by the City Board of Public Utilities demanding relief of traffic congestion on Main Street.

**Lordship Company, Bridgeport, Conn.**—A petition will be presented to the General Assembly when it convenes to have an extension built by the Lordship Company in Bridgeport.

**Washington & Maryland Railway, Washington, D. C.**—This company reports that during 1917 it will construct a 1-mile extension from its present terminus to Sligo Creek in Tacoma Park, Md.

**Jacksonville (Fla.) Traction Company.**—Double tracks across Springfield Park from Pearl Street to Cedar Street and on Cedar to Eagle and down Eagle to Hogan Street are being laid by the Jacksonville Traction Company, to eventually be completed with double track on Hogan Street to Bay Street.

**Georgia Railway & Power Company, Atlanta, Ga.**—A contract has been awarded to R. M. Walker, Atlanta, at \$19,400, to repair the Edgewood Avenue bridge, the cost to be divided between the city, the Southern Railway, and the Georgia Railway & Power Company.

**Aurora, Mendota & Western Railroad, Aurora, Ill.**—It is reported that this company will construct its proposed line from Aurora to Mendota by day labor. H. D. Hallett, 132 Downer Place, Aurora, engineer. [Sept. 16, '16.]

**Fox & Illinois Union Railway, Aurora, Ill.**—This company proposes the construction of an extension from Morris south to Gardner and thence to Dwight.

**Chicago & West Towns Railway, Chicago, Ill.**—This company has discontinued service through the village of Berwyn owing to franchise difficulties with the Village Council.

**Woodstock & Sycamore Traction Company, Genoa, Ill.**—This company, which operates between Sycamore, Genoa and Marengo, twenty-five miles, will electrify its line during the coming spring. Cars are now being operated by gasoline.

**Illinois Traction System, Peoria, Ill.**—The town of Catlin has approved the plan of the Illinois Traction System for taking care of its track through the village streets. As Catlin is under a commission form of government, the settlement of the franchise privileges was voted on by the citizens who approved the franchise granting the following type of construction: The track is to be rebuilt in the center of the street, occupying a space 7 ft. wide; the ties are to be surfaced on 6 in. of washed gravel and the track then filled with stone screenings up level with the brick paving each side of the track. This settlement came after some agitation to force the company to pave the streets of the village over which its lines pass, in order to gain franchise rights.

**Quincy (Ill.) Railway.**—This company has purchased a lot, 140 x 160 ft., at the southwest corner of Ninth and Locust Streets, Quincy, in contemplation of another loop. The construction of the new loop will enable cars to make a shorter circuit and to avoid entering the grounds of the State Soldiers' home at certain periods of the day.

**Indiana Railways & Light Company, Kokomo, Ind.**—This company is reported to have in contemplation two extensions in Kokomo, one to the northwestern part of the city and the other to the southern part of the city.

**Orleans-Kenner Electric Railway, New Orleans, La.**—It is reported that this company contemplates the construction of a 6-mile extension from St. Charles Parish. Johnson & Company, Inc., New Orleans, contractor.

**Portland, Me.**—Plans are under contemplation for the construction of an electric railway to connect Portland and York Beach, Me., with Portsmouth, N. H. The York Beach Chamber of Commerce is interested.

**Massachusetts Northeastern Street Railway, Haverhill, Mass.**—The Public Service Commission of Massachusetts has issued an order authorizing the Massachusetts Northeastern Street Railway to issue \$100,000 of first mortgage, twenty-year, 5 per cent. bonds. Of the proceeds, \$36,000 are to be used for construction and for railway equipment and \$64,000 for carhouse equipment.

**Michigan Railway, Kalamazoo, Mich.**—This company is negotiating for the sale of its tracks inside the city limits of Flint, extending from the northern limits to Hamilton Avenue, to the Detroit United Railway.

**St. Paul Southern Electric Railway, St. Paul, Minn.**—This company is constructing an extension from Hastings to White Rock, 23 miles. Two 160-ft. and six 80-ft. steel spans will be erected on piles. On the completion of this extension the company contemplates the construction of a line through White Rock, Dumbrota, Rochester, Chatfield, Preston, and Harmony, Minn., and Burr Oak, Iowa, to Decorah, a distance of 126 miles.

**Kansas City, Mo.**—It is reported that Samuel J. McWilliams, secretary of the Gaston Railway Syndicate, Scarritt Building, Kansas City, Mo., is interested in the construction of a proposed line from Kansas City to Springfield, via Butler and Rockville.

**International Railway, Buffalo, N. Y.**—Surveys have been made and work will be begun in the spring by the International Railway on the construction of an extension of its Elmwood Avenue line from Hertel Avenue to the city line.

**New York, N. Y.**—A statement has been issued by F. Van Z. Lane, traffic engineer, Bayonne, N. J., urging the construction of an electric railway from Staten Island to New York via Bayonne, Greenville, and Lower Jersey City. It is proposed to construct a tunnel under the Kill von Kull River between Staten Island and New Jersey.

**Ohio Electric Railway, Springfield, Ohio.**—Bids will soon be asked by the Ohio Electric Railway for constructing a 120-ft. steel deck girder bridge, with concrete abutments,

over the Cincinnati, Hamilton & Dayton Railroad at Middletown.

**Welland, Ont.**—Municipalities along the Canadian shore of Lake Erie between Port Colborne and Bridgeburg and the municipalities between Port Colborne and Welland along the east side of the Welland Canal, will vote on Jan. 1, or at special elections to be held soon after, on propositions guaranteeing bonds for a publicly owned hydroelectric radial railway. The cost of the proposed railway is estimated at \$2,208,716. It will be built by the Ontario Hydro-Electric Commission.

**Montgomery Transit Company, Philadelphia, Pa.**—A report from the Montgomery Transit Company states that the company has under construction an extension from Harleysville to Souderton, 4.3 miles, and from Lederach to East Greenville, 12 miles.

**Dallas (Tex.) Electric Company.**—Street railways of Dallas are unable to comply with the orders of the City Commission to lay 90-lb. T rails on Tremont and Colorado Streets, the time limit for this work having expired Dec. 1. According to Edward T. Moore, general manager of the lines, the company has found it impossible to procure the rails necessary for laying this work, and the City Commission has voted not to enforce the penalty provided by the charter for failure to comply with its order on the part of the company.

**Roanoke Railway & Electric Company, Roanoke, Va.**—Work will be begun at once by this company on the construction of 4,000 ft. of new single track on Ninth Street for the Viscose silk mills.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—During 1917 the Monongahela Valley Traction Company expects to construct 17 miles of new track.

#### SHOPS AND BUILDINGS

**Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.**—As one of the movements in preparation for the establishing of freight service on the Chicago, North Shore & Milwaukee Railroad, work has been begun in the placing of a yard for storage of the freight cars and equipment near the south limits of North Chicago. Tracks are being placed, the overhead system is being rapidly installed, and all arrangements are being made for the establishment of both a switch yard and a storage yard for the care of the freight department.

**Toledo Railways & Light Company, Toledo, Ohio.**—This company contemplates the construction of a carhouse on the site of the old Casino. The new carhouse will be capable of housing seventy-five cars, and will have a complete repair department.

**Sand Springs Railway, Tulsa, Okla.**—A contract has been let by this company for the construction of a combination freight and passenger station at Tulsa, to cost about \$25,000.

#### POWER HOUSES AND SUBSTATIONS

**Arkansas Valley Railway, Light & Power Company, Pueblo, Col.**—This company will extend its power lines from Pueblo to Avondale.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company is erecting three new substations between Fort Wayne and Decatur, one being located just south of Fort Wayne, one-half way between the two terminals, and the third just outside of the city limits of Decatur, near the power-house.

**Kansas City-Western Railway, Kansas City, Kan.**—This company has completed half of the replacement with aluminum of its high-tension line that is between Kansas City and Walcott, 18 miles. The company receives its current at Kansas City, Kan., from the Kansas City Railways Company. The current is stepped up at the receiving station, carried to Walcott and there stepped down for transmission in both directions to Leavenworth and Kansas City, Kan.

**Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.**—Work has begun on the new freight and power house to be erected at Lisbon Falls for the Lewiston, Augusta & Waterville Street Railway.

# INDUSTRIAL NEWS

Review of Trade and Market Conditions

Rolling Stock Purchases

Business Changes

Trade Literature

## TRACK GRINDER BUSINESS GROWING RAPIDLY Reciprocating Grinder Sales Show Increase—Deliveries Now Prompt—Grinding Brick Manufacture—New Plant for Brick Making

"When the manufacturers of railway track grinders first offered their machines for sale to the electric railways of this country, grinding was looked upon as a luxury. It is now regarded as an essential factor of improvement in track construction." This statement was recently made by W. B. Goodall, Railway Track Work Company, Philadelphia. He also said: "Many roads are now grinding all of their new track. This assures smooth joints from the start, and defers the time when cupping will begin. The reciprocating process of grinding offers many advantages when the result desired is a smooth rail surface."

The demand for "reciprocating track grinders" is good. Sales in 1915 exceeded those of 1914 by 50 per cent, and the sales this year will exceed those of last year by 30 per cent. The demand has come partly from sources which at first were not expected to buy grinders. Foreign sales also have increased lately. Several small roads, with less than 20 miles of track, have purchased grinders for reclaiming old track. Some of the longer users of this type of grinder are the Third Avenue Railroad, New York, eight grinders; Philadelphia Rapid Transit Company, twelve grinders; Brooklyn Rapid Transit Company, United Railways of Baltimore, and Connecticut Company, each four grinders. The Brooklyn property makes use of a grinder on the elevated tracks of its system. Some of the roads in the Northern States operate their grinders all winter.

The price of the reciprocating track grinder has not been increased even though costs for manufacture and for demonstration have risen in accord with general cost. Delays of material at one time forced the manufacturer to fall three months behind in deliveries, but this condition now has been relieved, and grinders can be shipped promptly.

### HOW CUTTING BRICKS ARE MADE

The conditions surrounding the manufacture of the abrasive bricks used with the reciprocating grinders are of interest. These bricks, in sets of four, sell for about \$4.50 per set. At one time the manufacturer was 5000 bricks behind his orders. Shipments are now made three weeks after receipt of orders, and steps have been taken which will still further accelerate deliveries.

Track-grinding bricks are made in two grades of hardness. Some engineers prefer bricks so hard that they will last as long as five working days. Others prefer the soft grade of brick which cuts the rail much faster but will last only fifteen to twenty hours. The bricks are made of bauxite, imported from Greece and France. It has been difficult to obtain this material since ocean shipping has been restricted. The prepared bauxite is burned in electric furnaces until it is hard and sharp. Then it is crushed and screened to size. Clay and feldspar are then added, and the bricks are molded. Next they are burned in kilns. Ten days' time is required to mix, pour and dry a lot of bricks, and then a week's time is allowed for baking.

Because of the difficulty experienced by the Railway Track Work Company in obtaining abrasive bricks for sale to users of its grinders, the principals of this company have formed and incorporated a new company known as the Abrasive Products Company. One kiln has been installed and bricks are now being made by this company at Thirtieth and Walnut Streets, Philadelphia. Cutting wheels also are being made, and the business is reported to have shown such prospects that this company is now considering the installation of three additional kilns.

Prospects for track grinder sales during 1917 look bright,

according to Mr. Goodall, who also says that the accelerating demand for grinder bricks is proof that the roads are making more intensive use of their grinders.

### "WIG-WAGS" WITHOUT BELLS ARE RECOMMENDED

Referring to the article on highway-crossing signals published in the issue of Nov. 18, William P. Hall of the Hall Switch & Signal Company, New York, confirms the statement earlier made that the swinging disk commonly known as the "Wig-Wag" has met with great favor by purchasers of such signals. "It is also a fact," he says, "that this is due to a belief on the part of the railroad companies that an audible signal alone does not fully meet their requirements."

"In the light of our many years of experience in the automatic block signal field, we concluded some time ago that a wig-wag signal so constructed and operated as to indicate danger to the users of highways, both when in motion and in a state of rest, was eminently desirable. We have developed a wig-wag signal which gives warning of danger when in motion, and which, when deprived of its operating current, indicates danger by a fixed position showing red, the latter being insured by gravity."

"Any type of wig-wag signal which indicates danger only when in motion may become a positive danger to highway traffic when interrupted in its normal movement by a lack of power, therefore we believe that the wig-wag, constructed and operated as described, is more desirable than the combined use of the ordinary wig-wag and bell. If the current used for the operation of the bell should fail there is absolutely no signal of danger in one case, whereas, if the current used for the operation of the wig-wag signal should fail, the signal would still indicate danger to highway traffic by assuming a fixed red position. It also appears that the plan of using the wig-wag only eliminates the oftentimes very objectionable features of the noisy bell at highway crossings."

### COPPER PRICES FORCED DOWN SLIGHTLY BY PEACE PROPOSALS

Although showing considerable and somewhat unexpected strength on the proposal for peace offered by the Teutonic Allies for a few days, the copper market was apparently unable to stand the strain any longer. December copper is more than a cent lower than the high price of a week ago, and on Tuesday following the declaration of the position held by England regarding Germany's proposals December electrolytic was quoted at 34 cents bid, 34.5 cents asked. January copper was quoted at 32.75. Quotations for 1917 were as follows: First quarter, 32.25; second quarter, 31.25; third quarter, 30.25, and fourth quarter, 29.75. As will be noticed, the greatest reaction was in copper for early delivery. Copper for last quarter 1917 delivery was affected least of all.

While the reaction has not been great, there is considerable uneasiness among the buyers. Every day there appears on the market a number of small lots up to 200 and 300 tons of spot copper. How much more of this resale copper is held is not known. It is well known that producers are sold out, but it had generally been understood that practically all sales had been made by consumers and the volume of copper held for speculation was exceedingly small.

Copper wire manufacturers and manufacturers of electrical goods stand in a very unsatisfactory position should there be a large amount of copper available for speculation. Stocks were laid in at top-notch prices, and in many cases these stocks were very substantial. Both wire and electrical manufacturers have orders on their books for deliveries

way into 1918, and unfilled orders would keep the factories going night and day well through 1917, and great care was taken to prevent any uncertainty of delivery through lack of raw materials.

**WHO SHOULD KEEP THE STOCK OF RENEWAL PARTS?**

This topic, previously mentioned in the issues of Nov. 25, page 1135, and Dec. 2, page 1183, has brought forth many very interesting views from manufacturers of standardized and other products. In the following discussion of this topic, Charles M. Sneider, development department, The Jeffrey Manufacturing Company, Columbus, Ohio, sets forth another view. He says:

"Stock-keeping is far from being an office boy's job. The question of the stock of renewal parts is one of mutual responsibility wherein the purchaser should consider the cost of first repairs in connection with the cost of the original apparatus. The manufacturer should be able to inform the purchaser as to when the first repairs should be needed under nominal service conditions and how soon such repairs can be supplied upon order or out-of-stock. The extent to which repair parts are required should be the basis of carrying the same in stock, care being taken to keep in touch with the matter of obsolete and new designs so as to slow up sufficiently in anticipation of new designs and not to have a large quantity of "dying" repairs on hand. This latter feature is the common fault with overzealous stock departments.

"The head of an efficient service stock department is not the first step from the office boy's job—not even in a country town. The stock department should be in charge of a capable man, fully acquainted with the product, the trade demands and the matter of new designs."

**ROLLING STOCK**

People's Railway, Dayton, Ohio, is said to be in the market for ten motor cars.

People's Railway, Dayton, Ohio, has ordered ten trailer cars from the W. R. Kershner Company.

Lake Shore Electric Railway, Cleveland, Ohio, has placed an order for thirteen interurban cars and five city cars with the Jewett Car Company.

Cleveland, South Western & Columbus Railway, Cleveland, Ohio, has placed an order with the Kuhlman Car Company for six interurban cars.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., is building three passenger cars and one freight car for use on its newly acquired line between Fort Wayne and Decatur, Ind.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y., noted in the ELECTRIC RAILWAY JOURNAL of Dec. 9, 1916, as being in the market for fifteen center-entrance interurban cars, has ordered this equipment from the Kuhlman Car Company.

Columbus (Ohio) Railway Power & Light Company is said to be in the market for five city cars and three interurban cars. A recent issue of ELECTRIC RAILWAY JOURNAL noted that this company was planning to rebuild forty-five cars in its own shops, but these plans have been changed. The company now plans to have new car bodies built by the American Car Company, making use of the hardware and equipment from the old cars as far as possible.

Michigan Railway, Jackson, Mich., has specified the following details for the twenty prepayment passenger cars which it has recently ordered from the St. Louis Car Company:

Seating capacity.....40	Height, rail to sills.....31 ft.
Weight (car body only), 19,000 lb.	Sill to trolley base..8 ft. 5¼ in.
Bolster centers, length...19 ft.	Body.....Semi-steel
Length of body.....28 ft.	Interior trim.....Mahogany
Over vestibule.....40 ft. 4 in.	Headlining.....Agasote
Width over sills.....8 ft. 2 in.	Roof, type.....Turtle deck
Over all.....8 ft. 6 in.	Underframe.....Metal

New York (N. Y.) Municipal Railway Corporation reported in the ELECTRIC RAILWAY JOURNAL of Nov. 11, 1916,

page 1046, as asking for bids on 100 subway cars, will probably exercise an option on 100 subway cars in addition to the 500 cars already contracted for, which 100 cars will be similar in construction to the present equipment and will probably be purchased during the year 1917. The specifications for this equipment are as follows:

Name of road, New York Municipal Railway	Curtain material,D. C. Pantasote
Type of car...Closed passenger	Destination signs, Hunter illuminated
Seating capacity.....78 to 90	Door operating mechanism, National Pneumatic
Weight (car body only), 45,000 lb.	Gears and pinions, GE Grade "T"
Bolster centers, length...47 ft.	Hand brakes.....Geared
Length of body: Over vestibule...66 ft. 2¼ in.	Heaters.....Electric
Width over sills...9 ft. 9 in.	Journal boxes...Malleable iron
Over all.....10 ft.	Motors, type and number, GE-248A 2 per car
Height, rail to side sills, 3 ft. ½ in.	Motors, outside or inside hung, Inside, 1 per truck
Side sill to top of roof, 9 ft. 1¾ in.	Paint.....Enamel system
Body.....Metal	Sash fixtures.....Edwards'
Interior trim...Steel and Agasote	Seats, style, Longitudinal and transverse
Headlining.....Agasote	Seating material.....Rattan
Roof, type.....Compromise	Step treads.....No steps
Underframe.....Metal	Trucks, type.....Arch bar
Air brakes.....Westinghouse	Ventilators...Perry—24 per car
Axles, Carnegie quenched and tempered	Wheels, Carnegie solid steel, National
Bumpers...Hedley anti-climber	Malleable Castings Co.
Cables, New York Municipal Railway's	Special devices, etc., Draw bar centering device,
specification	Westinghouse empty and
Car trimmings, Bronze and aero metal	load brake, Smith Ward
Control, type...Westinghouse	slack adjusters. Selective ac-
Couplers.....Westinghouse	celeration device.
Curtain fixtures, Curtain Supply Company	

London & Port Stanley Railway, London (Ont.), Canada, which has just placed an order with the Jewett Car Company for two three-compartment closed motor cars, has specified the following details for this equipment:

Type of car, Three compartment, closed, motor	Control, type, GE type M.K. M.U.
Seating capacity.....68	Couplers.....Tomlinson
Weight (car body only), 49,733 lb.	Curtain fixtures...Ring type
Bolster centers, length, 45 ft. 4 in.	Curtain material...Pantasote
Length of body...64 ft. 6 in.	Fenders or wheelguards, Steel pilots
Over vestibule.....70 ft.	Gears and pinions, GE Grade "M"
Width over sills...9 ft. 6 in.	Gongs.....Pneumatic
Over all.....9 ft. 10 in.	Hand brakes...Peacock brakes
Sill to trolley base.9 ft. 10¼ in.	Heaters...Consolidated Electric
Body.....Steel	Headlights...U. S. incandescent
Interior trim.....Mahogany	Motors, type and number, 4 GE No. 225 B 750-1500 v.
Headlining.....Agasote	Motors, outside or inside hung, Inside
Roof, type.....Monitor	Sanders.....Air
Underframe.....Steel	Seats, style.....High back
Air brakes, GE straight and automatic	Seating material, Plush and pantasote
Bumpers.....Spring	Trolley base...Pantographs used
Car trimmings.....Bronze	Ventilators.....Automatic

**TRADE NOTES**

Rochester Light & Power Company, Detroit, Mich., has ordered two 2000-kw. rotary converters for railway service from the General Electric Company.

Lord Manufacturing Company, New York, N. Y., reports an order of 100 Horne double-acting brakes from the Laconia Car Company for use on surface cars being built for the Boston Elevated Railway.

Buffalo & Lake Erie Traction, Buffalo, N. Y., has placed an order with the General Electric Company for fifteen double motor equipments, for the necessary air brakes, and for a 500-kw. rotary converter equipment.

J. B. Hill, W. E. Schwob and H. G. Miller, Iowa City, Iowa, announce the organization of the Schwob-Miller Engineering Company, to engage in a general practice as consulting and designing engineers, with offices in the Phoenix Block, Iowa City.

Bound Brook Oil-Less Bearing Company, Bound Brook, N. J., announces the appointment of William Fisher Jennings as Eastern sales manager of that company. Mr. Jennings has been connected with the company for almost three years and is well known to the trade.

F. Castiglioni, electrical engineer of the Railway Improvement Company, on leave of absence serving in the Italian Army, has been promoted in the 84th territorials heavy artillery. Signor Castiglioni left for the front June 1, 1916, on the Regina D'Italia. Readers of this paper will remember him as the author of technical articles on railway operation.

H. W. Johns-Manville Company, Cleveland, Ohio, announces that every employee with the company a year or more was gladdened by the receipt of a Christmas greeting signed by President T. F. Manville announcing the board of directors' decision to give a bonus equal to 10 per cent of the year's salary. This action was prompted by the very satisfactory earnings of the company in 1916 and the splendid service rendered by the J-M employees.

SKF Ball Bearing Company, Hartford, Conn., announces that S. B. Taylor, sales manager of the company, has been appointed vice-president to succeed F. B. Kirkbride, who remains on the board of the company. Mr. Taylor will remain in charge of sales. G. A. Ungar, former representative of the company in Cleveland, Detroit and Pittsburgh, has been appointed technical manager and chief engineer, succeeding Uno Forsberg, who returns to Sweden after completing his work of creating the manufacturing organization of the SKF Ball Bearing Company in this country.

National Pneumatic Company, New York, N. Y., reports that it has received an order from the Toledo Railways & Light Company for twenty-five sets of manual door control for equipping cars which are being remodeled. This company's manual door control, with safety interlocking feature, has been specified on the fifteen cars recently ordered by the Buffalo & Lake Erie Traction Company, and its door engines have been specified on the six cars ordered for the Cleveland, South Western & Columbus Railway.

#### ADVERTISING LITERATURE

Findley Electric Porcelain Company, Findley, Ohio, is distributing a bulletin on "Standard Electrical Porcelain."

Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has issued booklet M on magnetic switch control apparatus.

Holland Trolley Supply Company, Cleveland, Ohio, is distributing pamphlets on its Bishop sleet cutter and Holland sleet wheels.

Ohio Brass Company, Mansfield, Ohio, has issued a bulletin on its all-copper type and on its steel terminal type gas-weld bonds.

Nash Engineering Company, South Norwalk, Conn., has issued bulletin No. 4 descriptive of its turbine vacuum and low-pressure boiler-feed pumps.

Berry & Zimmerman, Philadelphia, Pa., is distributing bulletin No. 4 of "Development," which contains an article "Grasp," of interest to the industries and public utilities.

Westinghouse Church Kerr & Company, New York, N. Y., has issued a pamphlet on some of the products of plants or factories designed and constructed by the company.

W. K. Palmer Company, Consulting Engineers, Kansas City, Mo., announces that the company has opened a branch office at 705 Merchants Loan & Trust Company Building, Chicago, Ill.

Ohmer Fare Register Company, Dayton, Ohio, is distributing a reprint of an article which appeared in the *Denver Tramway Bulletin* for October on the Ohmer system of fare protection.

American Appliances & Machinery Manufacturing Company, Brooklyn, N. Y., announces that after Dec. 15 it will occupy its new factory building at 161 Jamaica Avenue. The building contains 4500 sq. ft. of floor space.

Standard Electric Tool Company, Cincinnati, Ohio, has issued bulletin A-53 on its portable electric drills and grinders. In addition to the regular types of a.c. and d.c. drills, this company has a number of ball-bearing tool post grinders, parallel grinders, aerial grinders and bench grinders.

Railway Storage Battery Car Company, New York, N. Y., has issued bulletin No. 33 describing its car No. 316, which operates on the Chattahoochee Valley Railway between West Point, Ga., and Riverview, Ala. This car is equipped with Edison storage batteries. Actual operating costs per car-mile are also given in a table.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued leaflet 3764-A, describing and illustrating its No. 323-V railway motor. This motor has a rating of 30 kw. at 600 volts and is said to represent the latest development in railway motors of the split-frame

type. This company has also issued circular 1577, which treats briefly and concisely the question of standard railway equipment.

Hubbard & Company, Pittsburgh, Pa., is distributing a pamphlet on "Continuity and How." This pamphlet devotes considerable space to pin failures and gives the result of a number of tests on the new Pierce forged steel pin, which is made by this company. The various pin lengths recommended by a number of insulator manufacturers are given and the different manufacturers' insulators and pins are fully illustrated and described.

National Tube Company, Pittsburgh, Pa., exhibited a series of three industrial motion picture films illustrating the manufacture of pipe, from ore to finished product, at a meeting of the American Institute of Electrical Engineers, West Lynn, Mass., on Dec. 20, 1916. These pictures were taken under the direction of the company after eight months' work and at an expenditure of several thousand dollars. These films start at the Mesaba ore ranges in Minnesota and follow the ore, step by step, until it is shipped out as finished pipe.

Chicago (Ill.) Pneumatic Tool Company has issued bulletin No. 263 on its Boyer railway speed recorder. This machine consists of a rotary pump, a cylinder and a piston. Oil is used as a circulating medium, the pump chamber and the cylinder being entirely filled. By examining a chart which pulls around a drum in the upper part of the machine, the exact speed at which the train passed any point on the road, the number and location of stops, the distance, speed and location of any backward movement that may have been made can be determined at a glance.

Grip Nut Company, Chicago, Ill., has issued a bulletin of a recommended process in using grip nuts. A number of tables are given showing the economy of using grip nuts in lieu of double nut process, another showing the economy of using grip unit nuts in lieu of United States standard nuts and grip nuts, a third table showing the economy of using grip holding nuts in lieu of United States standard nuts and grip nuts. Grip nuts are used on draft rigging, box and column bolts, side rods and frames, frogs and crossings, air brake equipment, brake beams and brake beam hanging poles.

J. G. Wilson Corporation, Norfolk, Va., is distributing catalog No. 34½, which describes and illustrates its rolling doors, shutters and partitions in steel and wood. This eighty-page catalog shows a number of street railway car-houses equipped with interlocking slat rolling steel doors. Among these are the Cleveland Street Railway, Cleveland, Ohio, Pittsburgh Railways, Mount Washington, Pa., and the Washington & Alexander Railway, Baltimore, Md. The doors are operated with standard chain hoists and are equipped with improved automatic release, controlled a fusible length by means of which the doors close automatically should the temperature reach 150 deg. Fahr.

General Electric Company, Schenectady, N. Y., has issued bulletin No. 44417, describing and illustrating its GE-258 ventilated commutating pole railway motor. This motor was designed especially for light-weight, one-man cars, and is built in two types, one being suitable for 24-in. wheels and a 4-in. axle diameter, the other being built for 30-in. wheels and a maximum of 4½-in. axle. Both types have an hourly rating of 25 hp. on 600 volts. The motors are designed to use a maximum gear ratio which will give the car speed necessary to maintain the usual city schedule. A number of tables given indicate the capacity of this motor and will assist materially in determining whether this motor is suitable for any desired schedule.

Hall Switch & Signal Company, 30 Church Street, New York, N. Y., is distributing bulletin No. 20, which describes and illustrates its new highway crossing signal and its Universal crossing bell. The signal is of the wigwag type, which gives an oscillating movement on either side of the center. Should the apparatus from whatever cause become deranged, the danger or stop indication is automatically displayed. The bell, which can be mounted on the top of a 4-in. iron post, strikes approximately three times a second, which gives a more effective warning than that given by a gong struck at a more rapid rate. This equipment has been generally installed on railroads in connection with automatic block systems and for highway crossing protection.