Electric Railway Journal

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Communication from General Harries

New York, April 12, 1917.

To the Editors:

Please announce in your columns that complete arrangements have now been made by which the Council of National Defense looks to the American Electric Railway Association for all information as to electric carriers. Conferences are being held with the Quartermaster Department of the Army as to tariffs and transportation matters generally. In the interest of efficiency, electric railway companies should address all communications with respect to national defense to E. B. Burritt, secretary American Electric Railway Association.

George H. Harries,
Chairman
Committee on National Defense.

HIGHER REVENUES NEEDED

Although overshadowed by the onrush of international events, the question of adequate transportation revenues is to-day of great importance throughout the whole country. The steam railroads, with their expansion limited by economic conditions very similar to those which face the electric railways, are making a concerted effort to secure general increases of from 10 to 15 per cent in freight rates. With higher expenditures for materials, fuel, supplies, taxes and wages, the railroads have in general been placed in the position of having decreasing net receipts with increasing gross business. And it is not to be supposed that this situation will be improved under war conditions. The outlook for real growth, therefore, is dark, unless the carriers are allowed to charge rates sufficient to meet the rising costs of operation. The electric roads are fully as seriously situated, and as they have already proved the necessity of a 6-cent fare under peace conditions, they should certainly be permitted to charge it under war conditions, just as we trust the plea of the steam railroads for higher rates will be granted. The country as never before needs those good transportation facilities which only solvent corporations can supply.

SIX-CENT FARE POSSIBLE FOR PHILADELPHIA

Director Twining, as we noted last week, admits that a 5-cent fare with universal transfers will not meet the demands of such a unified surface and rapid-transit system as has been contemplated for Philadelphia. This being so, two courses are open—to limit the present new construction or to provide for increased revenues. It may be that part of the work now contemplated can easily be postponed, but this does not afford a permanent solution of the problem. Moreover, the modern city needs rapid transit, and the idea of practising self-deprivation along this line in order to maintain a 5-cent fare limit is neither far-sighted nor public-spirited. Philadelphia, as it happens, is in a good position to put a dent in the "sacred" nickel. To take care of all the deficits estimated by the engineers, Ford, Bacon & Davis, only one of two means can be utilized—making a heavy increase in taxation, or charging a rate of fare to cover the cost of service. Under the first method the burden would fall upon the owner or renter of real estate rather than upon the passenger—a condition that would probably be opposed in Philadelphia because of the unusually large number of home owners. Again, owing to a State law any municipal bonds which are self-supporting need not be included in the municipal debt limit. For these reasons the question of an adequate electric railway fare ought to be, and we hope will be, faced squarely in Philadelphia.

FUEL ECONOMY UNDER ELECTRIC OPERATION

To those who have followed the development of steam railroad electrification since the time when all discussion was based upon pure theory, the data on actual operating results that are now becoming available provide material for many interesting "post mortems." One such case in particular appears in the much-challenged prophecy made some years ago by W. S. Murray to the effect that the ratio of coal consumption by steam locomotives to that of electrically driven equipment would be in the ratio of at least 2:1. This, as we recollect it, was a large mouthful for even the enthusiasts to swallow, yet the figures for the Chicago, Milwaukee & St. Paul's electrified divisions that were published in a recent issue indicate that the statement was really conservative. These records show that in passenger service, 188 lb. of coal were required per train-mile under steam operating conditions as against 29.1 kw.-hr. per train-mile with hydroelectric power. For freight service the corresponding figures are 276 lb. of coal and 39.4 kw.-hr. per 1000 ton-miles. The coal in question is generally lignitic in character, but a somewhat better quality is available over the western part of the electric zone than on the eastern slope of the mountains, the average value approximating 11,000 B.t.u. per pound as burned. Since an over-all twenty-four-hour thermal efficiency of 12 per cent is regularly reached by modern power stations, 1 kw.-hr. in a station using this

fuel should require 2.6 lb. of coal. The recorded energy consumptions of 29.1 kw.-hr. per passenger train-mile and 39.4 kw.-hr. per 1000 freight ton-miles then correspond to respectively 75 lb. and 102 lb. of coal under conditions of electrical operation. When compared with the record for coal-consumption under steam, the figures give ratios of 2.5:1 for passenger service and 2.7:1 for freight service, exceeding materially the ratio that was considered too high in the early days of electrification.

GETTING MORE OUT OF THE POWER PLANT

Several of the articles in this issue of the Electric Railway Journal are devoted to the design and operating problems of the steam power plant, especially to those of the so-called "auxiliaries." The boilers, with their furnaces, the engines or turbines, and the electric generators are the fundamental parts of the plant. Associated with them are numerous devices which contribute largely to making their operation effective. Coincident with the development of the basic equipment has been that of the auxiliaries, so that a modern plant is a great and almost automatic machine for turning the energy of coal into that of the electric current. The labor element has been reduced to very reasonable proportions by the substitution of mechanical devices, and it is a primitive plant indeed in which human labor is employed where much cheaper energy can be used. The present and prospective scarcity and expensiveness of labor furnishes an added incentive for the installation of these devices.

One of the notable results which has followed the use of such apparatus as that for coal and ashes handling, which is described in two articles this week, and of the efficient modern prime movers having great output per ton of weight, has been the bringing nearer together of the cost of coal and of electrical energy. In early plants the fuel item was comparatively small in the list of operating costs. Now it is the dominating element, and its position at the head of the list is firmly established if present coal prices continue. In other words, the cost of transforming energy from one extreme form to the other is becoming relatively very much less than it formerly was due to the mechanical and thermal perfection of the transformations.

This result is remarkable when one considers the complication of these transformations and the many possible sources of loss. To be sure most of the energy still goes out through the condenser circulating water and the chimney rather than the switchboard, but until some new process of getting energy direct from coal is discovered these losses are inevitable. The preventable losses, such as radiation, those due to excess flue temperatures, cylinder condensation and the like have been largely eliminated. In the meantime the men who are "making the wheels go round" should have the support of the management in their endeavor to get every possible kilowatt-hour out of every ton of the precious mineral with which they are feeding the capacious maw of the boiler room.

HOW THE RAILWAYS CAN HELP

Everyone should realize that a country engaged in war is in danger of man famine. With part of the able-bodied population under arms and another large part engaged in the manufacture of military supplies, every effort should be made to utilize the productive labor energies of the nation to their fullest extent. Every man engaged in useless work means fewer at the front, or on the farm, or in munition factories, or in transportation service, or otherwise engaged in the defense of the nation. Just as there must be economy in the consumption of food and in all expenditures of money, so there must be efficiency and economy in the use of labor in all industries.

For electric railways this does not mean a reduction of their transportation service because electric railway transportation has been recognized by the war department as an important factor in its plan for national defense, but it does mean that every company should study how it can make its labor most efficient and how it can relieve for military duty any of its men who may be called to the colors. We have previously referred to the possibility of using women in many places where men are usually now employed, and it is interesting to record that the American Gas & Electric Company has already found that under certain conditions women make good substation attendants. One-man cars, in many cases, also offer an opportunity for retrenchment in our national resources, not only because they will relieve both the man conductor and his woman substitute, but also because they will provide a means by which the companies can reduce expenditures in these serious times.

Several electric railway companies have already announced that the unused land along their rights-of-way and elsewhere will be available for farming this summer. As much of this property is near cities, its cultivation may be of material help in adding to the necessary food supplies. Other companies have already volunteered to the government secret service department the co-operation of the railway's confidential organization. Car conductors are in an excellent position for reporting unusual or suspicious events, and arrangements could well be made for receiving such reports through one man at the head office.

Another suggestion to electric railways, borrowed from experience of both the British and Canadian tramways, is co-operation with the military authorities in recruiting by the operation over the lines in the evening of illuminated cars with bands and recruiting posters. Still another suggestion, also from our British allies, is for the medical and clerical staff of the railway to assist the authorities in the examination and enlistment of recruits. As the physical requirements for employment on most electric railway companies are as high, if not higher, than those of the government for military service, co-operation of this kind should be of value to the present emergency. In some British cities a very considerable part of the military medical examinations were conducted by the tramways.

"TOO MUCH PUBLICITY ABOUT PUBLICITY"?

A correspondent of the ELECTRIC RAILWAY JOURNAL recently asked an officer of an important public utility company to give this publication details of its methods of obtaining publicity. That officer seemed doubtful of the wisdom of saying much, observing, "There is danger of there being too much publicity about publicity." The same idea has been expressed by others. This particular officer seemed to feel that publicity involved personal relations, friendship and other processes which could not be ventilated to advantage. Such an attitude of mind discloses, in our judgment, a fatal misconception of the meaning of publicity. Any plan of attempting to secure publicity, the details of which plan cannot themselves be made fully public, is nothing more or less than an attempt to "put something over."

If a lawyer was presenting his case to a court and expected to obtain justice in that court, yet maintained such relations with judge and jury that the details of those relations could not stand being publicly known, that lawyer might very easily take the position that there could be "too much publicity about 'justice.'" If, on the other hand, his methods were open and above board, and he was seeking only to present the facts to judge and jury and to obtain no unfair advantage over either his adversaries or over the court itself, that lawyer could have no objection to every possible fact concerning the methods of obtaining justice being made known.

Publicity is a science, a fine art, if you will. The beginning and the end of Publicity is an appeal to public opinion. Such an appeal, above all else, must be sincere and frank, not only in the appeal itself, but in every detail with which the appeal is presented. Unless every detail of the effort can be made known, the appeal itself is apt to be futile. Publicity must itself be public; it must be absolutely open and above board. With all the cards on the table, no one can suggest that the game is not being played fairly, and that the public utility company so playing it ought to have a fair show.

But, some people urge, it might not look so well if the public knew we were cultivating the friendship of editors and others in order to induce them to treat of our affairs in a friendly way. Why not, if your effort is only to get what is right and just? If you are trying to obtain a friendliness of treatment the facts will not warrant, the effort ought not to be made any way.

The ELECTRIC RAILWAY JOURNAL believes and has for long believed that the American people are fair. It believes the street railroad companies have a strong case to present to the public, a case demanding relief from burdensome obligations, a case demanding constructive assistance in many directions. There are, of course, some small, possibly weak, links in the big chain, but fundamentally the case is sound. It is sound because the present comfort and convenience of the public is so vitally dependent upon the very present health and prosperity of electric railway companies.

So many companies are afraid of their past. Why not face facts as they are, and make the public see them as you see them. You, a manager, believe yourself to be doing the best you can. You know the difficulties and the weaknesses, but you know the way the scales balance. Let the public know the case as you know it, in all its fulness—and you can rely upon public support to just the extent that your position is in fact sound and deserves public support.

The world is in a melting pot. Precedents, traditions, old-fashioned points of view are being discarded. If the street railroad and the public utilities are to be saved, as saved they must be, they must go—over the heads of lawyers, courts and commissions—to the people.

Trust the people. That is the surest way to make them trust you, and if you can make them trust you, you will have made your foundations really secure.

SALE OF POWER BY THE INTERBOROUGH

A most interesting power contract was signed when the Brooklyn Rapid Transit Company agreed to purchase the energy for the operation of its Manhattan subway lines from the Interborough Rapid Transit Company. Some details of this contract were published in the issue of this paper for March 10. The bid of the Interborough was not only the lowest of those submitted but, so far as we know, it was lower than the price of steam-generated energy furnished anywhere by a power company to an electric railway. The railways in Chicago have a very reasonable rate from the Commonwealth Edison Company, somewhat less than 8 mills per kilowatt-hour in the latest period covered by the last report of the Board of Supervising Engineers, Chicago Traction, but the Interborough contract is for 7 mills for a.c. power under definite conditions of load factor, annual energy consumption and price of coal. The difference of a mill in price is a matter of considerable import when one considers the quantities of energy involved. In the New York case, for example, where 100,000,000 kw.-hr. will soon be consumed annually, this difference represents $100,000 per year. The load factor specified in this case is 42 per cent, which is considerably lower than the average in Chicago, indicating still further the reasonableness of the price to be charged.

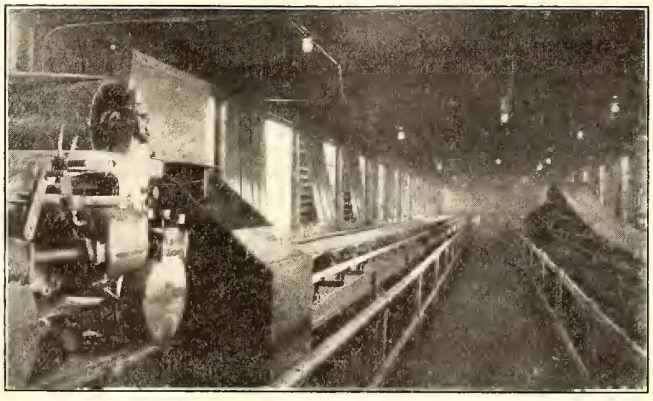
The question naturally arises as to why the Interborough can make such a low price on this business. The circumstances are, of course, too complicated to permit of a simple answer. We note, however, that the railway has stated that it does not expect to make any considerable profit on the transaction; in fact, in estimating the cost of producing the extra power only the additional operating costs and fixed charges made necessary by the increased business were included. In other words, the price is what may be termed an "increment price." It can hardly be taken, therefore, as a criterion for comparison with other charges, including those made by the competing central power companies. It furnishes, however, a datum of reference as to the actual cost of producing additional power in plants of the most modern design, with the largest and most economical units.

Methods for Handling Coal and Ashes

Typical Equipments Are Those in the Power Plants of the Norfolk & Western Railway, the Springfield (Mass.) Street Railway and the Buffalo General Electric Company

THE reception, storage and distribution of coal, and the collection, storage and disposal of ashes are the source of some of the most interesting problems connected with steam power. This is true because there is no standard method of handling these materials and each plant possesses individual characteristics of site, general layout of equipment, etc. There are available, also, a number of devices for handling coal and ashes, such as bucket and belt conveyors, hoists and industrial railways.

As typical of recent practice in this field three power plants have been selected to indicate ways in which some engineers have solved their coal and ashes handling problems. These are the plants of the Norfolk & Western Railway at Bluestone Junction, W. Va., the Springfield (Mass.) Street Railway and the Buffalo General Electric Company. They were selected to show radically different plans adopted in stations of widely differing size and design.



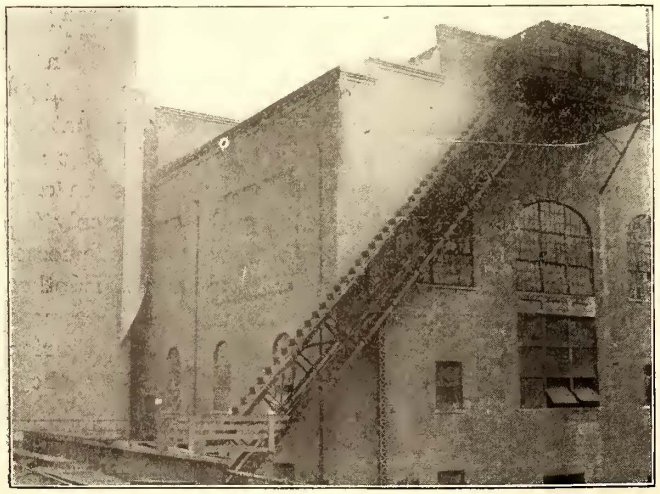
COAL AND ASHES HANDLING—COAL CONVEYING AND DISTRIBUTING APPARATUS, TONAWANDA, PLANT

THE NORFOLK & WESTERN PLANT

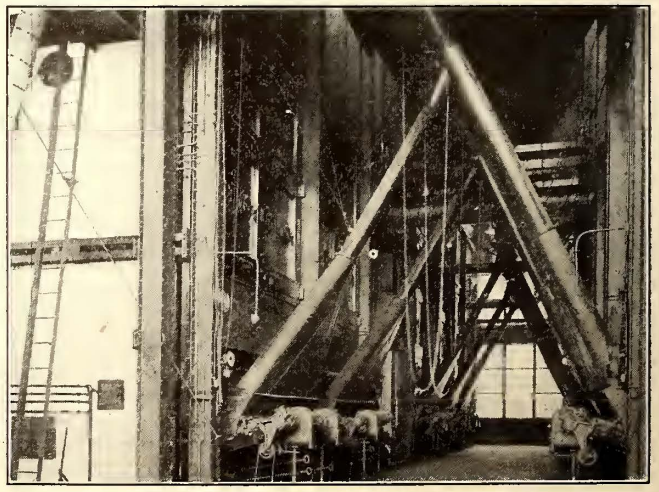
In the Norfolk & Western plant the coal is received in hopper-bottom cars on a siding along one side of the power house, as shown in the illustration below. The cars discharge run-of-mine coal into a 16-ft. x 24-ft. structural steel hopper under the tracks. Below the hopper are a reciprocating feeder and a single-roll crusher which empty into an inclined conveyor of the continuous bucket type, having a capacity of about 60 tons per hour at a speed of 80 ft. per minute. This conveyor elevates the coal about 60 ft. at one end of the boiler room and discharges it into a horizontal distributing conveyor. This conveyor extends longitudinally through the boiler-room monitor and is of the traveling scraper type, having 18-in. x 8-in. flights of ¼-in. steel plate. The coal is distributed to the storage bins by means of nine hand-wheel operated gates.

The two storage bins, of the steel suspension type, are made of ⅜-in. open-hearth steel plate, and are suspended above and between the boilers from the building girders. Their capacity is approximately 350 tons. The coal-handling machinery is driven by motors, the crusher motor having a rating of aproximately 35 hp., the inclined conveyor motor, one of 15 hp., and the horizontal conveyor motor one of 10 hp. The coal is delivered to the stokers by means of round chutes made from ingot iron plates. These chutes have spreaders on their ends evenly to distribute the coal over the stoker magazine. The bunker is fitted with undercut gates of cast iron operated from the boiler-room floor by hand chains.

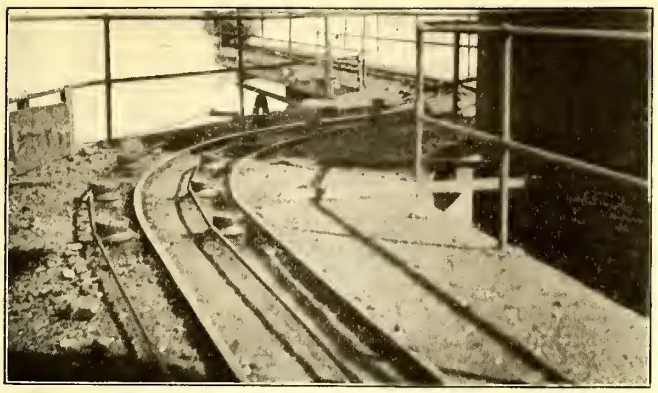
The method used in removing ashes is as follows: A narrow-gage track is located under each row of ash hoppers in the boiler-room basement. Steel platform cars carrying two buckets of 1 cu. yd. capacity each are pushed along these tracks and loaded by gravity from the ashpit hoppers. They are then run outside the boiler-room basement to a loading trolley, shown in an illustration on page 679. This is about 110 ft. long and can accommodate three gondola cars on each track. The buckets are lifted from the small platform cars and emptied into the gondolas by means of a traveling elec-



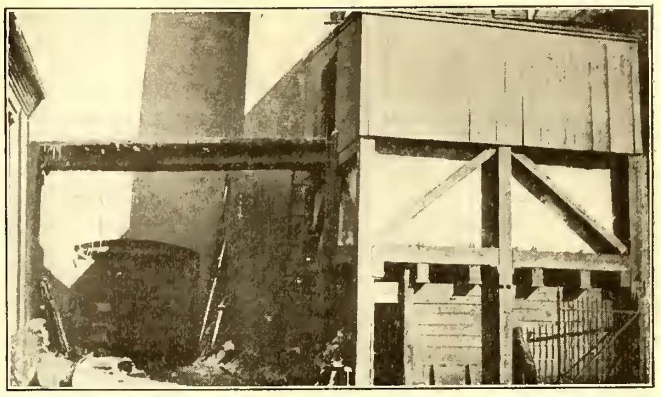
COAL AND ASHES HANDLING—CRUSHER AND BUCKET CONVEYOR, N. & W. RY. PLANT



COAL AND ASHES HANDLING—SUSPENDED COAL BUNKER AND CHUTES, N. & W. RY. PLANT



COAL AND ASHES HANDLING—COAL BRIDGE FOR CABLE CAR, SPRINGFIELD PLANT



COAL AND ASHES HANDLING—ASHES HANDLING BRIDGE AND RECEIVING BIN

tric hoist. Each hoist can handle a working load of 3000 lb., the vertical elevating speed being 30 ft. and the traveling speed 200 ft. per minute. The hoists are controlled from the ground by means of operating arms carried on outriggers. The buckets are of the self-dumping self-righting type. The present installation comprises four of the platform cars and two traveling electric hoists. The entire coal and ashes handling equipment was supplied by the R. H. Beaumont Company.

Industrial Railway a Feature at Springfield

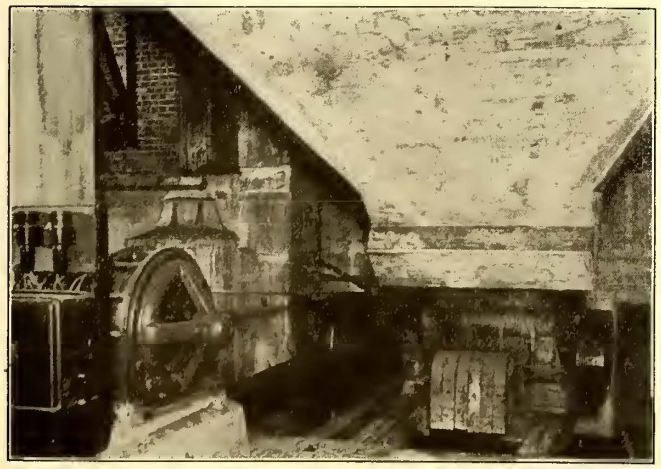
The Margaret Street station of the Springfield Street Railway is located on the east bank of the Connecticut River about 1 mile south of the business center of the city. Its equipment consists mainly of direct-current, engine-driven generators, although 600 kw. in inverted rotaries is in use to supply alternating current for outlying substation distribution service. Between the plant and the river is the right-of-way of the New York, New Haven & Hartford Railroad, which is a factor in limiting the immediate storage capacity for fuel to about 1000 tons. This is provided in a triangular-shaped yard just outside the old boiler room of the station. A reserve coal yard of about 3000 tons capacity is located near the station on the north side of Margaret Street.

This installation of coal and ashes handling equipment was made by the C. W. Hunt Company. It has a capacity of 50 tons per hour and includes a complete mechanical plant for taking the coal from the track hopper to the bunker over the boilers, with motor-driven crusher, conveyor and bucket elevator and cable dump car.

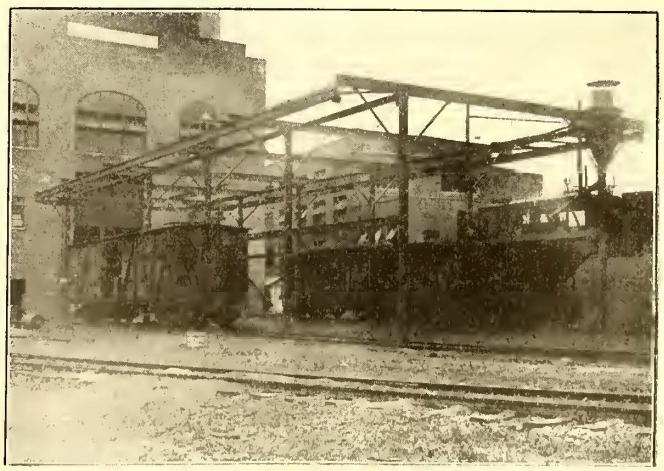
Coal is dumped from cars on a railroad siding into a track hopper and crusher immediately below, the latter being driven by a 25-hp. motor. From the crusher, a bucket conveyor driven by a 50-hp. motor carries the coal on a horizontal run of about 50 ft. to the base of a steel-frame tower, whence the buckets elevate the coal to a height about 50 ft. above ground. The buckets are 15 in. deep, with an average length of 18 in. and an average width of about 16.5 in. These discharge at the top of the tower into the hopper of a set of 10,000-lb. Howe registering scales before delivery into the cable car leading to the overhead bunkers. Coal to be stored in the yard is discharged from the upper part of the tower through 12-in. diameter iron spouts hinged at the top and covering the storage yard area. Several pictures are shown to give the details of the tower and of other features of the equipment.

The cable car has a capacity of 3200 lb., and runs from the tower to the bunkers in the boiler house over a truss bridge about 150 ft. long. One of the illustrations is a view of the top of the bridge, showing the car just returning from the bunkers. The car runs on a track of about 20-in. gage and is equipped with an automatic dumping trip. The cable mechanism is driven by a 7.5-hp. motor mounted in the tower, and the car makes the round trip to and from the bunkers without attendance except that a tower operator looks after the scale records, fills the car and releases it, starts and stops the cable and has general charge of the coal handling. An adjustable trip on the track at the bunker controls the automatic discharge of fuel from the car. The bunker capacity is 300 tons.

Normally this equipment is operated about six hours per day. In winter eight men are employed in coal and ashes handling, exclusive of fireroom service. Four



COAL AND ASHES HANDLING—COAL CRUSHER AND MOTOR, TONAWANDA PLANT



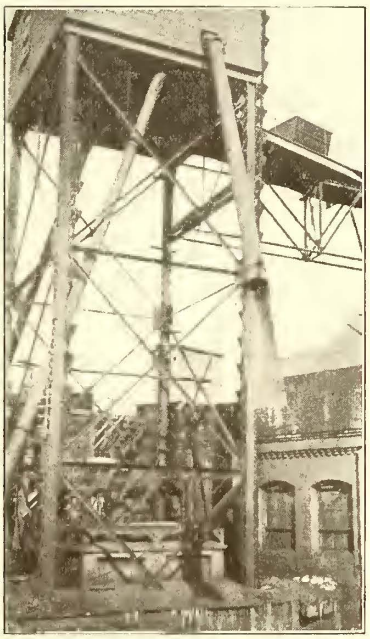
COAL AND ASHES HANDLING—ASHES REMOVING EQUIPMENT, N. & W. RY. PLANT

shovelers and ashes handlers are required, and one man devotes his entire attention to the operation of the crusher and conveyor during the hours of operation. The foreman of coal handling attends to oiling gears, shafts, cams, etc., daily and oils the bucket chain weekly.

Ashes are effectively handled in this station by discharging them from the boiler ashpits into a hopper car in the basement, which is run to an elevator and thence by a short overhead bridge to an exterior ash hopper. Teams or trucks receive the ashes from the hopper by gravity.

Belt Conveyors Used at Tonawanda

In the new 210,000-kw. plant of the Buffalo General Electric Company at Tonawanda, N. Y., coal is at present delivered by rail with a temporary storage maintained by means of locomotive cranes working upon trestles. The coal-handling system within the station was installed by the Mead-Morrison Manufacturing Company. A standard-gage track runs through the station parallel to the north wall. Cars may be dumped two at a time on this track, the coal falling into hoppers below the boiler-room floor level. Each hopper has a capacity of several carloads. A set of track scales is located just outside the building. Below the hoppers are duplicate installations of crushers discharging into bucket elevators, one for each crusher. Each crusher is of the duplex single-roll type, belt-driven by a motor, and is capable of crushing 200 tons of semi-bituminous coal per hour from run-of-mine size to 2 in. Each elevator is motor operated and is capable of lifting 280 tons of coal per hour approximately 135 ft. from the crushers to a belt conveyor above the coal bunkers. One belt conveyor, 30 in. wide and 200 ft. long, is provided for each elevator, a traveling tripper being provided with each conveyor to distribute the coal evenly.

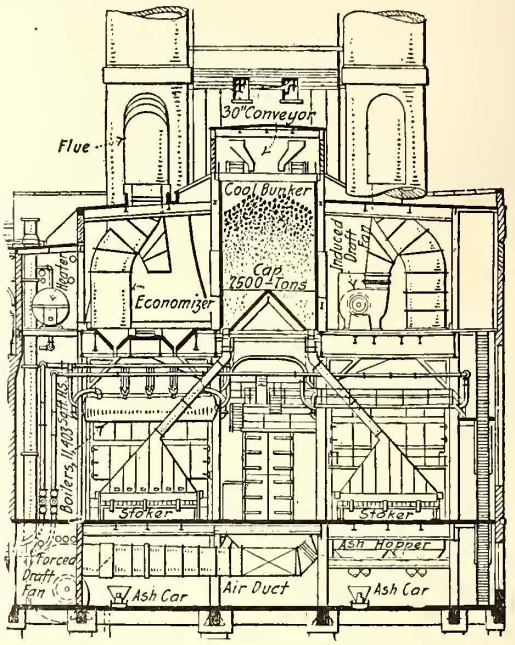


COAL AND ASHES HANDLING—COAL TOWER AND BUCKET CONVEYOR, SPRINGFIELD PLANT

The belt conveyors shown in one of the illustrations are motor driven, and push-button control is provided at four points along the runway beside each conveyor, so that in emergency the belt conveyor, bucket elevator and crusher feeding that conveyor can be stopped. An automatic device prevents the bucket elevators from traveling in the opposite direction in case power is shut off. In the coal-handling bay of the station crane rails are provided for a future traveling coal unloader to be operated above the coal cars to shorten the time of unloading when necessary. Ultimately a modern coal yard with traveling bridge crane and a storage capacity of at least 50,000 tons will be provided, and this will be connected with a coal-handling wharf on the Niagara River by traveling belt conveyors fed from hoisting towers designed for barge unloading.

Coal is fed into the stoker hoppers from a central overhead bunker of 2500 tons capacity through inclined spouts flaring into outlets over the hoppers. A cross-section of the boiler house is reproduced to show this feature. The boilers are set with firing aisles running crosswise of the station, which enables both ends to be readily fired from one central bunker.

Ashes are to be used for filling land about the station for some time to come. These will be removed from hoppers in the basement beneath the furnaces by rocker dump cars of 80 cu. ft. capacity, running on 24-in.-gage tracks and hauled by a 3-ton, double-trolley, direct-current mine locomotive built by the Jeffrey Manufacturing Company.



COAL AND ASHES HANDLING—CROSS-SECTION THROUGH BOILER HOUSE, TONAWANDA PLANT

Cash Boxes Kept in Power Station Vault

The Vicksburg Light & Traction Company, Vicksburg, Miss., of which O. H. Simonds is general manager, operates twenty cars and uses the Cleveland locked type of fare box. The locked coin sections are removed from the cases at the end of the runs at night, are emptied during the night and returned to the cars before the morning runs.

The power station of this road is located adjacent to the carhouse, and when the cars are turned in at night, the locked cash boxes are delivered to the night engineer of the power station. He stores the boxes containing the receipts in a vault built under the concrete steps leading down into the power station. These steps are inside the power station building. A steel door has been built in the vault and a long steel chute leads into one side of this fireproof compartment. The cash boxes as removed from the cars are slid down this chute into the vault. In the morning the company's collector opens the vault, removes the cash, and the boxes are then placed on the cars ready for the early morning runs.

By this method the company is enabled to have the cash turned in to a man who is on duty all night, and who stores it in a place which is especially safe.

A concession has been granted by the city of Madrid, Spain, for the construction and operation of an underground electric railway system to cost about $6,000,000. The subway will be 8.7 miles long.

Practical Results in Publicity Campaigns

Personal Touch Is the Real Miracle Worker—This Is Illustrated by Means of Two Incidents Which Tell Their Own Story

By CHARLES T. HEASLIP
New York City

The following incidents are typical of what is going on to some extent on all public utility properties. Personality plays an important part in the conduct of their business. The case of Bancroft shows what personality can accomplish; that of Smith shows clearly that dividends are not all that a company needs to earn.

IN the issues of this paper for Jan. 27, 1917, page 153, and Feb. 24, page 346, the writer gave the results of some of his experiences which showed how some managers had dealt with politicians and others, in the main successfully. The following two incidents have been selected to bring out the importance of the personal touch in management work.

A Manager With the Personal Touch

Working for one of the big syndicates that owns the lighting and traction properties in a dozen different cities is a general manager who is the original human dynamo. He generates energy so easily and always has so much in reserve that last year, when his stockholders acquired a new street car and lighting company in a town 100 miles away from his, they turned it over to him to manage instead of looking around for an individual executive for it.

At the same time they increased his salary from $6,000 a year to $12,000, so that in so far as executive expenses were concerned the placing of the dual city properties under one management represented no saving.

But public utility syndicates are not in the habit of paying two men's salaries to one man without having good reason to believe that the additional expenditure will be justified by the results. The directors in this particular syndicate knew what Bancroft had done in one town, and when he told them that he could do it in two by splitting his time between them they believed him. To-day he is operating combination properties that are admiringly spoken of in the public utility field as "humdingers."

Ask his directors what the secret of his remarkable success is and they will rise as one man and say, "Personality!" Ask Bancroft himself and he will chuckle, "Personal touch!" Both are right. Bancroft has as much personality as one "T. R.," and when it comes to finding out what the people want and giving it to them he is every whit as great in his field as the gentleman with the teeth and the horn-rimmed spectacles is in his. He knows his public forward and backward, coming and going—and it supports him to a man.

There are other public utility executives who have studied the public as diligently as this man, but they have made hard work of it and their progress has been slow. Bancroft, however, has a sense of humor. To him, studying folks is just one continuous cabaret show. Yet from all his whimsical observations come deductions as unerring as those of Sherlock Holmes, and as positive in their power to produce a solution of the problem at hand.

"Have you ever given any thought to the momentous question of why people cuss trolley cars?" he once asked me.

"Your cars, or trolleys in general?" I inquired.

"Both," he said, with a twinkle.

"Well," I ventured, recalling an experience of my own that morning, "when one is in a hurry, one usually manages to just miss a car, and its retreating back platform offers an irresistible target for invective."

"Right!" he cried, delightedly. "There are probably a hundred other reasons just as common and just as illuminating, but when you sum it all up it gets down to this:

"When a person is feeling out of sorts, a trolley car is one of the most available and tempting subjects for plain and fancy cussin' that exists. And therein lies a problem that cannot be solved by good service alone."

"What is the solution then?" I asked.

"Keeping in constant touch with your patrons and never letting any kind of a complaint—even the most ridiculous—go unsettled. In other words, never let a grouch remain a grouch if his grouch is directed against you.

"It's not difficult," he continued. "Less than 1 per cent of the 'kickers' ever have a grievance that seems real enough to bring them down to the office with a complaint. But when they do come down we never let them go away with a grouch against us."

If that sounds too idealistic to be true, consider this incident which occurred in Bancroft's office one day while I was present.

A "kicker" of the type that is hardest to handle, the theorist with ideas, came in and explained that he and "a lot of other patrons of the street car company" had difficulty in reading the platform signs that marked the destinations of the various cars.

"The letters are too small," he said, frowning severely at the general manager. "I would suggest that you eliminate the lettered signs entirely and signify the cars' destinations by large numerals, say, 2 ft. high, hung from the front platform. 'No. 1' could mean 'City Hall,' 'No. 2' 'Branch Park,' 'No. 3' 'Terrace Garden,' etc."

"All right," said Bancroft, cheerfully. "We'll put it to a public vote. I'll tell the newspapers about your idea and ask them to request each of their readers who favors it to send me a letter to that effect. If I get a hundred letters I'll put it through."

The idea was put up to the newspapers and well advertised, but fewer than twenty letters concerning it were received, and more than half of these stated that the writers were opposed to "freak stunts," and that the present method of identifying the cars was perfectly satisfactory. As the town had a population of 35,000 the theorist had to admit that his idea wasn't receiving enough public support to warrant its adoption. But he did not feel at all unfriendly toward the company. Instead, he transferred his grouch to his fellow townsmen who were so unappreciative of the "betterment" which

he had suggested and "which Mr. Bancroft had treated so courteously."

Bancroft does not limit his missionary work to the "kickers" who take the trouble to come to his office. He rides upon the cars himself, and when he bumps into anyone who is voicing some unfavorable sentiment against the company he promptly gets busy. One afternoon he was riding on one of his suburban lines which is only single-tracked and on which delays sometimes occur at the turnouts. At one of these turnouts the car in which he was riding was held up for eight minutes, waiting for the southbound car to come along and pass it. Seated next to him was a nervous, irritable man who was in a hurry and who simply could not contain his opinion of the traction company after the wait had passed the four-minute stage. Summarized and passed by the board of censors, his opinion was that the company gave the rottenest service in the whole United States.

"No, you are wrong," said Bancroft, with a smile. "Our other company down in Parkerville gives even worse service."

"Who are you?" demanded the irritable one.

"I'm just general manager of the line you've been cussin'," was the cheery reply. "But that's all right, my friend," he hastened to add, as his companion colored and started to explain that minutes were precious to him just then, "I don't blame you a bit. Delays like this do get on one's nerves. But as soon as we get our double-tracking franchise through we won't have any more of them."

And then he proceeded to tell the man all about the improvements that were going to be made, with the net result that when the car finally got downtown his companion forgot all about how precious the minutes were and insisted upon pledging friendship with him over a julep at the Commercial Club.

To help him in his missionary work Bancroft has built up a splendid staff of subordinate officials on each of the properties which he manages. There is not a department head in either of the traction or lighting companies who has not absorbed some of the Bancroft spirit. The result is that he has a compact organization that is working day and night to make friends for the companies. Their motto is, "Keep the public contented!" and they live up to it. All of which makes it comparatively easy for him to get any reasonable favor he wants for his companies from the people, because a contented public will never fight a public utility that it knows is "on the square."

A Manager Without the Personal Touch

But, by the same token, it is mighty difficult for a general manager to convince the public that he and his company are "on the square" when he will not go out of his way to make friends with them.

In another section of the country is one manager who has never learned that fact. He, too, manages both a traction and a lighting company, and is one of the most conscientious workers in the public utility field. But he is continually in hot water. Recently he almost lost a franchise for his street car company because of an enmity that he had stirred up more than two years ago with one of his lighting consumers. The incident responsible for his trouble was a simple affair, but is typical of the molehills that frequently assume mountainous proportions for the public service official who is "shy" on diplomacy.

Smith, the general manager in question, was so loyal to his stockholders that night after night he would work overtime, riding around town in his automobile watching the number of lights his consumers used and estimating what their monthly bills should amount to. Every time there was any marked discrepancy between his estimate and the amount registered by the meter he would send one of his inspectors up to test the meter and see if it was registering correctly. It must be stated in all fairness to Smith, however, that he would call for these tests just as promptly when his estimates tended to show that the consumer was getting the worst of it as when they tended to show that the company was being cheated.

One day he sent an inspector around to the home of James Black, one of the biggest and most influential business men in town.

"Black's meter doesn't seem to be registering half the juice he is using," said the general manager. "I've been riding past his house every night for two weeks now and he's had every light in it blazing, yet his bill for October is only $1.08. His meter is skinning us out of at least $1 a month."

Sure enough, a test showed that it was. It had rusted inside and was running slow. A new meter was substituted and in accordance with the figures on its dial the following month Black's bill jumped to $2.40. Whereupon Black came around to Smith's office and raised a rumpus. Smith could probably have explained things satisfactorily if he had taken the trouble to show Mr. Black his old meter, which was rusted so badly that even a layman would understand that it could not register properly. But he chose, instead, to "pacify" Mr. Black in this fashion:

"You ought to be glad that we are not charging you for the electricity that you used but that your old meter didn't register. But that's the way with you fellows. You take advantage of us as long as you can, and then when we call the turn on you, you get ugly. Gosh hang it! You'd kick if we were giving you the current for nothing!"

Naturally, Mr. Black left the office madder than the proverbial wet hen, and when the traction company's franchise came up on a referendum vote later it was he who led the fight against it.

Smith used the same undiplomatic methods in dealing with his street car patrons. I was in his office once when a woman rang up to inquire about an umbrella which she had left in one of the cars.

"So you left it in the car, eh?" he bawled through the telephone. "Well, that's the way with you women. You're always leaving something behind you. Go down to the carhouse to-night, and if it was found by the conductor and turned in you can have it back."

Then, hanging up the receiver, he turned to me and said:

"By gosh! Those women think a street car company ought to provide guardians for them so they won't forget and leave half their belongings behind them. They make me tired!"

It really never occurred to Smith that he had made an enemy out of that woman, and it would have been futile to tell him so. He would not have understood. He had no imagination. Street cars, in his eyes, were merely machines for collecting nickels from the public. He was in charge of those machines, and it was his duty, as he saw it, to see that no nickels escaped. A careless woman with a lost umbrella was just an incident. Smith did not have even enough vision to see that if he insulted her she would probably not only roast him and his company to all of her friends, but in the future would cheat the company out of fares with more feminine zest than ever.

I am sorry that this latter argument did not occur to me as I sat in Smith's office that day. There is just a chance that it might have given him a new viewpoint,

for he was one of the most punctilious guardians of the nickel that I have ever known. His operating expenses were held down to an almost unbelievable minimum, while his gross receipts were always soaring. On the lines that carried good crowds he gave good service. He could see those nickels; they showed on the fare registers. But on the lines where traffic was comparatively light the service was bad, and he kept it so. His vision never extended beyond the nickels in hand.

Smith is still on the job. His stockholders keep him in power because they never have to fight with him to keep expenses down. They know that he makes the "buffalo bellow" before he ever loosens up on one of the new nickels turned in by his conductors. But Smith's stockholders haven't much imagination either. All they see is that the 8 per cent dividends on their holdings are being paid regularly. They fail to see: (1) That the town in which Smith operates is growing rapidly. (2) That public dislike for Smith and his methods are growing proportionately. (3) That some day the public is going to get Smith and the company into a hole, and that it is going to cost them a lot of money before they can clamber out.

When the last-named incident occurs Smith will be dropped from the payroll without compunction and left alone to mourn the ingratitude of stockholders who do not appreciate conscientious nickel-shaving when it comes a cropper.

Famous Old Power Plant Improved

The Niagara Street Plant of the International Railway, Buffalo, N. Y., Is Still Effectively Supplementing the Supply of Niagara Power

TWENTY years ago the Niagara Street plant of the then Buffalo Street Railway figured conspicuously in the columns of the STREET RAILWAY JOURNAL, a predecessor of this paper. Still earlier, in 1891, C. J. Field described it as the latest type of electric street railway practice. In 1894 two vertical Lake Erie engines of 1250 hp. each were added to the earlier equipment of smaller vertical and horizontal engines. These large engines and some of the smaller ones are still in active service. In 1894 a large storage battery was installed to serve as an auxiliary source of energy and this battery is also in daily use, now as then serving the useful function of keeping down the load peaks. In 1898 the power plant capacity was supplemented with about 2000 hp. of Niagara power transformed to direct current in four similar rotary converters. This supply was later increased until at present the output of the old power plant is supplementary to it. The plant is used effectively to keep down the peaks so as to insure the minimum charge for Niagara power, this charge being determined from the peaks in the manner most recently described in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 13, 1913, page 420.

Under the direction of G. W. Dunlap, now superintendent of power and equipment of the International Railway, some improvements have been recently carried out which are resulting in marked economies. The principal ones relate to the boiler plant, but others affect the engine room and battery room. As a result of the introduction of the improvements described in the following paragraphs it is possible to operate the plant with a total of twenty-eight men working in three shifts. The engines are run from six to nine in the morning and from 4.30 to 7.30 in the evening, the battery being partly discharged in the morning, completely emptied in the evening and charged practically entirely from Niagara power between peaks.

As mentioned in the article describing the new Buffalo-Niagara Falls high-speed line, appearing in the issue of this paper for March 3, page 378, the power plant is being enlarged by the addition of a turbo-generator unit to provide some of the additional power required for that line. This is a 5500-kw. Westinghouse unit containing a three-phase, 25-cycle, 11,000-volt generator. It will not only serve the purpose mentioned but will also reinforce the power supply for the Buffalo city lines.

The boiler room contains nineteen B. & W. boilers which were formerly equipped with Roney stokers. To permit forcing, fifteen of these have been equipped with Riley underfeed stokers and the remaining four are now entirely laid up. This change has not only increased the capacity of the plant but has eliminated smoke, which was objectionable in the neighborhood of the plant.

The combined capacity of the newly equipped boilers is 3450 hp. and they can be forced to 250 per cent of rating. Air, taken from the boiler room, is supplied to the furnaces through a 5-ft. x 6-ft. conduit in the floor of the firing aisle, the pressure under the grate being from 4 in. to 5 in. of water.

The air supply is furnished from two Sturtevant multivane fans driven by steam turbines of 113 brake hp. capacity. Either fan has capacity for the entire plant, supplying 55,000 cu. ft. per minute at 6-in, pressure if desired. The fans are 44 in. in diameter and their speed is from 1400 to 1500 r.p.m. The speed is varied through the medium of an automatic regulator controlled by the steam pressure.

The stokers are supplied with unusually large hoppers which serve as a temporary storage. The stokers are driven by two vertical engines. one of which is held in reserve, connected through a chain drive to a line shaft to which the stokers are clutch-connected. The experiment of automatically regulating the speed of the stoker engines under the control of air pressure was tried, but hand operation was found to be preferable. No other changes were found necessary in the boiler room except the enlarging of the smoke flues to accommodate the increased volume of air.

The coal used is Reynoldsville nut and mine-run slack, mixed, which is stored under roof in an old horse barn adjacent to the power plant, having a capacity of 3000 tons. The coal is brought to the plant in hopper-bottom cars at the level of the Niagara River below, being dumped onto a bucket elevator either direct or through crushers as required. From the top of the elevator it takes one of three routes: (1) It can be dumped onto a Jeffreys plate cross conveyor for delivery to the boiler room; (2) It can be dumped at the foot of the leg of an elevator which is used to raise it to the cross-conveyor already referred to, this plan being used for short time storage, or (3) It can be dumped into a storage conveyor for distribution to the storage pile. The last-named is a rope conveyor with 9-in. discs which is also used for bringing the coal out of storage.

The storage battery auxiliary to this plant consists of 286 cells having a capacity of 1300 kw. for one hour, according to the rating of the original builder, the Electric Storage Battery Company. The cells are of the type known as 53 G and the tanks have capacity for eight additional plates. The battery is now maintained by the Gould Storage Battery Company.

In maintaining the battery distilled water was formerly used and a tank car had to be kept in service for use with this battery and others on the system. This expense has been saved recently by installing filters made by the Allen Filter Service Company after tests

which were satisfactory to the battery company. Another improvement in connection with the battery was the installation of circuit breakers on the negative side giving additional protection. There are now three breakers in circuit, one on each side of the battery and one on the positive side of the booster motor. The automatic booster with carbon regulators installed many years ago is still in operation.

City water was formerly used about the power plant for washing boilers and general service. The use of this has been eliminated by installing a tank on the roof of the power plant and an electrically-driven centrifugal pump for raising water from the river level to the tank. For driving the pump an old GE-1000 railway motor was rewound as a shunt motor and belted to the pump. To start and stop the motor an automatic controller was provided, operated in turn by a make-and-break gage connected with the tank. In the engine room a Turner oil filter with a capacity of from 3 to 5 gal. per minute has been installed, and the lighting here and in other parts of the station has been improved by the addition of an automatic switch for throwing the lighting circuit on the main storage battery in case of failure of the regular source of supply.

Steam-Driven Auxiliaries Versus Auxiliary Turbine and Motor-Driven Units

$2,005 Per Year Saving in Favor of Latter Plan as Estimated for Des Moines Station Which Also Supplies Steam for Heating the Company Shops

BY F. C. CHAMBERS
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IN selecting the type of auxiliary equipment for use in the new power house now under construction by the Des Moines City Railway the comparative costs of steam-driven auxiliaries and motor-driven auxiliaries supplied with energy from a small auxiliary high-pressure turbine-generator set were worked out as presented herewith. The apparatus is figured for use with a new 5000-kw. General Electric unit, which will be the present equipment of the new power house to operate in conjunction with a 1000-kw. and a 2000-kw. unit in the present plant adjacent. The final figures show an excess first cost of $9,630 for the motor-driven auxiliary

INITIAL AND OPERATING COSTS OF STEAM AND MOTOR-DRIVEN AUXILIARIES

Initial Costs

	Steam	*Motor*
Circulating pump	$2,440	$2,105
Air pump	1,500	1,900
Condensation pump	1,840	1,600
Piping	500	250
Transformers	690	1,800
Switchboard, etc.	650	2,100
Turbine	..	7,500
	$7,620	$17,255

Operating Costs

General Data:

In the following calculations the data given regarding horsepower required and the water rate of turbines has been furnished by manufacturers of this apparatus and represents a fair average for this class of apparatus:

Total number hours' operation per annum	8,768
Kilowatt-hours generated per annum	24,000,000
Feed water rate per kilowatt-hour (pounds)	21
Pounds coal per kilowatt-hour	3.25
Pounds water evaporated per pound of coal	6
Total pounds feed water per annum	504,000,000
Average temperature of feed water (initial) (deg. Fahr.)	60
Average temperature of feed water (final) (deg. Fahr.)	210
Pounds steam required for heating feed water	73,700,000
Pounds steam required for shop heating	15,600,000
Cost of coal	$1.50
Cost per annum per kilowatt demand	$9.38
Water rate of auxiliary turbine per kilowatt-hour (average) (pounds)	45
Water rate of motor-driven auxiliary per horsepower-hour (pounds)	40
Water rate of circulating pump turbine per horsepower-hour (pounds)	40
Water rate of air pump turbine per horsepower-hour (pounds)	30
Water rate of condenser pump turbine per horsepower-hour (pounds)	60
Water rate of exciter turbine per kilowatt-hour (p'nds)	75
Water rate of stoker engine turbine per horsepower-hour (pounds)	60
Water rate of boiler feed pumps per horsepower-hour (pounds)	75
Water rate of main turbine units per horsepower-hour (pounds)	18

Steam-Driven Auxiliaries

Circulating pump 50 hp. at 40 lb.	8768 hr. lb. steam	17,500,000
Air pump 20 hp. at 30 lb.	8768 hr. lb. steam	5,260,000
Condenser pump 5 hp. at 60 lb.	8768 hr. lb. steam	2,638,000
Exciter 20 kw. at 75 lb.	8768 hr. lb. steam	13,180,000
Stoker engine, 5 hp. at 60 lb.	8768 hr. lb. steam	2,630,000
Boiler feed, 16 hp. at 75 lb.	8768 hr. lb. steam	10,520,000
Total steam per annum from auxiliaries		51,728,000

Total Steam Required Per Annum

Heating boiler feed (pounds)	73,700,000
For shop heating	15,600,000
Total (pounds)	89,300,000
Pounds steam available from auxiliaries	51,728,000
Pounds live steam required from boilers	37,572,000
Pounds fuel required for producing steam for auxiliaries and shop heating	14,880,000
Cost of fuel at $1.50 per ton	$11,160,000
Kilowatt-hours for blowers and miscellaneous auxiliaries, 35 hp. 8768 hours	2,300.00
Cost of current at ¼c. per kilowatt-hour (fuel charge)	$575.00
Maximum kilowatt demand by blowers and miscellaneous auxiliaries	26.25
Maximum demand cost for blowers and miscellaneous auxiliaries	$246.00

Total Cost Operation of Steam Auxiliaries

Fuel	$11,160.00
Electrical energy	575.00
Station demand charge	246.00
Total	$11,981.00

Motor-Driven Auxiliaries

Circulating pump	50 hp. at 40 lb.	8768 hr. lb. steam	17,520,000
Air pump	20 hp. at 40 lb.	8768 hr. lb. steam	7,020,000
Condenser pump	5 hp. at 40 lb.	8768 hr. lb. steam	1,752,000
Exciter	35 hp. at 40 lb.	8768 hr. lb. steam	12,480,000
Stokers	5 hp. at 40 lb.	8768 hr. lb. steam	1,752,000
Blowers and miscellaneous steam	35 hp. at 75 lb.	8768 hr. lb.	12,480,000
Boiler feed pumps	16 hp. at 75 lb.		10,520,000
Total pounds steam per annum from auxiliaries			63,524,000

Total Steam Required Per Annum

Heating boiler feed	73,700,000
Shop heating	15,600,000
Total	89,300,000
Pounds steam available from auxiliaries	83,524,000
Pounds excess steam required from auxiliary turbine	25,776,000
Pounds fuel required for producing steam for auxiliary and shop heating	14,880,000
Cost of fuel at $1.50 per ton	$11,160.00
Available kilowatt-hours from excess steam	552,000
Saving in fuel at 3.25 lb. per kilowatt-hour (pounds)	1,860,000
Saving cost of fuel	$1,395.00
Additional station kilowatt capacity available from auxiliary turbine without increasing demand on boiler plant above requirements of steam-driven auxiliaries	65
Saving in demand charge due to increased station capacity	$610.00

Total Cost Operation Motor-Driven Auxiliaries

Cost of fuel		$11,160.00
Credit due to saving in fuel	$1,395.00	
Credit due to increase in station capacity	610.00	
Total credit	$2,005.00	2,005.00
Net operating cost		$9,155.00

Recapitulation

	Combined Motor and Steam	*Motor*	*Difference*
Total initial Investment	$7,620.00	$17,255.00	$9,630.00
Total operating cost	11,981.00	9,155.00	2,005.00
Per cent saving on investment			20.83

equipment as compared with the steam-driven auxiliary equipment, but a saving in annual operating costs of $2,005, which represents a saving of 20.83 per cent per year on the excess investment for motor drive. This is a significant saving in the total operating cost of the plant and is what determined the selection of completely motor-driven auxiliaries for the new station.

Going into some of the details in comparing the two types of equipment, it should be noted that the general plan of operation for the motor-driven auxiliaries is to use the auxiliary turbine supplying energy to these motors as a means of supplying just the amount of exhaust steam needed for feed-water heating and for heating the company's shops close at hand. In winter, instead of using live steam to make up the amount needed for heating in addition to that supplied by the exhaust from the auxiliaries, with steam drive, the auxiliary turbine is loaded up electrically sufficiently to supply the full demands of the shop and feed-water heating.

The generating voltage of the auxiliary turbine set is stepped up through transformers so that this source of energy may be connected to the main station bus and the surplus energy used to help carry the load on the plant, or lighten that much the load on the main generators. By this means no live steam is supplied to the exhaust mains, but rather, whatever the requirements, they are supplied through the auxiliary turbine which functions as a pressure-reducing valve and in addition utilizes the energy given up in the expansion. In summer, on the other hand, the reverse operation takes place. The auxiliary turbine, generating energy up to the requirements of the motor-driven auxiliaries, will deliver more exhaust steam than can be used in the feed-water heater, and none is required for shop heating. Hence a portion of the energy for the motors is taken off the main station bus through the transformers and the auxiliary turbine is loaded only to the point of supplying enough exhaust steam for the feed-water heater requirements.

In the comparison of the two auxiliary systems, the blowers, house pumps, sump pumps, etc., were planned to be motor-driven under either system, and in the operating costs for the steam-driven auxiliary the cost of current for driving these and the cost of the station capacity for supplying this energy are included.

No estimate of the comparative maintenance cost of the two systems was made, since no definite data relative to the cost of maintaining small turbines were available. However, it is undoubtedly true that the cost of maintaining one comparatively large turbine will be considerably less than that of maintaining a number of smaller units. The cost of maintenance on motors would be practically nothing, as these will be of a slow-speed induction type. If the comparative maintenance cost of the two systems had been estimated, there would probably be a much larger saving shown in favor of the motor drive.

Considering the flexibility of operation and the comparative labor required for the two systems, the advantages are nearly all in favor of the auxiliary turbine drive. The time required to place the apparatus in operation is much less with motor-drive than with steam drive, since in the latter case it is necessary to drain the condensation from the steam lines and warm up the turbine slightly before it is possible to start up each of the several units. In the Des Moines plant this operation would be necessary four times in each twenty-four hours, and this in itself would be quite an item so far as labor is concerned, although it would depend altogether upon the conditions whether or not this would require any additional men. With steam drive, there would also be a steam and exhaust line to each one of the auxiliaries, which would be a source of constant loss throughout the year, due to the condensation in the lines, whether the auxiliaries were in use or not. This is true because it is necessary to have steam available at the throttle at all times in order to put the apparatus into operation upon demand in the shortest possible time. These conditions have not been taken into consideration in estimating the relative costs given herewith.

With steam-driven auxiliaries it would be necessary to provide a much larger auxiliary header adjacent to the main steam header, and also a larger exhaust header for the auxiliaries than would be installed under the plan adopted. These additional costs were not included in the figures given in the table, but this would probably amount to $300 or $400, and would in turn add a slight additional amount to the maintenance costs.

Workmen's Compensation Insurance

Plan of Compulsory Employers' Mutual Association Is Said to Deserve Thorough Trial in This Country

IN a recent issue of the *Journal of Political Economy*, E. H. Downey, Harrisburg, Pa., presented a general review of workmen's compensation insurance. After studying the diverse methods for carrying on such insurance in this country, Mr. Downey concludes that the present competitive organization is inappropriate. Competitive insurance is exceptionally wasteful in operation, inefficient for accident prevention and unfairly discriminatory in its incidence of burdens, and it fails even to meet the elementary requirement of ultimate security. Many of these defects, in his opinion, can be overcome by effective public regulation, but this deprives the system of every characteristic of competition except its unnecessary cost. From the point of view of social utility, Mr. Downey believes, the case for monopoly is fairly overwhelming. The choice lies, therefore, between compulsory state and compulsory mutual insurance.

Actual experience with compulsory state compensation insurance has been too brief and too limited to admit of any definite conclusions. Exclusive, or substantially exclusive, state funds exist in Norway, Ontario, Ohio, Washington, Oregon and Nevada. The bill of particulars against such experiments is formidable enough, but Mr. Downey notes that none of the shortcomings is inherent in state insurance. The feasibility of state insurance is purely a question of intelligent organization in the first instance and of efficient administration afterward. Whether these conditions are likely soon to be fulfilled in many American commonwealths may be fairly debatable.

Compulsory employers' mutual associations have a history of thirty-five years in Germany, and a record of social achievement to which private accident insurance affords no parallel, according to Mr. Downey. This mode of organization is not comprised among the many American experiments. A compulsory association of this character would be relatively free from politics; it would be at least as economical as state insurance, and it would stand a far better chance of administrative efficiency. In the very important respect of accident prevention, compulsory employers' mutuals should secure the maximum attainable results. In short, Mr. Downey says, the plan promises so well *a priori* and has worked so well abroad, that it deserves a fair trial in at least one of the larger industrial commonwealths of this country.

Chicago Traffic, Value and Finances

Methods Used by Traction and Subway Commission in Checking Travel for Unified System—Cost and Present Value of Elevated Lines—Summary of Financial Plan

THE main report of the Chicago Traction and Subway Commission in regard to a unified system of transportation in that city was presented in detail in the ELECTRIC RAILWAY JOURNAL of Dec. 9 and Dec. 23, 1916. Since that time there have also been published in the issue of March 10 an abstract of the supplementary chapter dealing with estimates of future city growth and, in the issue of March 31, an abstract of that describing the industrial survey carried on by the commission.

The remainder of the thirteen chapters of the supplement, containing miscellaneous engineering, statistical and financial data that served as a basis for the commission's recommendations, will not be reviewed at length in these pages, on account of their volume, the purely local character of much of the information and the availability of the full report. For this last article, however, abstracts have been made of certain sections that may be of general interest. These deal with the methods used in checking the elevated and surface traffic, with the reproduction cost new and present value totals for the elevated properties, and with the general financial plan of the unification.

Elevated Traffic Investigation

Besides making an investigation of the elevated station traffic records, which showed among several things the more rapid growth in the outlying residential sections, the commissioners made a complete twenty-four-hour check to determine the riding characteristics of elevated passengers. This check was unique in its field on account of the volume of traffic observed and the size of the system involved.

An identification slip was issued by a commission observer to each passenger as he entered an elevated station at the beginning of his journey, which he carried through his trip, returning it as he left the station at the end of his journey. Each slip had printed on its face the list of stations, with the name of the particular station at which the ticket was issued marked to identify the boarding point, while the destination station was known by the place of collection. No marking of the slips in the field was necessary.

As tickets were collected, they were placed in envelopes separately marked by hours, thus recording the traffic for each hour of the twenty-four. Thus, the slips collected at any station and automatically separated as to destination and hour of the day, needed to be sorted only for the 206 possible stations of origin. The sorting and counting of the slips for this fact was done by machines, using a card punched for each identification slip to show the hour of the day, station origin and station destination. These cards were then machine sorted and counted by Powers accounting machines, and the data recorded on station sheets, showing the total passengers to each station from every other station for each hour. A final cross tabulation for the complete twenty-four-hour period was made, showing the total passengers from each of the 206 stations to every other station.

Various methods of publicity were used to instruct the public in what was expected of them, and no difficulty was experienced in any part of the city. The completeness of this co-operation is evidenced by the fact that of the 536,000 people using the elevated system during the check, more than 93.2 per cent surrendered slips at the end of the journey. This percentage does not include any that were mutilated, falsely marked or otherwise in doubt, and therefore represents the net usable result.

Besides indicating a true average haul of 6.48 miles, the check provided data showing that the traffic from opposite sides of the city across the loop is delivered principally to definite districts, each class of traffic having distinct characteristics. Moreover, the analysis proved that the term "loop district" is no longer descriptive of the whole central business district, which has already extended far south, north and west of the Union Loop elevated structure, as far as traffic delivery is concerned. The check showed also a failure on the part of the elevated railroads to secure as large a proportion of the long-haul business as should naturally come to them in many districts, more speed being necessary.

Examination of Surface Lines

The investigation of surface-line traffic developed the fact that the average ride varies from 1½ to 3½ miles. The average speed in some cases approaches average rapid transit running time. It was found to vary from 8 to 15 m.p.h., depending on the location of the route and the hour of the day. The area covered by the surface system, the one fare, the universal transfer and the high running speed have combined to give it nearly 78 per cent of the daily 2,520,000 revenue passengers and 85 per cent of the 4,000,000 revenue and transfer passengers of the city.

In order to obtain complete information regarding the origin and destination of passengers, a check was made on the important lines. The check was based on the traffic on an ordinary week day, every fourth car on a line being observed. The direction of transfer was noted in other ways than in the general traffic check in order not to overload the observers.

Identification slips were printed for the two directions of each line. The line was divided into a number of sections about ½ mile in length, each including only one transfer point. The sections had serial numbers, placed between the two blank columns designated "On" and "Off." The sections were also designated by the names of the limiting streets, and the house number at the beginning of the section was given to the left of the street names.

Observers were placed on the rear and front platforms, the rear observers marking the boarding section by pencil or punch mark and handing the slip to the passenger. Either the rear or the front observer collected the slip from the passenger at the end of his journey. The front observer also made observations of the actual running time of the car at each section point. The observer on the rear platform was unable to attend to the duties both of issuing and collecting on heavily-loaded cars in the rush periods, and a third man was placed on the car to assist him.

The slips were placed in an envelope at the end of each

half trip, marked with the time of start and end of the trip, the running time at each section point, the number of transfers collected, the cash fares registered, and the total number of slips issued and collected. When

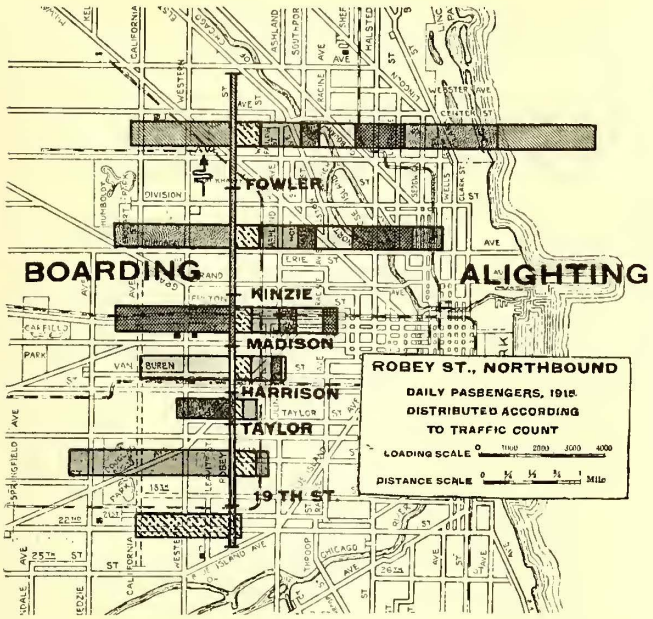


FIG. 1—SPECIMEN CHART SHOWING PASSENGER DISTRIBUTION BASED ON TRAFFIC COUNT

the envelopes were turned in they were coded for four periods of the day, as follows: 6 a. m. to 9 a. m.; 9 a. m. to 4 p. m.; 4 p. m. to 7 p. m., and 7 p. m. to midnight. The cards were then punched for date, line, direction, period, section on and section off, and were sorted by machines for the last four facts. Cross tabulations, similar to the elevated check, were made for each direction, and each period, and a total for the day, thus making five tabulations for each direction, or ten in all.

Besides tabulating the collected data, the commissioners used them in making graphical averages. For example, Fig. 1 illustrates the northbound traffic on the Robey Street line, with passengers boarding in the various sections shown to the left of the vertical line, and passengers alighting shown to the right of the same line. The height of the column, in each case, shows the relative number of passengers. A different shading is used for each section, and the same shading to the left and right represents a traffic movement. For instance, the passengers boarding the line between Blue Island Avenue and Nineteenth Street are shown by the dot and dash hatched symbol to the left, and total about 3000. The same symbol to the right shows the portion of these passengers alighting in each section.

THE TRANSFER QUESTION

Separate transfer observations were made by issuing special transfers (standard transfers with two lower corners cut off) on each line on a separate day. The conductors on the receiving lines intersecting the line of issue separated the special transfers into two lots, one for each direction of travel of his car. The standard transfer of the surface lines shows, by its color and punching, the direction of the issuing car, and therefore the direction of travel of the car on the issuing line could be determined. In this way the four transfer movements at all intersections were determined.

To determine the proportion of passengers retransferring, a special check was made by the method of identification tickets on four lines of heavy transfer. Slips were issued only to passengers presenting transfers, and marked to show the direction of the car from which the transfer was received (determined by its color). Notation was also made which showed the color of transfer taken by these passengers. The results represented the minimum figures for retransfer.

Under the plan of unification of surface, elevated and subway lines, it is proposed to provide transfers at all intersections of surface lines with elevated and subway lines where stations now exist or will be built, this to be limited only by the exclusion of transfers between surface and rapid transit lines in the loop district.

In estimating future rapid transit surface transfers, the commissioners collected definite information from 6000 rush-hour workers employed in typical office buildings in the central business district. The information supplied regarding these 6000 workers gave definitely

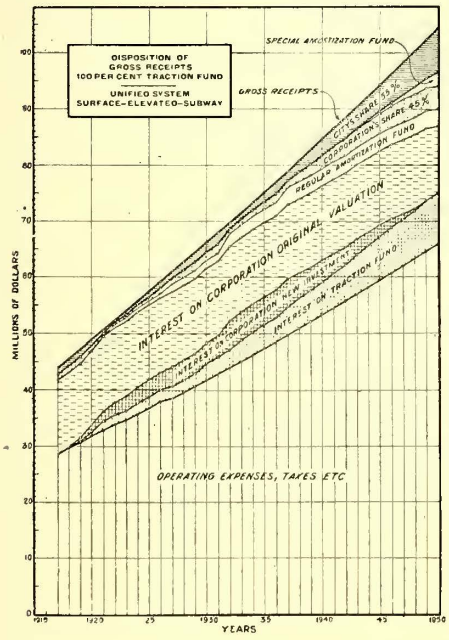


FIG. 3—CHART SHOWING PROPOSED DISTRIBUTION OF GROSS RECEIPTS UNDER 100-PER CENT TRACTION FUND PLAN

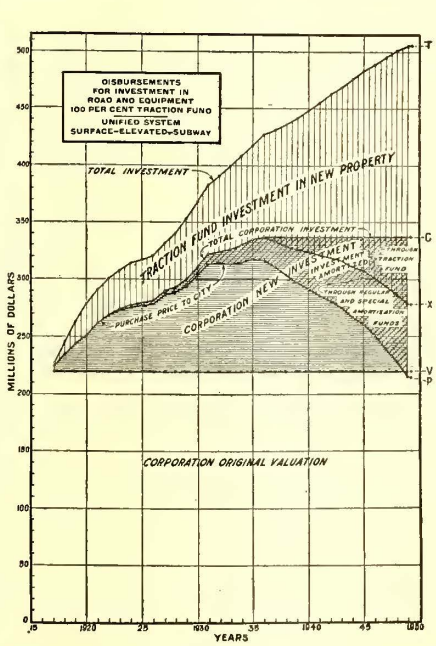


FIG. 2—CHART SHOWING PROPOSED INVESTMENT IN UNIFIED SYSTEM UNDER 100-PER CENT TRACTION FUND PLAN

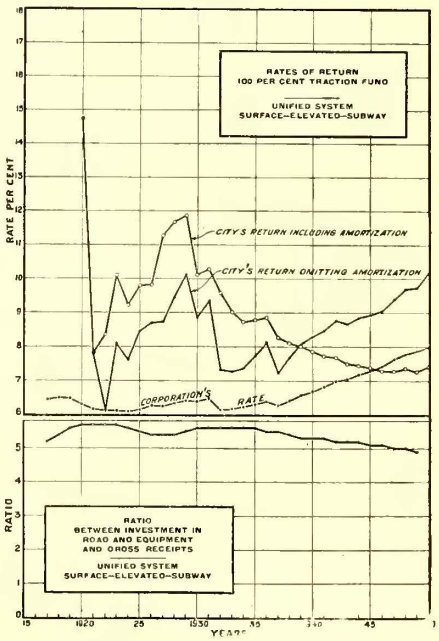


FIG. 4—CHART SHOWING RATES OF RETURN FOR UNIFIED SYSTEM AND RATIO BETWEEN INVESTMENT AND GROSS RECEIPTS

the places of residence, employment and the method of transportation used, whether elevated, surface or steam railroad. These workers were then grouped according to place of residence, making sixty or seventy residence groups, scattered all over the city at various distances from the central business district. For each group the traveling time was figured, via surface lines and via elevated railroads, the difference giving the time saving for each group by use of the rapid transit. For each individual of the group it was known which method of transportation was used and, therefore, the percentage of the group using the rapid transit. Knowing these percentages, it was possible to plot a curve showing the probable percentage of total passengers who would elect to use the rapid transit for various amounts of time saved. The curve showed that the percentage choosing rapid transit varies from 10 per cent for about three minutes saved, 60 per cent for ten minutes saved, 80 per cent for fourteen minutes saved, to more than 95 per cent for savings of twenty minutes and more.

By using these percentages it was determined that a transfer may be expected between surface and rapid transit lines, in both directions, of about 117,000 passengers daily. This number is between 5 and 6 per cent of the revenue passengers carried by the surface lines on an average day in 1916. This figure is based on a free transfer, and under the proposed 2-cent charge the amount is estimated to be reduced to 75,000 the first year, rising 15,000 a year until 150,000 in the fifth year.

VALUATION OF ELEVATED PROPERTY

The supplementary report contains a chapter dealing specially with the principles of valuation applied in determining the cost of the physical property of the elevated lines and the treatment accorded individual items in the official classification of accounts. Owing to the fact that this information formed the basis of a paper by F. J. Bachelder, valuation engineer of the commission, published in the ELECTRIC RAILWAY JOURNAL of March 3, page 386, none of the details will be repeated here. There is reproduced, however, a table showing the reproduction cost new and the present value of the various parts of the land, right-of-way and other physical property.

VALUATION OF CHICAGO ELEVATED PROPERTIES AS OF JUNE 30, 1916

Right of Way	Reproduction Cost, New	Present Value
Bare land and easements—total acquired by companies	$13,203,583	$13,203,583
Other land—not used or useful (deduct)	465,204	465,204
Bare land—used or useful for railway purposes	$12,738,379	$12,738,379
Value of leaseholds	261,894	261,894
Other buildings owned—on land not used but useful for railroad purposes	231,671	231,671
Total land and buildings used or useful for railway purposes	$13,231,944	$13,231,944
Acquisition costs	1,323,194	1,323,194
Right-of-way easements	138,329	138,329
Total right-of-way—land, buildings and easements	$14,693,467	$14,693,467
Engineering on total right-of-way, land and easements	293,869	293,869
Total right-of-way	$14,987,336	$14,987,336
Other Physical Property		
Cost of reproduction, new	$43,961,481	$34,658,372
Contingencies to cover omissions and miscellaneous construction costs	2,198,074	1,732,919
Administration on other physical property	1,200,000	1,110,000
Engineering on other physical property plus contingencies	2,307,978	2,063,772
Paving on city streets and alleys	125,894	102,664
Bridge easements	45,000	45,000
Total other physical property, etc.	$49,838,427	$39,712,727
Taxes and insurance during construction:		
(a) Taxes on total right-of-way	$739,666	$739,666
(b) Taxes on other physical property	429,745	429,745
(c) Insurance	31,851	31,851
Interest during construction:		
(a) On total right-of-way	2,697,720	2,697,720
(b) On total other physical property	4,485,458	4,485,458
(c) On taxes and insurance	72,076	72,076
Plant development costs—actual money spent for permanent physical structure, not subject to frequent renewals	382,387	267,670
Total right-of-way and other physical property	$73,664,666	$63,424,249
Agreed general allowance, not specifically determined in the organization, development and production of the operating property	8,103,113	6,976,667
Grand total reproduction cost, new	$81,767,779	$70,400,916

THE FINANCIAL PLAN

The financial plan of the commission contemplates the investment of all the traction fund in the property. The report also gives the city the option of expending 25 per cent of the traction fund in improvements which will not earn revenue. This leads to two statements of the estimated results of the plan, but for purpose of illustration only the first will be here used.

The data regarding investment, besides being tabu-

SPECIMEN INCOME STATEMENT FOR CALENDAR YEAR 1948, SHOWING FINANCIAL PLAN OF UNIFIED SYSTEM

Gross receipts		$100,468,000
Maintenance, Replacements and renewals, Other operating expenses, deductions from gross income, except interest on capital, and profit and loss debits, Taxes, Expenses of the board of regulation and control, except those pertaining to investment in road and equipment	Estimated to be 63 per cent	63,295,000
Net receipts		$37,173,000
Deduct:		
City of Chicago:		
Interest on traction fund investment at the same rate as next item	$8,535,000	
Chicago Railways Corporation:		
Interest paid on capital obligations issued to cover investment in road and equipment after the plan becomes effective	482,000	
Interest on investment in road and equipment made before the plan becomes effective, at 6 per cent a year	13,200,000	
Regular amortization fund:		
1922 to 1926, ¼ per cent; 1927 to 1932, ½ per cent; 1933 to 1937, ¾ per cent; after 1947, 1 per cent. In all cases calculated on the then purchase price to the city except that in no year shall it be less than in the year just preceding	3,108,000	25,325,000
Divisible net receipts		$11,848,000
Distribution:		
Chicago Railways Corporation:		
45 per cent, but never less in any year than 1 per cent of the gross receipts or more than enough to make the total return in any year 8 per cent on the purchase price to the city. (See note)		$4,093,000
City of Chicago:		
55 per cent, less any amount necessary to make the corporation's share of the divisible net receipts equal in any year to 1 per cent of the gross receipts. Such drafts to become a first lien on any excess in subsequent years of the corporation's share of the divisible net receipts over 1 per cent of the gross receipts		6,516,000
Special amortization fund:		
Excess income allotment as defined in note		1,239,000

Note:

The sum of the two company interest deductions and 45 per cent of the divisible net receipts is the total potential income of the corporation and is designated "income fund." The amount of the income fund in any year in excess of 7 per cent on the purchase price to the city of the property in use is designated "excess income." This excess income is divided as follows:

1. When not greater than 1 per cent of the purchase price: To the corporation, two-thirds; to the special amortization fund, one-third.

2. When greater than 1 per cent but not greater than 2 per cent of the purchase price: To the corporation, ⅔ per cent of purchase price plus one-third of the amount over 1 per cent of the purchase price; to the special amortization fund, ⅓ per cent of the purchase price plus two-thirds of the amount over 1 per cent of the purchase price.

3. When greater than 2 per cent of the purchase price: To the corporation, 1 per cent of the purchase price; to the special amortization fund, all over 1 per cent of the purchase price.

The effect of this distribution of the excess income is to limit the corporation's return in any year to 8 per cent of the purchase price to the city.

lated, is presented in graphical form (Fig. 2), where the various items may be thus explained:

Total Investment (T): This is the total investment in the property regardless of the sources from which the funds are derived.

Traction Fund Investment: The total invested by the traction fund is represented by the ordinates between *T* and *X*. The ordinates between *T* and *C* represent the cash put into the project for the carrying on of new construction or the purchase of new equipment. The ordinates between *C* and *X* represent the excess of the traction fund over that necessary for the purposes just mentioned, which is, therefore, used to amortize previous expenditures for investment in road and equipment, made by the corporation.

Corporation Investment (C): This represents the total investment of the corporation, both old and new, regardless of the fact that some of it may have been amortized.

Corporation New Investment: The ordinates between *C* and *V* represent the new capital raised by the corporation regardless of the fact that some of it may have been amortized, as it is assumed that the amortization funds will be used immediately as a sinking fund to retire outstanding bonds, and that for funds to carry on new construction and purchase new equipment it will be necessary for the corporation to issue new securities.

Regular and Special Amortization Funds: The ordinates between *X* and *P* represent the amortization through the regular amortization fund, which is started at one-quarter of 1 per cent five years after the plan becomes operative, and the special amortization fund, which is a portion of the divisible net receipts in excess of enough to give the corporation a return of 7 per cent.

Purchase Price to the City (P): This represents the price at which the city may take over the property at any time and is the sum of the original valuation and the new investment less any amortization.

Original Valuation (V): This is taken at $220,000,000—the purchase price to-day of the surface lines plus the commissioners' valuation of the elevated lines, plus any certificates that may be issued between June 30, 1916, and the time the plan goes into effect, plus any amount which would be covered by such certificates if the elevated lines were under the 1907 and subsequent ordinances.

Fig. 3 shows the proposed distribution of gross receipts under the 100-per cent traction fund plan. Another description of the financial plan, in the form of a specimen income statement for the calendar year 1948, is shown in one of the tables on the opposite page. Fig. 4 shows the rates of return for the unified system under the 100-per cent traction fund plan, and the ratio between the investment in road and equipment and the gross receipts.

Syracuse Grade Separation Report

B. J. Arnold Reports Electrification Not Feasible and Recommends the Use of the Old Central Railroad Station for Combined Interurban Terminal and Market

IN the report upon the grade crossing situation in Syracuse by Bion J. Arnold, which has recently been made public, certain interesting provisions for the entrance of interurban lines into Syracuse are mentioned. In general, the report lays out a plan for depressing the steam railroad entrances and for rerouting some of the lines so that the present Franklin Street steam station would be abandoned. The report also recommends the use of the old Erie Canal cut for an interurban entrance into the city and the use of the abandoned Franklin Street steam station as a joint electric passenger and express terminal and public market.

The suburban and interurban travel in and out of Syracuse now amounts to 4,280,000 passengers per year, or about 13 per cent of the Syracuse city traffic. Statistics follow:

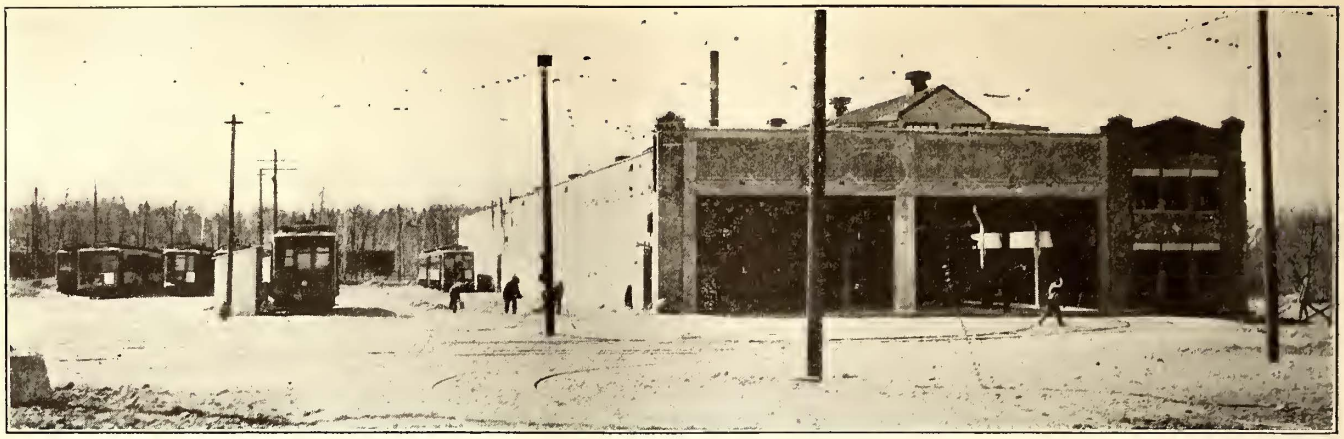
Steam trains, through and local	7 per cent
Electric, suburban and interurban	10.5 per cent
Syracuse surface lines, revenue passengers	82.5 per cent
Total passengers per year, all roads, approximately	40,000,000

The possible removal of the interurban lines from city streets to private rights-of-way through the canal bed to the east, north and west respectively was studied, but did not appear feasible either at the present time or in the immediate future. One reason is the financial limitations of the various properties under present rates of fare and the great dependence of interurban lines upon maximum convenience to their patrons through service to the central parts of the city. Another reason is that the business streets where frequent stops are necessary lie generally within the 1.5-mile zone, and it is possible for interurbans to proceed beyond the limit of this zone and reach free-running territory, beyond the limits of the proposed canal bed entrances, within from ten to fifteen minutes. As compared with interurban conditions in Detroit, Cleveland, Cincinnati, Pittsburgh, etc., where thirty to sixty minutes are required for interurbans to reach reasonable free-running territory, the entrance conditions to Syracuse were not considered particularly unfavorable at present. As regards the possibility of developing portions of the canal strip for rapid-transit entrances where most needed, and particularly when this can be done in conjunction with steam railroad entrances as was called for in the grade separation plan, the report concludes that this question appears in a much more favorable light.

In keeping with the tendency in various cities to bring all interurban lines into a common terminal, the report provides for the utilization of the present Franklin Street passenger station of the New York Central lines, when abandoned, for the interurban lines. Such extensive facilities would of course be unnecessary for the present interurban business, but the use of the abandoned station as a public market and interurban station combined might prove to be a justifiable arrangement. By this means the interurban lines would find it possible to develop at first hand a form of express business that has proved exceedingly profitable in other interurban centers.

Electrification Possibilities

As regards the possibility of electrification of the steam railroads through Syracuse, the report states emphatically that as a terminal proposition alone the electrification even of the New York Central lines cannot be considered feasible until such time as the main line is electrified, at least for passenger traffic. Terminal electrification alone would necessitate a complete equipment of engine houses and lay-over facilities at or near the junction points, east or west. For even a stub-end passenger terminal branching off the main line, this necessity would be serious enough, but for a through station practically a duplicate equipment would be required. Furthermore, there is a probability that road-engine service between Buffalo and Yonkers will soon be divided into two divisions instead of three as at present. This would transfer the first junction point from East Syracuse farther east to Utica. Manifestly, it would be impracticable to operate a section of electrified terminal line in such a long run unless absolutely necessitated by such a serious obstruction as the Detroit River tunnel. But whatever means are adopted now for the relief of the grade-crossing situation in Syracuse, these should contemplate the ultimate electrification of the main line in its passage through Syracuse. With this in view, any plan for depression of tracks appears more favorably than elevation, and the city of Syracuse could well afford to accept the smoke nuisance from a depressed cut for some years in order to realize the greater advantages of depression at such a time as main-line electrification comes into effect. The "air rights" could then be utilized and the entire right-of-way of the railroad become available for industrial or civic purposes.



MILWAUKEE CARHOUSE AND STATION—GENERAL VIEW OF CARHOUSE AND STORAGE LAYOUT

New Carhouse and Station in Milwaukee

Old Building, Outgrown and Badly Located for Present Needs, Was Abandoned and New Layout of Double Capacity Constructed

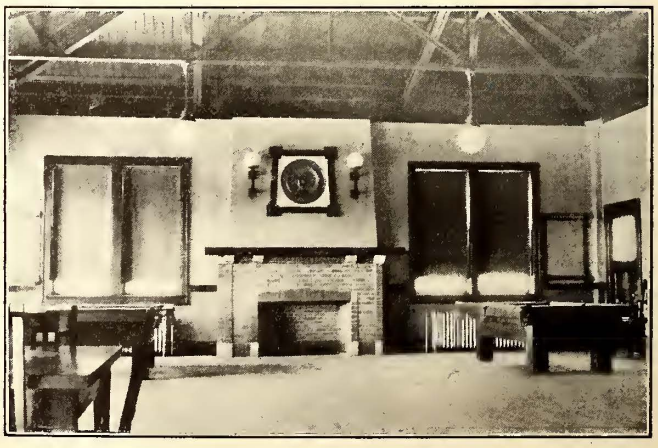
On March 31 the Milwaukee Electric Railway & Light Company formally dedicated its new Oakland station and carhouse with appropriate ceremonies under the auspices of the Employees' Mutual Benefit Association. The opening of the new carhouse marked the change in headquarters of six city lines from the old Farwell Avenue car station to the new Oakland station. It had been found necessary to increase the housing and storage facilities for the northeast section of the city in order to take care of the growth of the company's business and the additional facilities necessary for fifty new center-entrance cars under construction. The Farwell Avenue station was built about thirty years ago and was located on one of the principal car lines. All switching, therefore, into and around the station had to be done out on the main line. This interfered rather seriously with regular schedules and caused some unfavorable comment on account of delays which resulted. The building was also badly in need of repair and this, together with the fact that its location was no longer at the most desirable point to serve this section of the city, made it seem advisable to construct an entirely new layout.

The new location was selected for its convenience to the several lines to be served and for the particular facilities it offered for the needs of the trainmen. It will remove many of the trainmen from the more crowded sections of the city and will bring them to the outskirts, where there will be an opportunity for them to live under better conditions and perhaps purchase homes of their own. In this connection many inquiries have already been made to the company building and loan association regarding assistance in building new homes. The new station is on Oakland Avenue, near the end of the Oakland Avenue car line and near the Center Street crosstown line, which extends entirely across the city from east to west limits. This makes access to the carhouse possible with a small amount of dead mileage from the six lines to be served.

Carhouse Construction

The carhouse and track layout is very similar to the Fond du Lac carhouse constructed in 1913 and described in the Electric Railway Journal for March 15, 1913, page 497. The building is of sufficient capacity to house approximately one third of the cars which will operate out of this division. The entire layout will provide open and closed storage space for approximately 150 cars, the building being intended to house only those cars which are going through on the regular schedule for cleaning and inspection work. For this purpose four tracks are covered in the new building at the present

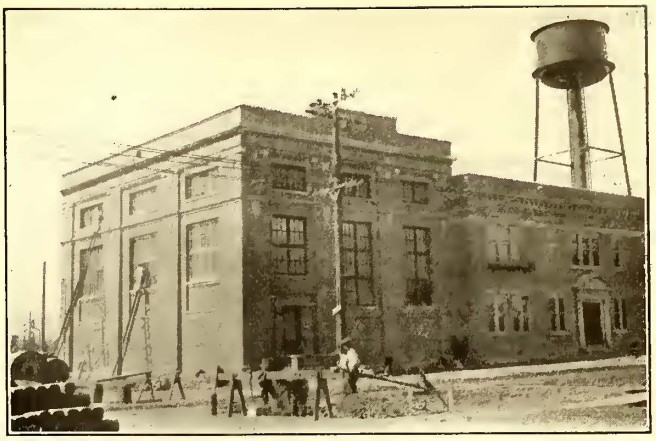
MILWAUKEE CARHOUSE AND STATION—RESTAURANT ON MAIN FLOOR OF TRAINMEN'S BUILDING



MILWAUKEE CARHOUSE AND STATION—READING ROOM AND RECEPTION ROOM, SECOND FLOOR TRAINMEN'S BUILDING

time, but the contract is already let for the construction of an additional bay to the north of the present building and covering four more tracks.

Besides the four tracks under cover in the present layout, there are ten tracks for open storage extending through the yard and stub-ended at the back. As soon as further filling can be done, each of these tracks will be connected to a loop track across the rear end of the property and extending along the south side to connect with the Oakland Street line. When this is completed, it will make possible the movement of cars into and out of the yard from either end of any track, and thus greatly facilitate car movement during the rush periods. The layout is arranged, as seen from the accompanying plan, so that all switching and maneuvering of cars in the yard can be done without the necessity to run out onto the main line in front of the property, and thus any delay from this cause is avoided.



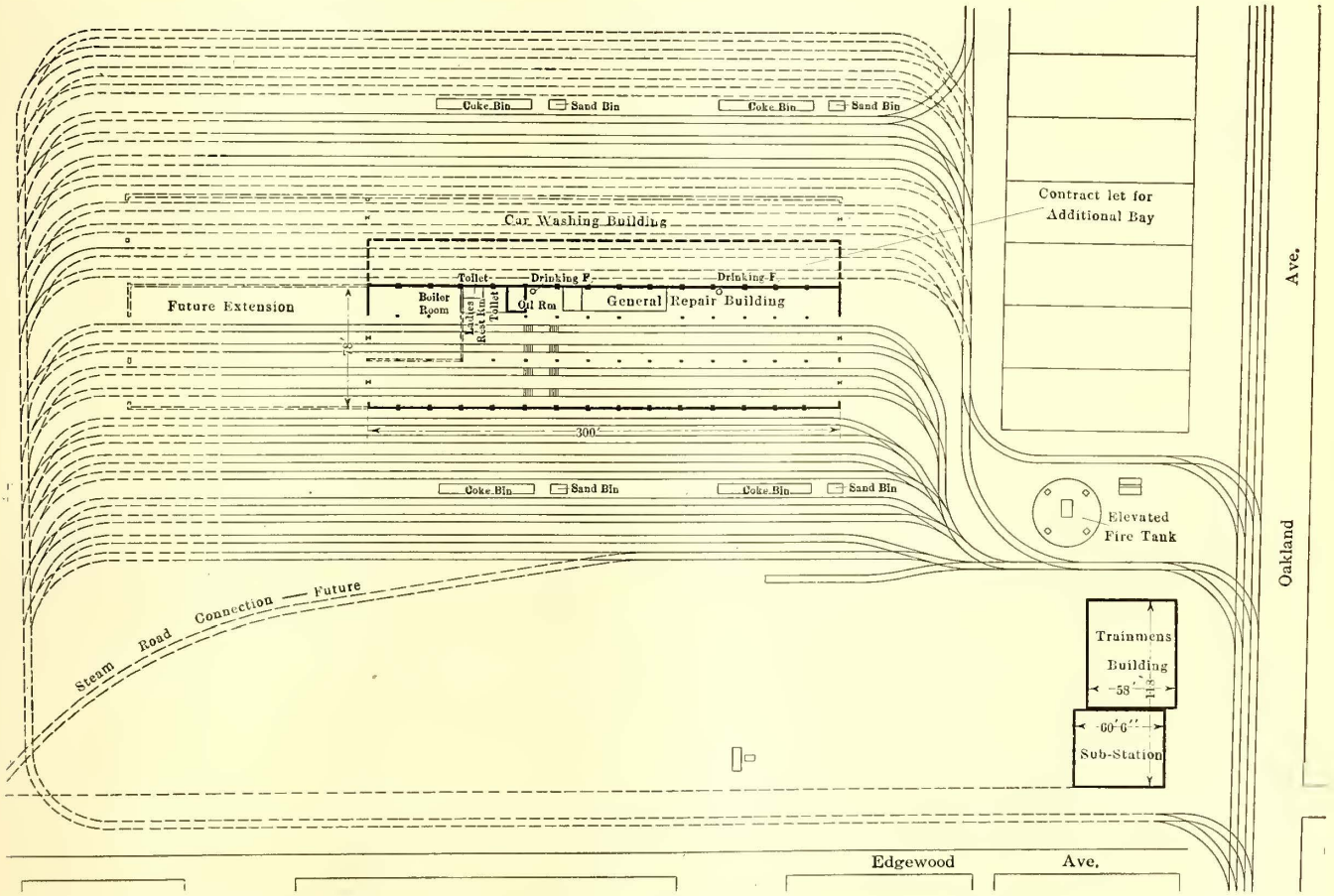
MILWAUKEE CARHOUSE AND STATION—SUBSTATION AND TRAINMEN'S BUILDING

General Repair Building

The present carhouse building is 300 ft. long and 80 ft. wide, and is constructed entirely of reinforced concrete. This type of construction was made necessary from the fact that the ground on which the building is placed had for some time been a city dump and, having previously been a deep ravine, was filled with all manner of rubbish which formed a very poor footing for a building. Pile construction was considered, but it was feared that the ash content of the filling might have a deteriorating effect upon the wood and make the construction uncertain. Hence the building was placed on sixty-four reinforced concrete piers averaging 16 ft. in length, some of them being as long as 30 ft. These were constructed by excavating a square hole down through the fill to the original grade, and on down to solid clay bearing. Footings for these columns were made 7½ ft. square on the average and the columns themselves were cast about 27 in. square.

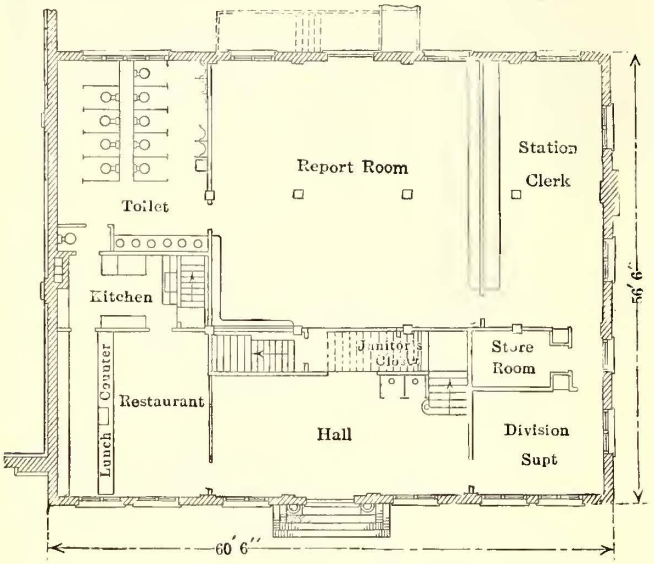
The general design of the present building is shown in the accompanying drawing and photographs. It was designed to serve principally as an inspection shop, and is, therefore, equipped with a suitable storeroom for materials, oil room and two balconies, one used for the lockers for the men, the other as a store place for the heaters in summer and the seats which they displace in winter.

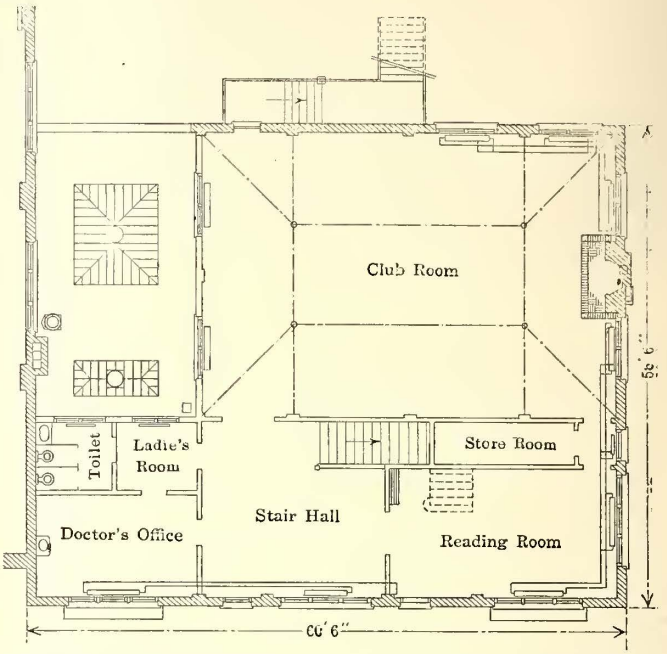
The four tracks in the building are constructed with pits to facilitate inspection and light repairs, and these



MILWAUKEE CARHOUSE AND STATION—GENERAL LAYOUT OF CAR STORAGE YARD, SHOWING GENERAL REPAIR BUILDING, TRAINMEN'S BUILDING AND SUBSTATION

pit tracks are for the major portion of the open-type construction. They are carried on short steel columns with a 2-ft. open space on either side of each track, which gives workmen a better advantage in working on trucks. A 4-in. slab of reinforced concrete between tracks is carried on 6-in. I-beams, which are supported between the track columns. As the rail used in the carhouse is all 7-in. 95-lb. T-rail, this brings the walk between tracks 3 in. below the level of the rail top. The floor of the carhouse at entrances and at points other





MILWAUKEE CARHOUSE AND STATION—FIRST AND SECOND FLOOR PLANS OF TRAINMEN'S BUILDING, SUBSTATION UNDER CONSTRUCTION ADJOINS AT THE LEFT IN THE ILLUSTRATIONS

than over the open-pit construction is on the same level as the top of the rail and the slab between tracks is tapered up to meet this level where the two floors join.

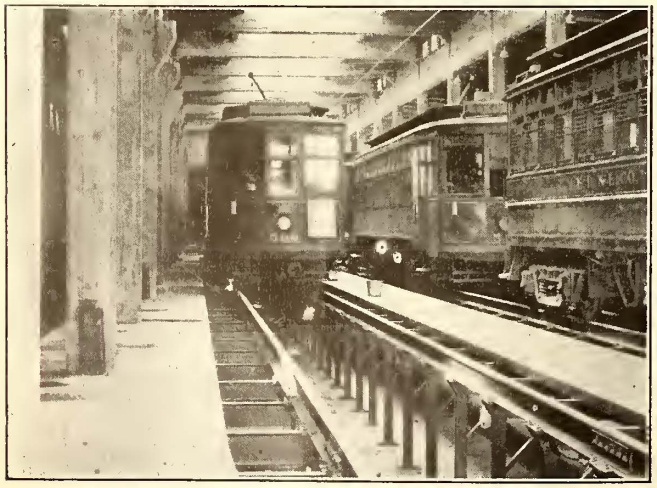
A skylight over practically the entire length of the main bay of the carhouse and five short lateral skylights over the length of the present building in the other bay make the building interior very bright, and expedite the work of inspection and maintenance. Rolling steel doors at the car entrances, rolling steel fire-doors at all doorways and a dry-pipe sprinkler system with standard hose equipment and hose houses in the yard, all connected with a 60,000-gal. fire tank carried 85 ft. in the air, give a very complete protection against fire.

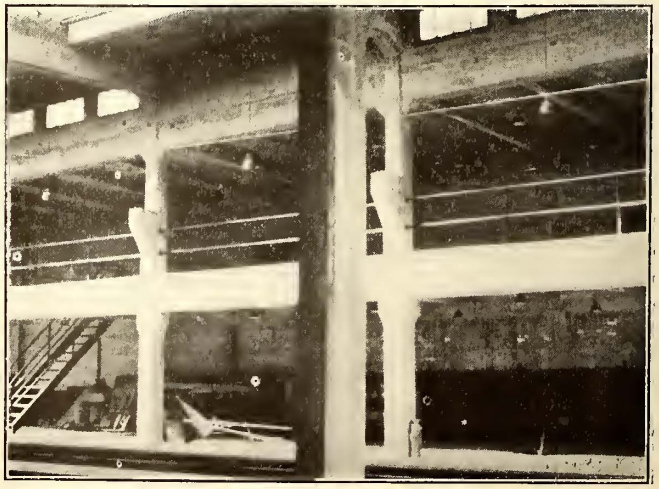
One feature of the layout is the provision for future extension of the present building either longitudinally or laterally across the plot as needed with the growth of the property and number of cars to be handled. This is clearly shown in the drawing.

Trainmen's Building

At the near corner of the property, which includes an area 806 ft. x 819 ft., the company has constructed a building for the convenience of the trainmen and the activities of this division of the Employees' Mutual Benefit Association. Also, adjacent to this is a new substation, which is now under construction to serve this section of the city. These two buildings are constructed of red colonial brick with Bedford stone coping and trimming. The first floor of the trainmen's building is given over to the division superintendent's office, a general division office and trainmen's room with elaborate toilet and shower bath facilities adjacent, and to a well-equipped restaurant, in which all cooking will be done electrically.

On the second floor is located a large trainmen's club room which is equipped with pool tables and card tables and will also be used for dancing and for meetings of the employees' association. A bronze tablet bearing the emblem of the employees' association is





MILWAUKEE CARHOUSE AND STATION—AT LEFT, INTERIOR VIEW SHOWING PIT CONSTRUCTION; AT RIGHT, BALCONY FOR STORING HEATER STOVES

mounted over the fireplace. There is also a smaller room equipped to serve as a reading room for the trainmen. In addition to the rooms described an office is provided for the division doctor on this floor, and a retiring room for women.

The building is very finely lighted throughout with semi-indirect fixtures of pleasing design and finish. It is heated during the fall and spring months from a small heating plant located in the basement of the building, but a heating pipe to be installed between this building and the carhouse will connect the heating system with the two 80-hp. firebox boilers with down-draft grates installed near the rear of the present carhouse building, making it possible to heat the building from the larger unit during the colder months, when it is also necessary to heat the carhouse.

Third Unit Added to Detroit United Shops

Carpenter Shop, Wood Mill, Tin Shop, Lumber Storage and Dry Kiln Housed in Newest Section of Layout

THE Detroit United Railway has just moved its wood-shop equipment from the old Monroe Avenue shop to the new wood-shop building at the Highland Park layout, and thus transferred the third division of the mechanical department to the new location. There still remains the construction of the storeroom and office buildings as the fourth unit of the group to complete the extensive new shops which have been in the course of construction for the past four years. The first unit, the paint shop, was built in 1913 and described in the ELECTRIC RAILWAY JOURNAL for April 12, 1913, and the second unit, serving as a truck and machone shop, was covered by an article in the JOURNAL for June 13, 1914.

The latest addition to the layout, which houses the carpenter shop, wood mill and lumber storage on the ground floor, and the tinsmith, pattern and cabinet shops and the dry kiln on the second floor, is located closely adjacent to the machine and truck shops, connected with them by a transfer table, the several tracks in the two buildings being on the same line. This location facilitates the movement of work through the shop. A damaged car is brought into the carpenter shop, which is nearest to the track serving the shops, and the body is there lifted off the truck by traveling cranes and placed on horses, while the trucks are run on through the shop, over the transfer table and into the truck shop for overhaul or repair.

HEADING ARRANGEMENT OF BUILDING

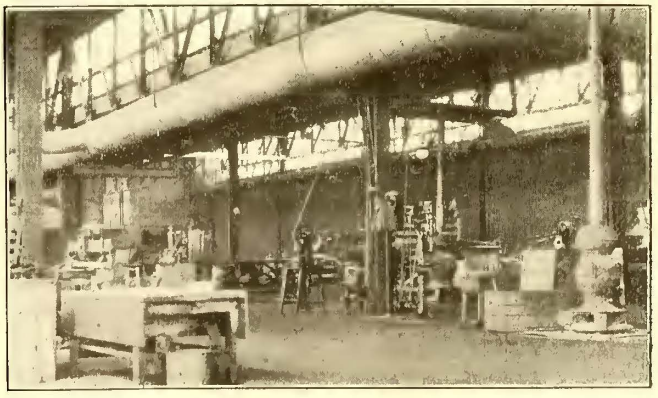
The building is of the same general style of architecture and construction as the machine shop. It is a mill-type building with steel columns and roof trusses on the interior and with reinforced concrete exterior columns, and walls of red brick. The floors are all of concrete and the roof is constructed of concrete slabs, 2½ in. thick and approximately 3 ft. x 7 ft., which were molded on the ground, laid on the steel roof girders and covered over and sealed with a building paper tarred and graveled. Practically the entire east and west side walls and the sides of the monitors are of glass with mechanically operated windows, thus providing good ventilation and making the shop especially well lighted. The artificial lighting is supplied by a system of arc lamps.

The heating is done by a hot-air system with tunnels under every other track on the ground floor, and 1-ft. x 4-ft. grated openings every 9 ft., which conduct and distribute the hot air throughout the shop. The hot air is supplied to the second-floor shops through an overhead piping system and the heat directed toward the floor at a number of outlets from the air duct. Three large motor-driven fans, one each for the repair shop, wood mill and second-floor rooms, force the hot air through the building from the heating plant, which when completed will be equipped with four 250-hp. Babcock & Wilcox boilers and Murphy stokers. This plant is under construction and will displace a temporary plant which was erected at the time the paint shop was built.

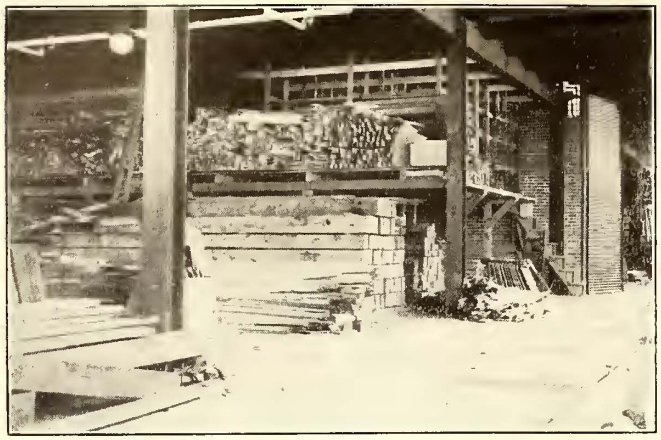
A large electric elevator, 10 ft. x 14 ft., is installed at each end of the wood mill and serves to expedite the movement of trucks of lumber and various material between the shops on the second floor and those on the first. Toilet rooms have been provided at both ends of each floor in the two-story section, and also in the repair shop, for the convenience of the men and so as to save on their time. A general locker and wash room occupies space at one end of the wood mill as seen in the accompanying drawing.

The arrangement of machines in the wood mill has been made so that rough material will come in from the lumber storage room at the north end of the building

DETROIT UNITED WOOD SHOP—CABINET SHOP LOCATED ON BALCONY



DETROIT UNITED WOOD SHOP—TIN AND CABINET SHOPS IN BALCONY



DETROIT UNITED WOOD SHOP—LUMBER STORAGE

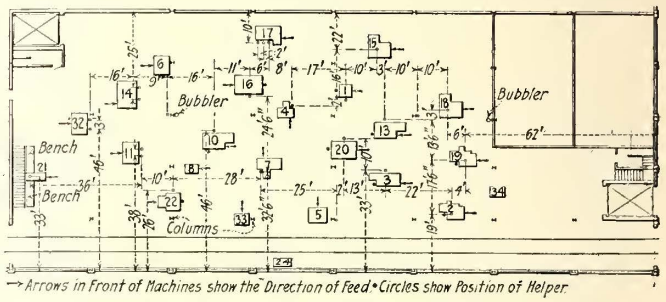
and progress naturally toward the south end of the mill and back again to the first end on its course through the cross-cut saw, rip saw, jointer, planer, etc., to the layout man. The layout of the various machines is shown in an accompanying drawing. Each machine is individually driven by a constant-speed Reliance 600-volt direct-current motor, in some cases by belt drive and in others by direct connection. The latter plain was adopted wherever conveniently possible, and the control in all cases is through a start and stop push button mounted on the machine at a point convenient to the right hand of the operator. All belts are guarded by pipe rails inclosing the moving parts and all motor wiring is carried in conduit.

The shop is made less noisy and the installation of machines and the work in the shops generally facilitated by a creosoted wood block floor which is laid on top of the concrete. A standard gage track extending through the building at the west wall, permits of carload delivery of lumber or various materials from steamline connections directly into the shop. On the opposite side of the mill, seven rolling steel doors, which are normally raised but which close automatically in case of fire, separate the mill from the carpenter repair shop.

LUMBER STORAGE

The lumber storage room at the north end of the building is fitted with a plank floor in the aisles between lumber piles to facilitate the trucking of lumber to the mill. Special shelves on a balcony in this room are used for the storage of molding, side posts, sash rests and various trimmings which are made up ahead during slack times. There is also storage space in this room for the various car body templets. No heating is provided in the lumber room. It has a total capacity of about 200,000 ft. of lumber, which is sorted and piled according to size and kind of wood, thus expediting the selection of any desired piece.

The capacity of the dry kiln is also about 200,000 ft. of lumber. The kiln is fitted with an open-type floor constructed of 2-in. x 6-in. planks laid on edge and supported several inches above the concrete floor. This flooring is made in sections so that it may readily be taken up and replaced in case it is necessary to get below the floor at any point. Two planks separated by blocks are fastened together, thus allowing the room to be heated by ten sets of steam pipes of thirteen pipes each which extend beneath the flooring from headers on the north wall to the opposite side. Vacuum and pressure gages mounted on the walls just outside the room provide a means of determining the conditions



DETROIT UNITED WOOD SHOP—ARRANGEMENT OF MACHINES IN WOOD MILL

1. Planer
2. Rip saw
3. Jointer
4. Band saw
5. Mortiser
6. Mortiser
7. Band saw
8. Jig saw
10. Universal wood worker
11. Shaper
13. Jointer and driller
14. Tenoner
15. Double saw table
16. Sander, 3 drum
17. Molder
18. Double saw table
19. Single saw table
20. Planer
21. Swing saw
22. Planer
24. Double end emery wheel
32. Shaper
33. Boring machine
34. Jig saw

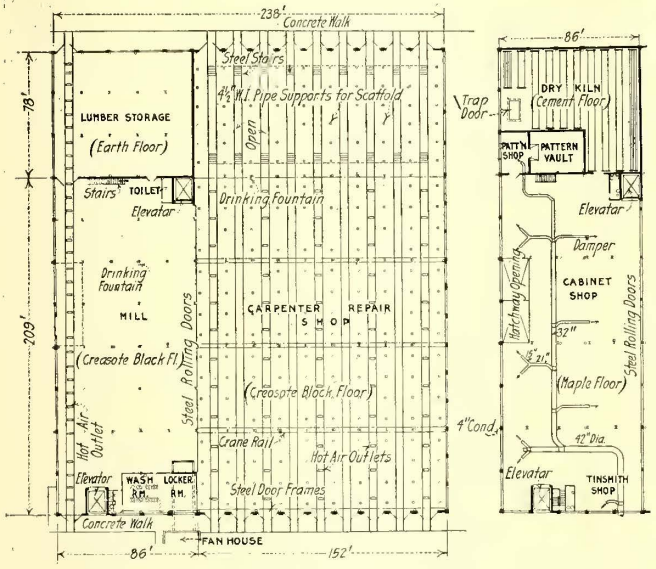
inside without the necessity of opening the kiln. A special method of admitting air to the kiln is provided by a number of 2-ft. square ventilation holes left in the concrete floor and closed off by galvanized-iron covers.

At the west wall in the dry kiln and over the track extending through the building on the ground floor a 6-ft. x 12-ft. opening has been cut to allow the hoisting of lumber from a car directly into the dry kiln, and while no provision has as yet been made for handling lumber in the kiln mechanically, there probably will be occasion for installing a monorail or other hoist system in the future. This opening in the floor is closed off by a trap door constructed of 2-in. x 4-in. boards laid on edge and bound by a steel band, forming a very heavy door. The door is counterbalanced by two concrete weights and the pulley system so arranged that only half the weight of each counterbalance is brought into play from the vertcal position of the door to within about 2 ft. of its closed position, and from there down the door must be closed against the full weight of the counterbalances. This is accomplished by placing a stop in the cable supporting the weights so that the

DETROIT UNITED WOOD SHOP—VARIABLE-SPEED WOOD LATHE, AT LEFT; TYPICAL MOTOR AND BELT DRIVE, AT RIGHT

pulley block is lifted directly at the same rate as the cable instead of at half the rate.

The space on the balcony over the wood mill is occupied by the tin and cabinet shops. This is also closed off from the carpenter repair shop by seven rolling steel doors, which are normally kept closed. A small pattern shops opens off the north end of the cabinet shop, and from this a door opens into the pattern storage vault. This will be equipped with steel shelving which, with the solid brick walls, concrete floor and roof and a steel fire door between the vault and the pattern shop, will provide a fireproof storage for the accumulation of company patterns.

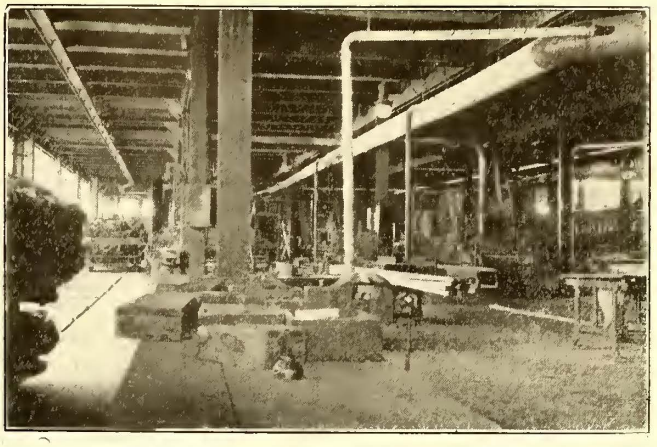


DETROIT UNITED WOOD SHOP—PLAN OF MAIN FLOOR AND BALCONY

A large Sirocco blower, located on the balcony floor at the end nearest the power plant, is driven by a large Reliance motor and connected with a blower system for carrying all the shavings and sawdust from the various machines over into a storage hopper in the boiler plant.

Carpenter Repair Shop

The carpenter repair shop has nine tracks extending entirely across the building and the shop is completely served by four 10-ton Shaw cranes, which travel at right angles to the tracks. These cranes are used for lifting car bodies from the trucks and for general hoisting in the body repair work. The installation of these cranes made it impossible to install trolley wires over the several tracks, but the cars are moved under their own power by means of long jumpers, which are connected to the trolley poles by a pole and hook and to the power supply through circuit-breakers located on each column. These circuit-breakers are arranged so that they must be held in while they are in use, thus eliminating danger from contact with a jumper carelessly left with current on. When the trucks are removed from cars and run into the truck shop, they are moved under their own power by the same scheme.

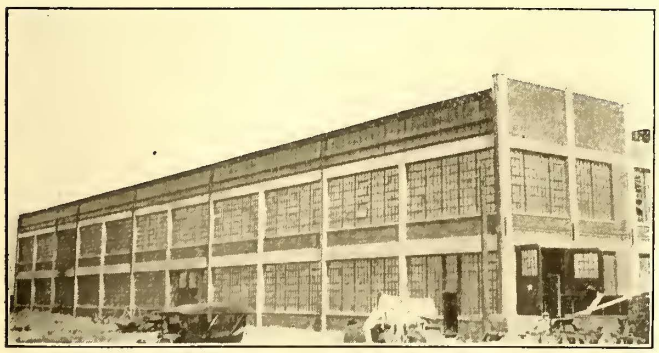


DETROIT UNITED WOOD SHOP—WOOD MILL

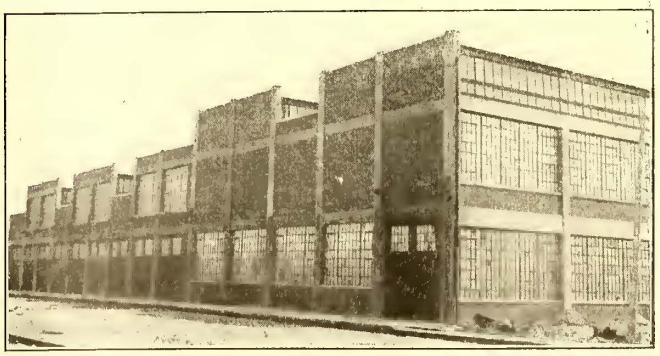
As the cars are repaired and made ready for service, they are gradually worked toward the north end of the building and here each of the nine tracks is equipped with an open-type pit, making it possible to adjust the brakes and do any other work necessary underneath the cars as the final preparation for placing them again in service.

A 3-in. compressed-air main extends across the west side of the carpenter shop and branches from this are carried under each crane runway and an outlet installed on each column for the operation of the various air tools in the course of the repair work. A four-panel switchboard equipped with circuit-breakers and knife switches, installed at the south end of the shops, controls the several cranes and the column circuit-breaker leads throughout the shop. All tracks in the shop are supplied with steel posts and adjustable scaffold supports located about 12 ft. apart for facilitating any repair work which may be required on the upper part of the car bodies.

The United States Bureau of Commerce states that in addition to 1000 copies of the National Electrical Safety Code which have been distributed to commissions, state officials, inspectors and persons interested in its preparation, nearly 10,000 copies have been sold. The Bureau of Standards is preparing a supplementary publication upon the scope and application of the code which is expected to be of considerable assistance to administrators as well as to officials of electrical operating companies and others.



DETROIT UNITED WOOD SHOP—WEST SIDE OF BUILDING



DETROIT UNITED WOOD SHOP—NORTH END OF BUILDING

Increased Coasting in Brooklyn

The motormen who are operating the New York Municipal subway cars in Brooklyn, N. Y., are displaying keen interest in the Rico coasting recorders recently installed on these cars. The original equipment consisted of 300 recorders and six terminal clocks, but it has been found necessary to install four additional clocks.

As an illustration of what has already been achieved through conscientious effort the following statistics are given:

On Feb. 13, shortly after the recorders were put into commission, the lowest individual coasting record was 21 per cent; on March 16 it had risen to 34 per cent. The highest record made by one of the three lines using the recorders on Feb. 13 was 37 per cent, whereas the lowest record by a line on March 16 was 41 per cent.

Motormen who have low coasting records are thoroughly instructed by the supervisors as to how to increase their efficiency and the improvement effected by such instruction has been considerable.

Comparative figures are not available, but there is every indication that the installation of the coasting recorders will result in a substantial saving in power consumption.

The Engineering Foundation and the National Research Council

The secretary of the Engineering Foundation, the inauguration of which was described in the issues of the ELECTRIC RAILWAY JOURNAL for Jan. 23, 1915, page 188, and Jan. 30, 1915, page 237, has presented to the foundation a report on the origin, foundation and scope of the National Research Council. The Engineering Foundation is organized to administer a fund donated to promote research work, and at present all of its income, including a special gift from the founder, is being devoted to the work of the Research Council. The purpose of this council, which now comprises nearly fifty eminent scientists, is to mobilize the research facilities of the country, and to this end it is acting in close cooperation with the Council of National Defense which has been constituted by act of Congress. The Council of National Defense has in charge the investigation, coordination and mobilization of all the means of transportation of the country, and the continuation of the work of the Committee on Industrial Preparedness of the Naval Consulting Board, all having preparation for war as the keynote. The National Research Council has made its first report to the President of the United States, who earlier expressed gratification at the preliminary report of this organization and promised active co-operation.

The Engineering Foundation is administered under the auspices of the United Engineering Society, with headquarters at 33 West Thirty-ninth Street, New York, N. Y., and the secretary is Dr. Cary T. Hutchinson.

Public Utilities in Costa Rica

There is one tramway system in the Republic of Costa Rica, namely, that operated by the Costa Rican Electric Company. This is a British concern, its securities being quoted on the London Stock Exchange. In 1915 this line carried 1,809,823 passengers. The line traverses the city and suburbs of San José and operates extensions to San Pedro del Mojon and Guadalupe. It is stated that this company and other public utility properties in and about San José were to have been acquired by New York interests, but this transfer of control has been abandoned for the time being at least. On Dec. 31, 1915, thirty-four cities and towns had electric lighting facilities and eighty-eight cities, towns and villages had water supply.

Railways Prepare for War

Steps Taken by Several Companies to Assist in National Defense

WOMEN EMPLOYEES IN SHEFFIELD

The Sheffield Corporation Tramways of Sheffield, England, have now in service 900 women out of a total staff of 2000. Of the remaining 1100 all but a few are discharged soldiers or men unfit for arduous work. According to a clipping from the *Sheffield Daily Telegraph* the buses and trams are to-day carrying 43 per cent more passengers than when the war broke out.

It is not only as conductors that the women are being employed. There are now women inspectors, clerks, timekeepers, cleaners and cashiers. Two depots are entirely "manned" by women, and their work is considered excellent. Although service in the tramway department is arduous, demanding long hours, defiance of weather conditions at their worst, and a good temper that may be relied upon never to fail, it is said that the cheerful good humor of the lady conductors is a marked characteristic of the war-time service.

WOMEN ATTENDANTS AT SUBSTATIONS

Although no American railways are yet reported as using women attendants at substations, such a plan is being followed by the American Gas & Electric Company in its property at Dunkirk, Ind. It has there a combined pumping plant and substation with which a residence is connected, and both the regular attendant and his wife are carried on the company's payroll. The duty of the male attendant embraces work on the local distribution system, such as testing meters, repairs to services, repairs to the street lighting system, etc. During the absence of the male attendant, the wife is on duty at the pumping plant and substation. The company has found this plan so successful that it has been introduced into substations at Jonesboro, Hartford and other places in Indiana.

UTILIZING WASTE GROUND FOR CULTIVATION

Notes have appeared in previous issues of this paper on the plan to develop for cultivation unused ground owned by electric railways now on the right-of-way or held for the erection of carhouses or other buildings. Companies which have already been mentioned in this connection are the Alton, Granite & St. Louis Traction Company, the East St. Louis & Suburban Railway, the Illinois Traction System and the Connecticut Company. During the last week the Pennsylvania Railroad has posted notices that the employees of that system will be permitted to farm unused ground of the company. The Northwestern Ohio Railway & Power Company has donated 150 lots in the village of Port Clinton for gardening purposes and has offered four prizes for the four best gardens made and cared for by women, boys and girls. The Delaware, Lackawanna & Western Railroad has also issued a circular letter calling farmers' attention to the help which the Lackawanna Railroad can give them in three general lines, namely: Help in guaranteed quick transportation of perishable consignments to markets; help in securing and bringing to the farms harvest labor from distant points, and help in establishing a system for selling products in towns to the farmers' advantage.

COMMUNICATIONS

Preventing Theft of Incandescent Lamps

LOUISVILLE, KY., April 3, 1917.

To the Editors:

The increasing use of the Mazda type of lamp for street railway service is bringing with it an annoyance which in many cases is assuming serious proportions. There has always been more or less loss by theft with the old carbon lamps; but in the case of the Mazda lamps the trouble is increased both because the Mazda lamp is much more desirable and therefore more tempting to the thief, and also because the cost of these lamps to the companies is about double that of the carbon lamps. The result is that the Mazda lamps are disappearing in large numbers from carhouses, shops, etc., where they are in general use, and the companies are facing a loss which is reaching considerable proportions.

Obviously, if these lamps could be made unsuitable for use in homes on the standard voltage, the temptation would be largely removed and the thefts would cease. It would seem practicable to make and market these lamps to operate six or seven in series instead of five. This would mean that the lamps would be rated at about 90 or 80 volts, respectively, which of course would make their use in homes impossible. The additional lamp or lamps in each circuit could readily be taken care of by the use of a twin series plug receptacle, similar to those now used for operating two lamps or devices from one socket in multiple work. These could probably be located in such a way as not to affect the symmetrical arrangement of the car lights to any great extent, and their use would make unnecessary any change in the wiring. ELECTRICAL ENGINEER.

[NOTE. The above letter was submitted for comment to S. E. Doane, chief engineer National Lamp Works, General Electric Company. Mr. Doane's reply is given below.—EDS.]

NATIONAL LAMP WORKS
OF GENERAL ELECTRIC COMPANY.

CLEVELAND, OHIO, April 10, 1917.

To the Editors:

In reference to the use of odd-voltage lamps for street railway service, as suggested by your correspondent, it seems to me that if the railway companies used low-voltage lamps they would simply increase their burden. If burned on the usual lighting circuits these lamps would give a great deal of light, but would be very short-lived. They would be popular because of their brilliancy and a thief would be impelled to come back for lamps again and again.

It would not be possible to make higher voltage lamps and have them sufficiently rugged to give satisfaction.

No demand has been brought to my attention for lamps of non-standard voltage. Of course, any kinds of lamps can be purchased which any customer wishes, subject to delays and expense incident to the manufacture of special lamps. It seems to me that this problem is one of the design of the fixtures rather than of lamps. One of the fundamentals in a problem of this kind is to put the extra expense into the permanent equipment rather than to add it to the incandescent lamp itself which is thrown away when burned out.

S. E. DOANE, Chief Engineer.

Standardization of Car Design

PRESSED STEEL CAR COMPANY

PITTSBURGH, PA., April 16, 1917.

To the Editors:

The article on the subject of standardization of car design, by W. H. Hulings, Jr., vice-president, The J. G. Brill Company, in your issue of Dec. 30, 1916, has been read with a great deal of interest. Mr. Heulings goes into the subject so fully that there is hardly anything that can be added to emphasize not only the advantages which would result but also the difficulties in the road of bringing such an undertaking to a successful issue.

You are no doubt aware of the efforts which have been made during the last few years in the direction of standardizing freight cars, which would seem to be a comparatively easy matter, because such cars are used in practically the same class of service. That is to say, while there are, of course, several types of cars required for different kinds of ladings, each type is in the same service, and it should not be very difficult to standardize each of these types. But comparatively little progress has been made, although the subject has the earnest consideration of the American Railway Association.

If it is so difficult to standardize freight cars, does it not seem reasonable to believe that it will be practically impossible to standardize electric cars for street railways, or for suburban and interurban purposes, on account of the almost immeasurable differences of requirements—not to count personal preferences governing the construction of such cars? Further, it must not be forgotten that the fact that electric cars are very seldom used in interchange makes the necessity less apparent.

Another handicap against standardization is the patent situation. Nearly every constructive feature is covered more or less by patents, the free use of which is not open to the builders, and every new construction covered by patents is generally followed by one or more substitutes which complicates the situation very much.

To ascertain, however, the sentiment among builders and users of electric cars on the subject, would it not be best to lay the whole question before the next electric railway convention, so that if it is looked upon favorably a committee can be appointed with instructions to report in another year.

Such a committee could perhaps see its way clear to make suggestions for the standardization of a number of details generally used on all cars, no matter what the type of the car as a whole may be. This would be a beginning and lead to further efforts in the future. Such procedure would be on lines similar to the work which has been done by the Master Car Builders' Association during the last thirty-five years and which has been very beneficial not only to the railroads but also to builders of cars, even though it has not resulted in making standard cars. CHARLES A. LINDSTROM,
Assistant to the President.

Committee on National Defense

The committee on national defense of the American Electric Railway Association is sending out a bulletin to all electric railway companies with suggestions as to how they can best co-operate in the work of national defense in the present condition of affairs.

The Illinois Traction System arranged a practical demonstration of its automatic block signal system at the University of Illinois electric show, which was held recently in the electrical engineering laboratory of that institution.

Practical and Economical Solutions of Problems in

EQUIPMENT AND ITS MAINTENANCE

Every live shop, track, line and power plant man is doing something that others would like to know about. Such men have a splendid opportunity to assist the industry by notifying the editors of this paper of new things that have been done. Information may be sent in the form of rough notes or short articles, and special rates will be paid for all accepted material.

Two-Car Trains for Suburban-Interurban Service

D. U. R. Installs Motor-Trailer Train on Pontiac Division Where Route Requires City, Suburban and Interurban Operation

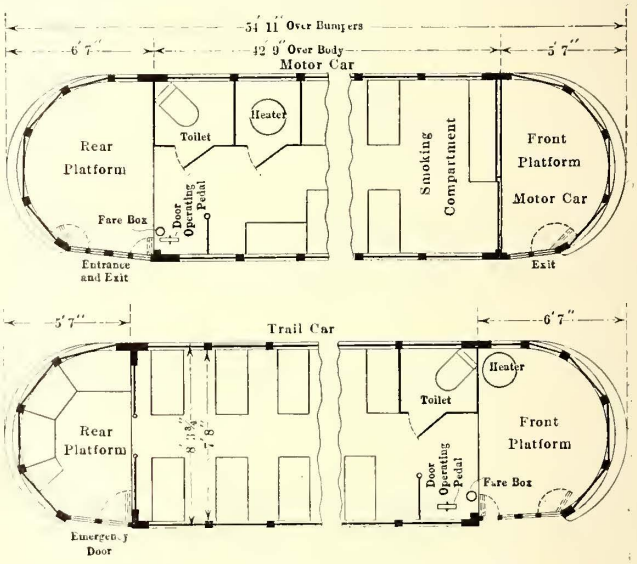
BY H. S. REED
Chief Draftsman Detroit United Railway

Among the recent additions to the rolling stock of the Detroit United Lines are eight trains, each consisting of a motor car and trailer and designed for service on the Pontiac division. One of the features of these trains of more than usual interest is the provision for passengers boarding the motor car or trailer from the same point, or, in other words, the motor car and trailer form a center-entrance train. This arrangement eliminates the delay at stopping points caused by passengers being compelled to run back or forward a car's length in case one car is full.

The service in which these cars are operated is divided into three branches; namely city, with a schedule speed of 10.8 m.p.h.; suburban, with a schedule speed of about 15 m.p.h.; and interurban, where the schedule speed increases to more than 25 m.p.h. The route over which these trains are operated is from the interurban waiting room in Detroit through the center of Pontiac to the terminal point called Oakland, which is located at the northern edge of the city. The distance one way is 25.38 miles. The limiting conditions of this service were determined by a test made on a single car, the results of which governed the design of the cars as well as the selection of the motor equipment.

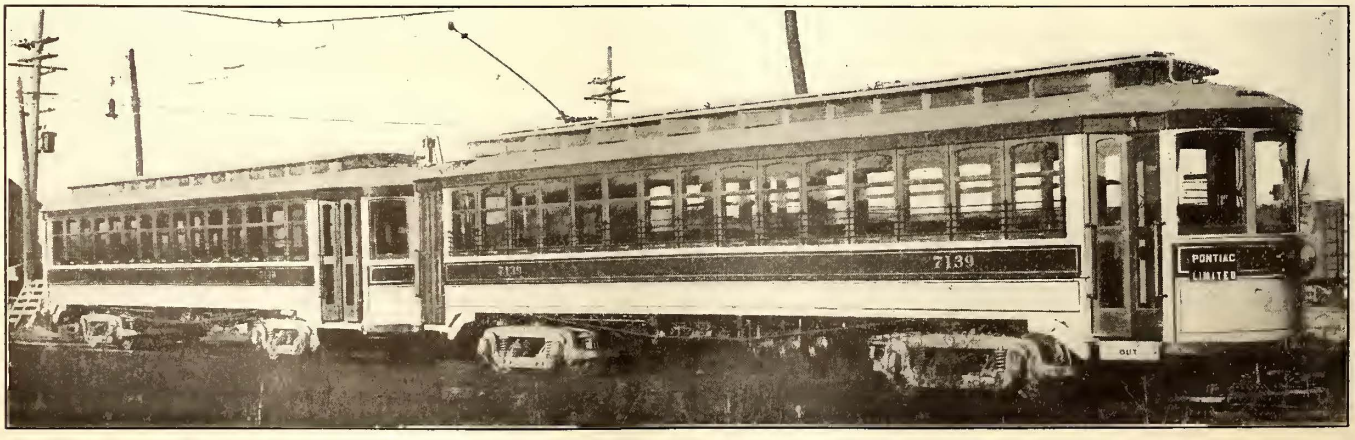
Both motor and trail cars are 54 ft. 11 in. over bumpers and 8 ft. 3¾ in. over sheathing. The drop platforms are given a ramp of 1½ in. toward the open side. The front platform of the motor car and the rear platform of the trail car are 5 ft. 7 in. long, while the rear platform of the motor car and the front platform of the trail car have a length of 6 ft. 7 in. With these exceptions the motor and the trail cars are practically identical in construction. The body length of both is 42 ft. 9 in. and the truck centers 29 ft. 9 in. The trucks are located symmetrically with respect to the entire car, but are off center relative to the body of the car. This arrangement was necessary to prevent the swing of the drawbar from exceeding 63 deg. on the sharpest curve.

The underframe is of steel with outside sills of 3-in. x 4-in. x ⅜-in. angles, the 4-in. leg being vertical and reinforced with 12-in. x ⅜-in. plates. There are no center sills and the car floor is supported on 4-in. I-beam crosspieces. The end sills are box girders constructed of 4-in. channels with cover plates. The necessity of keeping the car floor as low as possible to secure the proper step heights and still allow proper clearance for the multiple unit equipment underneath produced this shallow underframe, which was further strengthened by the use of 1½-in. truss rods.

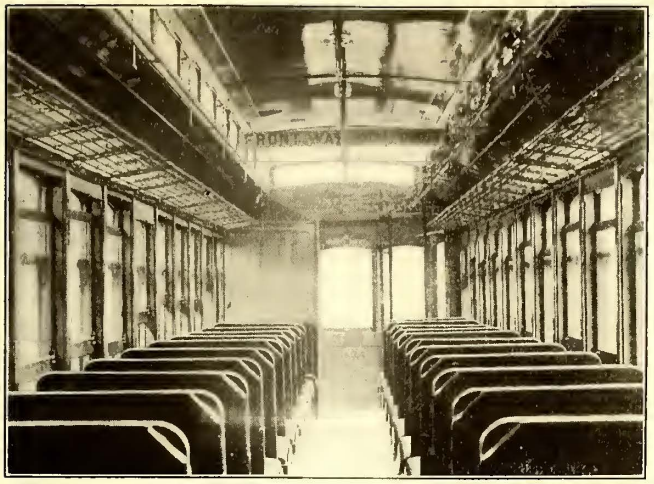


FLOOR PLAN OF MOTOR CAR AND TRAILER

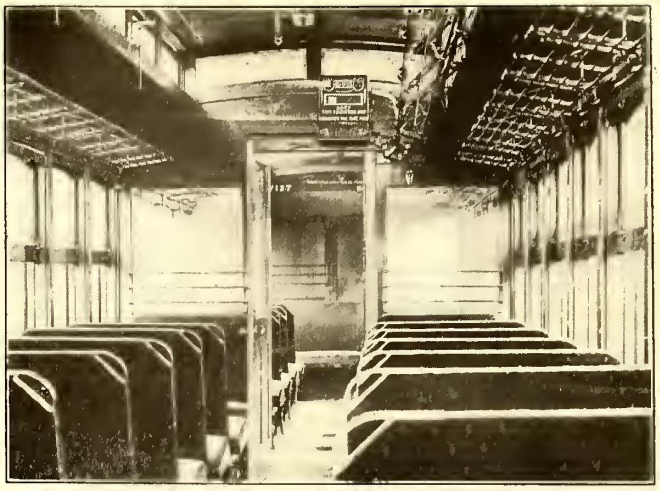
The body is of wood with concave and convex panels. There are fifteen windows on a side, the upper part being stationary and the lower part arranged to raise. A



TWO-CAR TRAIN FOR CITY, SUBURBAN AND INTERURBAN SERVICE



TRAIL CAR INTERIOR ARRANGEMENT



MOTOR CAR INTERIOR ARRANGEMENT

single folding door on the front platform of the motor car is operated manually in conjunction with a folding step and is used for exit only. On the rear platform for entrance and exit are two folding doors connected to folding steps and operated by the National Pneumatic door engines. Both entrance and exit doors open and close simultaneously. The door engine is controlled by a foot pedal at the conductor's position in the rear of the car and also by a rod running along the side of the car.

When operating in the city under the pay-as-you-enter system the conductor stands at the door-operating pedal and collects the city fares as the passengers step into the car. When the limits of the one-fare zone are reached, the conductor collects the interurban fares through the car and may open or close the doors from any point in the car by means of the door rod.

An entrance and exit door is provided on the front platform of the trailer and the arrangement, operation, etc., are in general uniform with the door of the rear platform of the motor car. The rear platform of the trailer is equipped with a single folding door for emergency use only. This door is not operated by an engine but can be unlocked at three different points in the car by means of a rod, and when unlocked may be easily opened by passengers. The interior is one long compartment containing twenty-seven Hale and Kilburn No. 11-A seats and one bulkhead seat. The rear vestibule is also equipped with a row of seats around the inside of the dash affording room for four passengers. All seats are upholstered in dark green figured frieze plush. The seating capacity of this car is sixty.

The motor car is divided into smoking and main compartments. The smoking compartment contains eight of the No. 11-A seats and three bulkhead seats upholstered in dark green leather. The main compartment contains eleven No. 11-A seats and four bulkhead seats upholstered in dark green figured frieze plush. The smoker will seat twenty-three passengers and the main compartment thirty-one, giving the car a total seating capacity of fifty-four, and making the seating capacity 114 for the entire train. In the trailer there is no smoking compartment, passengers being reminded by an inscription on an outer panel near the front door. The toilet room in this car is located in the rear left-hand corner with a heater room just in front of it, while in the trailer the toilet is in the front left-hand corner of the car and the heater is placed on the front platform.

The Peter Smith No. 1-C hot-water heater is used on both cars and on both ends of each Tomlinson air and electric coupling radial drawbars, form 8, 5 ft. long, are mounted. The electric equipment consists of four Westinghouse No. 557-A motors with HL control, which is installed on the motor cars only. The gear ratio is 21:56. The air-brake equipment is Westinghouse AMM with D2EG compressors on the motor car, and automatic brake on the trail car. The train signal device was furnished by the Consolidated Car Heating Company. Both cars are mounted on Standard C-60-P trucks with 6-ft. 6-in. wheelbase and 33-in. rolled-steel wheels, thus providing suitable equipment for installing motors on the trail cars should this become necessary at a later time. The weight of the motor car is 69,840 lb. and of the trail car 45,400 lb., making the weight of one train 115,240 lb.

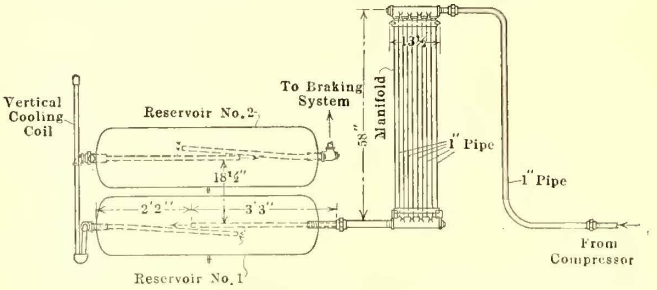
The eight trains have been in operation for several months and have demonstrated that they are able to perform satisfactorily the work for which they were built.

Freezing of Air Brakes Avoided

Pipes Entering and Leaving Main Reservoirs Extended so that Ends of Reservoirs Act as Baffles to Remove Suspended Moisture

BY J. J. SINCLAIR
Assistant Engineer of Car Equipment New York Municipal Railway, Brooklyn, N. Y.

Each winter season brings out different methods of preventing the freezing of the water which condenses in the pipes of air-brake systems of cars. Since most of the moisture will condense where the cooling of the



PLAN OF AIR PIPING ILLUSTRATING METHOD OF PREVENTING FREEZING

air takes place, it is essential to provide a means of removing this suspended water from the pipes before it is carried through into the air-brake system proper. The diagram shown herewith illustrates how this has been accomplished on the subway cars of the New York Municipal Railway.

The air coming from the compressor passes through

the manifold which consists of five 1-in. pipes connected in parallel between headers. As the air is cooled in the manifold the moisture condenses and is carried along suspended in the air until it reaches the first main reservoir. It will be noticed that the incoming pipe is extended to within 2 ft. 2 in. of the end of the reservoir, which thereby acts as a baffle and removes much of the suspended water. This falls to the bottom of the reservoir, where it is drained off. The outgoing pipe extends beyond the end of the incoming pipe, thus providing for good circulation of air in the reservoir. The air passes from the first reservoir to the vertical cooling coil. Any remaining moisture will condense here and be carried into the second main reservoir, where it is removed as in the first one.

This scheme has worked out in a satisfactory manner during the past winter and is one that could readily be applied to any air-brake system.

Saving Labor on Pole Holes

Use of Explosives Reduces Cost in Soils That Require Loosening—Loading Conditions Not the Same for All Soils

BY J. B. STONEKING, M.E.

Present-day conditions of labor shortage and costs, and the extreme difficulty of organizing and keeping efficient pole line construction gangs, have caused considerable delay in work on line extensions. Where poles must be set in rock, dynamite has long been used as the only successful method of making holes, whereas the use of explosives for making pole holes in material other than rock has grown but slowly.

PREPARING TO BLAST A POLE HOLE; VIEW OF DYNAMITE STICK

Experiments with different soils have shown that what is a good loading practice for one condition does not always hold true for others. It is therefore necessary to shoot a few holes in order to arrive at a correct loading. Better results have been obtained by removing the top earth to a depth of several inches and to the diameter of the pole hole desired before making the bore hole for the dynamite. In making the holes for the dynamite a punch bar driven by hammers, a soil auger with a long handle, or a churn drill are generally used, although one company used a specially made hollow pipe drill that is churned up and down, enough water being used to make a thin mud.

For deeper work up to 6½ ft. very good holes are made by tying small pieces of from one-eighth to one-half cartridge to a small straight lath or stick, starting at the bottom end and spacing them about 6 in. to 12 in. apart, leaving the last piece about 18 in. to 24 in. below the top of the ground. This distributes the charge and packs the earth tightly against the sides, leaving a cavity from 12 in. to 18 in. in diameter. Sometimes the dynamite is inserted into a long roll or cylinder of heavy stiff paper and spaced as with the lath.

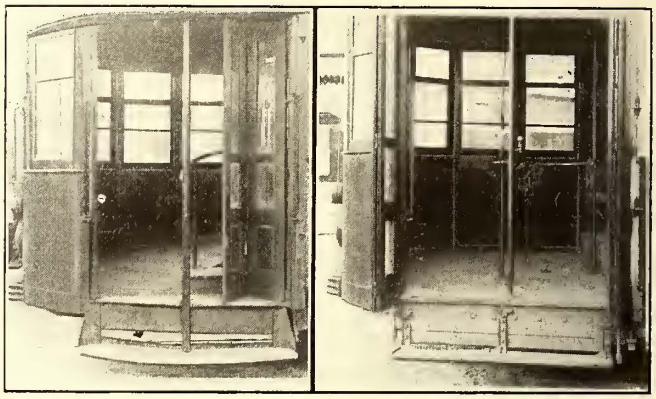
In general, the quicker-acting dynamites make better holes than the slower acting, heaving grades, a 40 to 50 per cent straight grade being used in summer and a 40 to 60 per cent low-freezing extra grade being used in winter when the dynamite may become chilled or frozen.

Ordinarily no tamping is necessary, but for harder material a small amount of tamping has the effect of confining the gases formed in the explosion, thereby creating a greater lateral pressure. Tamping generally results in a bridge being left over the cavity. By varying the size and spacing of the cartridges, and the amount of tamping, the engineer is able in a few trial holes to obtain a system of loading to fit almost any condition.

Surface Cars Remodeled and Standardized at Kansas City

Work Includes Removal of Inclined Platform, Rearrangement of Seats and Redecorating

The work of remodeling fifty-one cars of the "900 Series" type by the Kansas City Railways is nearly completed. This is only one of the undertakings to bring all

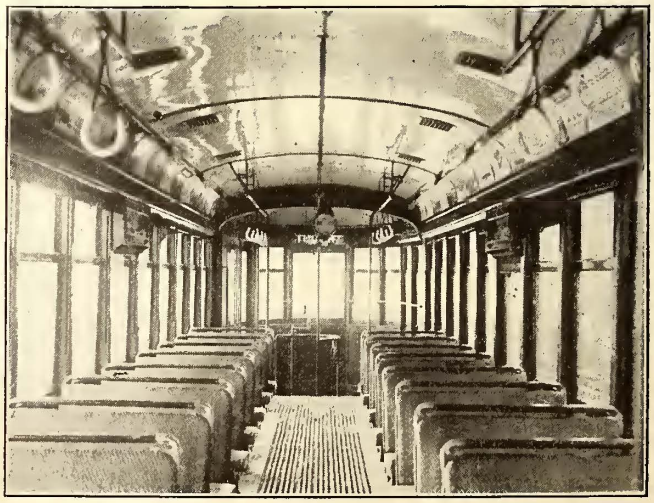


REAR PLATFORM BEFORE AND AFTER REMODELING

of the company's cars up to standard. The remodeling of other types was described in a recent issue of the ELECTRIC RAILWAY JOURNAL.

Included in the work is the replacement of a ramp in the rear by a floor having a 3-in. slope and forming a step with the main floor of the car. Outward folding doors and steps are being installed at the rear and a folding step added at the front. Both the steps and the platform knees are straight in the remodeled car.

The strap poles and hand straps in the center of the cars are being replaced by sixteen sanitary straps. In the

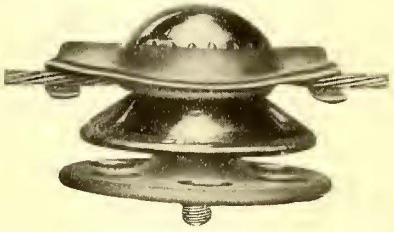


REMODELED INTERIOR, SHOWING SANITARY STRAPS

rearrangement of seats the substitution of longitudinal seats for the last pair of cross-seats at the rear end provides a wide space such as exists at the front. Six stanchions are also being installed. The ceilings are of Agasote, while the exteriors of the cars are being repainted in the standard orange and cream enamel with the company's standard color on the roofs.

Trolley Hanger for High Voltages

The trolley hanger shown in the accompanying illustration has been developed by the General Electric Company, Schenectady, N. Y., for use on potentials of 1200 to 1500 volts. It is known as the Form P suspension. It has a porcelain body into which a stud designed to



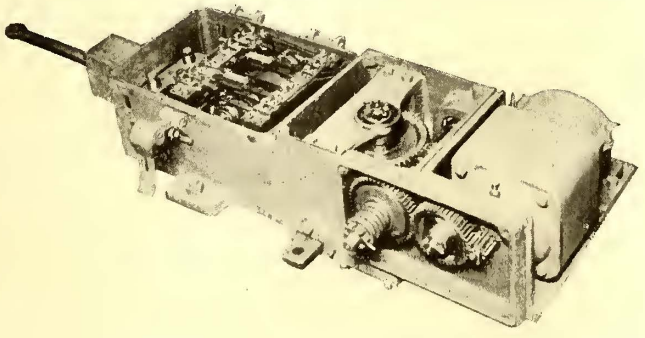
HIGH TENSION TROLLEY WIRE HANGER

withstand a force of 3 tons is cemented. There is a malleable-iron yoke for attaching the span wire and a guard of malleable iron under the porcelain body to afford protection against "wild" trolley poles.

Railway Switch and Lock Movement

An electrically operated railway switch and lock movement recently put on the market by the Union Switch & Signal Company, Swissvale, Pa., is shown in the accompanying illustration. This is designated as Style M. By the use of a worm gear for part of the gear train the size and weight of the apparatus has been reduced, and at the same time the worm gear locks the switch against movement caused by external forces.

Between the motor and the worm gear there is a simple disk friction clutch which provides ample protection for the gear train against the shock which might result from throwing the switch against obstructions of any kind. It also serves to absorb the shock on completion of the movement. This clutch maintains a constant coefficient of friction under wide variations in load and is



RAILWAY SWITCH AND LOCK MOVEMENT WITH COVER REMOVED

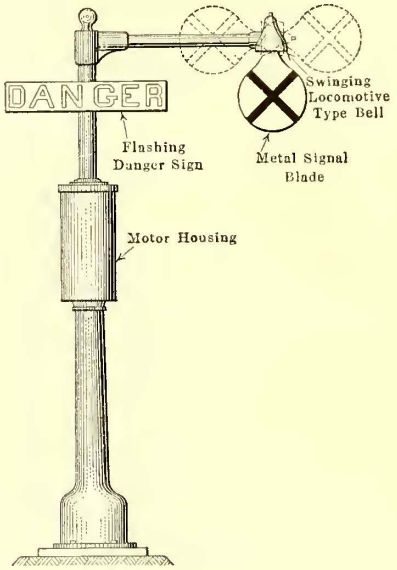
not affected by oil or moisture. The friction disks are made from automobile brake lining material and are easily replaced. The operation of the movement is such that the switch is locked in its normal or reverse position by means of the operating rod as well as by the lock rod.

A circuit controller operated by the slide bar is provided for the motor cutout and standard indication circuits. The contacts of this controller are adjusted in such a way that the indication circuit is always disconnected from the source of energy and short-circuited, except when the switch points are in either of their extreme locked positions. A separate point detector attachment may be incorporated in the circuit controller if additional protection afforded by a separate connection to the switch point is desired.

The switch and lock movement can be furnished for operation on high or low voltage direct current, or for alternating current of any standard voltage and at 25 or 60 cycles.

Spring-Operated Crossing Signal with Winding Motor

The track-winding type of crossing signal made by the Hoeschen Manufacturing Company, Omaha, Neb., has been supplemented by a similar signal arranged for motor winding. This was brought out to make possible the installation of the device in locations where the limitations of the track-winding type prohibited its use. A track-winding signal can not be installed at a crossing near a carhouse or shop where the cars, in coming out of the shop and switching back in, would run over the starting mechanism but would not continue on over the winding mechanism. In this case the signal would operate enough times without a winding impulse to completely unwind the spring and leave the



MOTOR-WINDING SPRING-OPERATED CROSSING SIGNAL

signal inoperative. The motor-winding type overcomes these difficulties and has another advantage in that it can be placed anywhere. It is arranged so that the motor winds the spring up faster than the spring unwinds when the wigwag is operating. When the spring is completely wound a cam actuated by a spring operates a switch mechanism which stops the motor. Then when the spring is nearly unwound this same mechanism cuts the motor in and the rewinding is repeated automatically regardless of the train movement.

Current for the winding motor can be supplied from a battery by using a low-voltage motor, or from the signal line or trolley supply by using a resistance inserted for a 110-volt a.c. or d.c. motor. A feature of the mechanism is an automatic time stop which may be adjusted so that the signal will operate for a period of from thirty seconds to three minutes and then be automatically stopped. This takes care of instances in which a car enters the block and stops, thus not operating the relay which stops the mechanism.

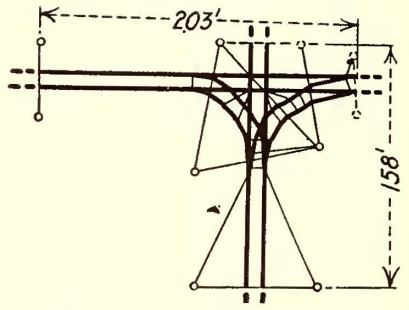
Cost of Erecting Overhead Work—VII

(From the records of a large Eastern company)

The following is the seventh group of a series of diagrams with figures to show the actual costs of erecting the various types of overhead construction described under conditions of light, ordinary and congested traffic. The preceding groups of this series were published in the issues for Jan. 20, page 127; Jan. 27, page 173; Feb. 10, page 260; Feb. 24, page 355; March 10, page 447; and March 31, page 606. The remaining groups will be published in later issues.

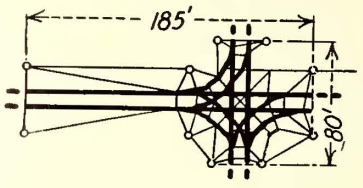
LABOR REQUIRED FOR CONSTRUCTING VARIOUS TYPES OF OVERHEAD TROLLEY SPECIAL WORK UNDER VARIOUS TRAFFIC CONDITIONS

Double track three-part through "Y," with crossing



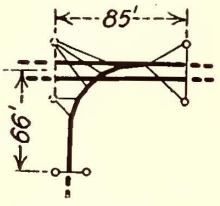
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
46*	$54.45	$39.60	$63.53	$46.20	$72.60	$52.80

Double track crossing double track with three double track connecting curves angle 90 deg.



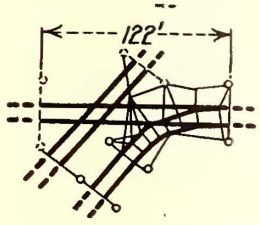
	Light		Ordinary		Congested	
No	Labor	Trucking	Labor	Trucking	Labor	Trucking
47*	$72.60	$52.80	$90.75	$66.00	$108.90	$79.20

Single track, left-hand branch-off crossing single track, angle 90 deg.



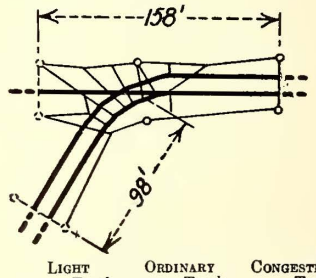
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
48	$15.95	$6.60	$19.14	$7.92	$23.93	$9.90

Double track crossing double track and adjacent to double track left hand branch-off, angle 50 deg.



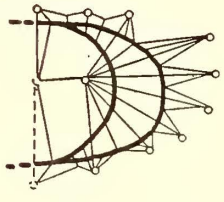
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
49*	$45.38	$33.00	$54.45	$39.60	$63.53	$46.20

Single track left-hand branch-off, single track plain curves, crossing single straight track, angle 60 deg.



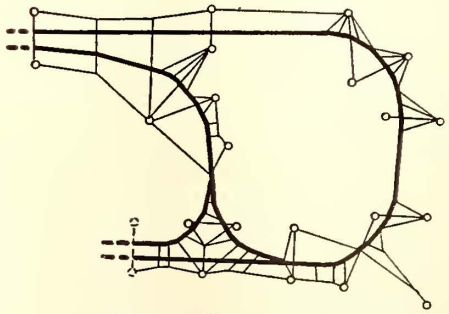
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
50*	$36.30	$26.40	$45.38	$33.00	$54.45	$39.60

Double track loop with single track entrance and exit



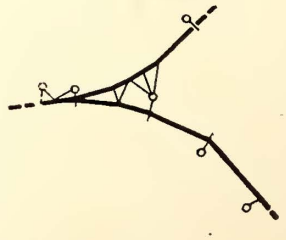
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
51*	$63.53	$46.20	$72.60	$52.80	$81.68	$59.40

Single track terminal loop with single track branch-off connections



	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
52*	$72.60	$52.80	$81.68	$59.40	$90.75	$66.00

Single track "Y" branch-off, angle 90 deg.

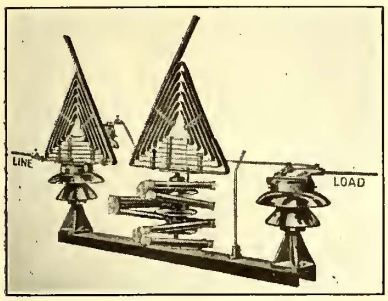


	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
53	$23.93	$9.90	$31.90	$13.20	$39.88	$16.50

*Trucking includes cost of extra reel truck. None of the figures on this page includes cost of superintendence and engineering.

New Lightning Arrester for Heavy Surges

A lightning arrester for use on transmission systems where very heavy surges are experienced has recently been placed on the market by the Railway & International Engineering Company of Pittsburgh, Pa. The arrester is of the Burke series horn-gap type and embodies a reactance coil connected in series with a high-capacity Koppat resistor in the ground circuit.



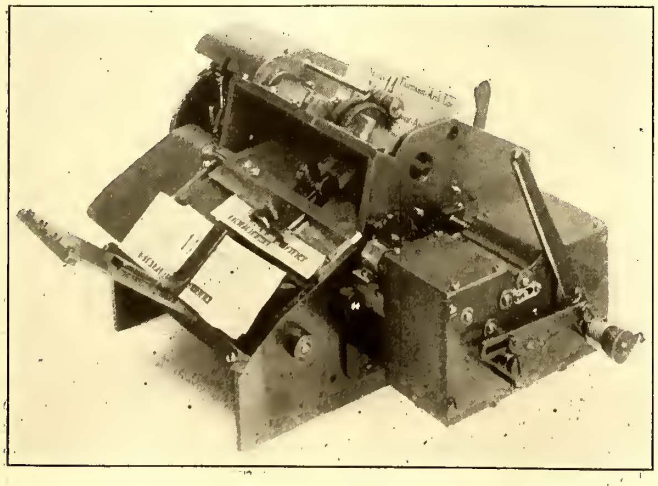
NEW LIGHTINING ARRESTER FOR HEAVY SURGES

An auxiliary gap shunts both the reactance coil and the resistor, giving a straight path to the ground for a surge too heavy to be discharged quickly. The reactance coil aids in limiting the rush of power to ground or between phases in case two or more arresters discharge at the same time, and also relieves the resistor of heavy strains by smoothing out the surge.

Another arrester of the Burke series horn-gap type also using the triangular choke coil has recently been developed. This arrester is not intended for use with heavy surges, but is merely an improvement over an arrester built by the company for some time. It provides improved operation and reliability principally in relieving and discharging the line repeatedly without deterioration, through the use of a different type of Koppat resistor and the increase of the capacity of the resistor by more than 300 per cent. This resistor is shunted by an auxiliary gap connected direct to the ground. In case of discharge across this auxiliary gap the arc formed breaks almost instantly, thus inserting the resistance in the ground circuit in series with the power arc that is broken in the main horn-gap.

Memphis Counts Transfers with Tickometer

Since September of last year the Memphis Street Railway Company has been using a Tickometer for counting all transfers. This machine, according to L. LeMay, the railway's auditor, has brought about not only a reduction in the number of people required for checking trip envelops, but also has speeded up the work and increased the accuracy.



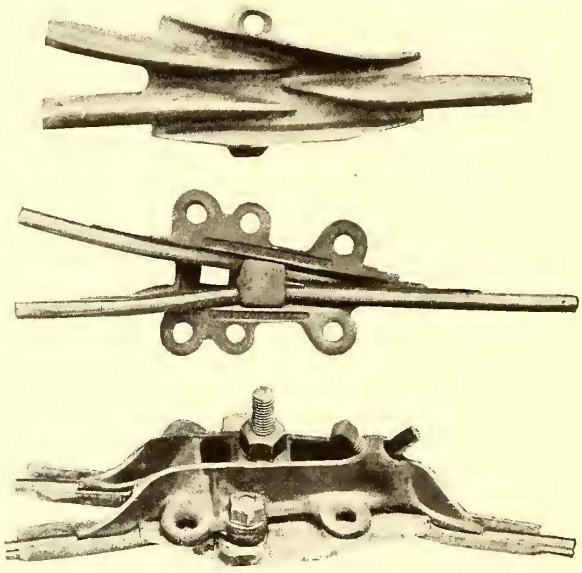
HIGH SPEED MACHINE FOR COUNTING TRANSFERS

The Tickometer is a small motor-driven transfer counting device installed on a table in the auditor's office. On test this machine has counted 800 transfers a minute in actual service in Memphis, and 35,000 to 45,000 transfers are counted in a day by one girl who works eight hours. Transfers are turned in in separate envelops for each trip. The machine is equipped with a total register, and a sub-total register with a reset. It is rented from the Tickometer Company, Cleveland, Ohio, on a monthly basis.

The use of this machine, according to Mr. LeMay, saves the hire of three clerks. In summer months it formerly required the services of five people to count the transfers. Now they are handled by a young man and a girl. The young man opens the envelops, withdraws the transfers and passes them with the envelop across the table to the girl, who feeds them through the Tickometer and checks the conductors' count against the machine count. After checking the transfers they are torn in two and they are later sold for scrap paper.

Trolley Frog with Renewable Wearing Pan

The trolley frog shown in the accompanying illustration is a new design placed on the market by the General Electric Company, Schenectady, N. Y. It consists of two parts, a malleable-iron body and a malleable-iron or composition metal wearing pan fastened to the body by two bolts.



WEARING PAN, BODY AND ASSEMBLY OF TROLLEY FROG

The trolley, span and guy wires are fastened into the body part of the frog. The pan receives all the wear and is easily replaced without disturbing or altering the adjustment of the trolley or supporting wires, since they are fastened to the body of the frog only. Renewals can therefore be made with a very short interruption of traffic. The branch trolley wire can be ended in the body by being clamped under the set screw as shown, or it can be run through the frog and attached directly to the guy wires.

Although the frog is designed for 15-deg. turnouts, by properly locating it with respect to the main and branch lines it can be used for almost any turnout. The weight is only 8 lb., and on account of its lightness the life of the trolley wire immediately adjoining the frog is considerably prolonged.

News of Electric Railways

Traffic and Transportation

Financial and Corporate | Personal Mention | Construction News

Mr. Goodnow at Seattle

Electrification of St. Paul Lines Between Seattle and Othello to Be Directed by Him from That City

C. A. Goodnow, Chicago, assistant to the president of the Chicago, Milwaukee & St. Paul Railway, who supervised the work of electrifying the company's line in Montana and Idaho, recently opened permanent headquarters in the passenger station in Seattle. The Milwaukee will spend $6,000,000 in the work of electrifying the line between Othello and Seattle, work to be completed by Jan. 1, 1919. Between 400 and 500 men will be employed constantly in the work. Engineers who have been in charge of the electrification between Harlowtown, Mont., and Avery, Idaho, arrived in Seattle recently. According to present plans, eight substations will be built. They will cost with their machinery approximately $175,000. The stations will be located at Taunton, Doris, Kittitas, Hyak, at the east portal of the Snoqualmie tunnel, at Cedar Falls, Black River Junction and the Tacoma shops.

Terminal and Power Arrangements

At Seattle it is proposed to electrify the passenger tracks of the company as far as the Stacey Street freight house. At Tacoma the line will be electrified to the passenger station and the yards on the tideflats. Electric current, which has already been contracted for with the Inter-Mountain Power Company, will be delivered on the east from the Washington Water Power Company's plant at Long Lake, 15 miles west of Spokane on the Spokane River, and brought to the substation at Taunton. On the west the electric current will be brought from the Snoqualmie Falls plant of the Puget Sound Traction, Light & Power Company and delivered at Cedar Falls. The Inter-Mountain Power Company, in order to connect the Long Lake and the Snoqualmie Falls power will build transmission lines aggregating 170 miles. There will be delivered at Taunton and Cedar Falls 7500 hp. each, and as the business of the railway increases the contract for this power will ultimately provide for an aggregate of 25,000 hp. Requisitions for the material have been placed with G. F. Wilder, Western purchasing agent of the Milwaukee at Seattle, and contracts for transmission, trolley and other power facilities will be let shortly. Substations of the bungalow type, with attractive grounds, will be built under the directions of R. Beeuwkes, electrical engineer; W. B. Walker, superintendent of construction, and R. E. Wade, assistant electrical engineer.

Mr. Cross Succeeds Mr. House

Thomas A. Cross, who has been vice-president and general manager of the United Railways & Electric Company, Baltimore, Md., on April 12 was elected president of the company and also chairman of the board. He succeeds William A. House in both positions and also succeeds Mr. House as a director. At the same time James R. Pratt, who has been assistant general manager of the company, was elected second vice-president and general manager. H. B. Flowers was appointed assistant general manager to succeed Mr. Pratt. Mr. Flowers was formerly assistant to the superintendent of transportation. William Early was re-elected secretary, John T. Tingle was re-elected assistant secretary, J. T. Staub was re-elected treasurer and N. E. Stubbs was re-elected auditor. Joseph C. France was reappointed general counsel. J. Pembroke Thom was appointed general attorney. Mr. Thom previously held this position. The executive committee consists of Alexander Brown, B. Howell Griswold, Jr., George C. Jenkins, M. Ernest Jenkins and J. H. Aldred. M. Ernest Jenkins succeeded Mr. House as a member of this committee some months ago.

Muskegon Detractor Answered

President of Local Utility Replies to Attack by the City Attorney

John Q. Ross, president of the Muskegon Traction & Lighting Company, Muskegon, Mich., replied recently in a public address to the statements made about the company by City Attorney Sessions in his attack upon the company in connection with the controversy between the company and the city over conditions of the company's street railway franchise, which has until 1931 to run. Officials of the company have previously announced their willingness to enter into negotiations for a new grant, but only on condition that the validity of the present rights of the company to operate be not contested by the city in court. Mr. Ross said in part:

Not All Milk and Honey

"It may be well for the people of Muskegon to remember that the first company owning the street railway failed because its income was not sufficient to maintain it and the property was sold at foreclosure. The second company lost money, and when it was sold to the present company the men who had their money in it received a little more than half of the money invested without having had interest on it while so invested.

"Upon the organization of the present company the common stock of the company was used to raise funds to purchase the street railway, the electric light property and the gas plant. After these companies had been purchased the bond issue of $600,000 was made. You will see from this that the city attorney had not been correctly informed, as his statement that the bonds had been issued to pay for the property does not present the facts.

"In view of these facts, many of them matters of common knowledge to people who lived here at that time, there could be no reliable information obtained by the city attorney which would justify him in failing to give credit to the figures in the investment account of the company as shown in the statement from which he quoted. Neither fact nor fancy justified him in stating that the company earned the equivalent of more than 11 per cent on the original investment.

"This year as a result of the high cost of material it is safe to say that the company will not earn sufficient to pay a dividend to its stockholders, even though most lines of business are unusually prosperous. The stockholders have had to support the property by continually investing additional money in it. The city is fortunate that the majority of the stock is owned by a company which could and did advance money to make up for its lack of earnings for the many lean years it has had. Under the circumstances the company is entitled to at least a fair statement even though the political exigencies of the time seem to demand the taking of action not warranted by the facts."

City Seeks Injunction

The bill for an injunction to restrain the company from using the city's streets for its street railway has been filed in the Circuit Court by City Attorney Sessions. The bill is signed by Mayor Arnt Ellifson. It describes in detail the various ordinances under which the company is operating and relates the negotiations between the city and the company for the Brunswick extension and other improvements. The Mayor has stated that if the city succeeds in securing the injunction it does not intend to exercise this power to stop traffic in Muskegon, but will employ it to force the company to build the Brunswick spur and equip its cars with air brakes and fenders.

Vehicular Tunnel for New Jersey

Public Service Corporation of New Jersey Spends $75,000 on Preliminary Survey

Some time ago Thomas N. McCarter, president of Public Service Corporation of New Jersey, suggested to the executive committee of the corporation that a thorough study be made of the feasibility of constructing and operating a vehicular tunnel between Twelfth Street, Jersey City, and Canal Street, New York. A committee was appointed, and the very best engineering skill was employed. Altogether some $75,000 was expended to determine, as near as might be in advance, whether the construction and operation of a vehicular tunnel would be commercially practicable.

The company's first public announcement of the scope of the work in which it has been engaged was made by Mr. McCarter at a meeting of the Newark Board of Trade, held in the Robert Treat Hotel, Newark, on April 4. The work was financed by Public Service, and was done by a committee consisting of Mr. McCarter, George J. Roberts, Percy Ingalls, Martin Schreiber and Walton Clark, all Public Service officials, assisted by some of the most eminent engineers in the country.

The tunnel recommended by the board is 10,309 ft. long from street entrance to street entrance, 9409 ft. long from portal to portal, and 4495 ft. long from bulkhead to bulkhead. The estimated total cost of construction, at normal prices for labor and material, is fixed at $6,899,000, but it is figured by the engineers that present prices of labor and material would add about about $2,000,000 to this figure. The tunnel contemplated is for vehicular purposes only.

Rhode Island Investigation Prospects

An act creating a special commission to investigate the affairs of the Rhode Island Company was favorably reported in the House on the afternoon of April 13 and was ordered on the calendar to be voted on April 17. It provides that the chairman of the Tax Commission, the chairman of the Public Utilities Commission and the bank commissioner shall constitute the special commission. The commission so created will investigate the company and report to the Public Utilities Commission such changes in the existing laws and conditions as it may find fair and desirable. The Public Utilities Commission is authorized and directed to carry out such recommendations. The State will pay one-half of the cost of the investigation and the company the other half. An appropriation of $20,000 for expenses is made in the bill.

In a report made by the Public Utilities Commission that body says that until a complete investigation is made the company's troubles can never be settled. The report presents the various demands which have been received from the public and the cities and towns for extended service in the way of more transfers and the extension of the 5-cent fare zones. The commission's recommendations follow:

"1. That a complete investigation of the Rhode Island Company be authorized to be made either by this commission, or by this commission sitting jointly with the Tax Commission, or by a special committee appointed for the purpose.

"2. That such investigation shall cover the finances, management, property and mode of operation of the Rhode Island Company, for the purpose of determining whether said company is furnishing to the people of this State a reasonably proper transportation service, and whether the net income of said company is a fair and equitable return upon the property in public service owned and controlled by it.

"3. That such commission shall further determine what modifications, if any, of the rates of fare, or of the transfer system, are just and equitable, and shall order the same to be made.

"4. That such commission shall investigate the matter of the present method of taxation of the Rhode Island Company, including taxes or payments to the State, or to any town or city, and report to the General Assembly on or before Feb. 15, 1918, its recommendations with reference to any proposed modification of such taxes or payments.

"5. That a special appropriation to cover the expenses of such investigation be made."

New York Labor Legislation

Chairman Straus of Public Service Commission Announces Program Will Go Over

Following the strike on the transit lines in New York in August last, the Public Service Commission formulated a plan for the equitable adjustment of differences between operators and employees, with a view to preventing strikes and lockouts. In pursuance of that plan, a series of public hearings was held, in the course of which representatives of labor, representatives of the operating companies and a number of experts representing the general public, gave the commission the benefit of their criticism and advice. In furtherance of the general object the commission planned to formulate legislation for presentation to the present session of the Legislature. Chairman Oscar S. Straus has now announced that the legislative program will be allowed to go over. He said:

"In view of the fact that the country is now at war, and that such a generous disposition prevails on the part of employees and operators, imbued by a high sense of patriotism and a spirit of ready and generous co-operation, the commission entertains the hope that, as a result of this spirit of co-operation, it will follow that an entirely different and more generous relationship between employers and employees will develop. Therefore, the commission has decided not to present any proposed legislation to the Legislature of 1917."

Authority Withheld

The Public Service Commission of Pennsylvania has refused to grant the city of Philadelphia authority to proceed with the construction of the new Broad Street subway, the central delivery loop, the Parkway-Roxborough subway-elevated line, and the high-speed surface line to Byberry. The only favorable action taken was on the extension of the Frankford elevated to Rhawn Street.

George T. Atkinson, assistant director of city transit of Philadelphia, was quoted in part as follows:

"The failure to approve the sections of the new lines, on which bids have been received and opened, means untold delay. However, we must abide by the commission's decision. What the next procedure will be I do not know."

An act has been introduced in the Senate designed to give to the city of Philadelphia full legal authoritiy to operate the city-built, high-speed lines and also to take over the local Philadelphia lines should all negotiations for an operating lease with the Philadelphia Rapid Transit Company fail.

Common User Rights Sought

These Privileges Desired in Effort to Extend the Seattle Municipal Line

An extension of the Seattle (Wash.) Municipal Railway, Division "A," from Nickerson Street and Thirteenth Avenue West to the north city limits in Ballard, and the acquirement of common user rights on Fourth Avenue, between Stewart Street and Jefferson Street, is claiming the attention of Seattle City Council at this time. Last June, in compliance with a request from the Council, A. L. Valentine, superintendent of public utilities, filed a report on Division A and an estimate of the cost of the Ballard extension. The Council, as constituted last year, was not in favor of the extension, and no action was taken on the report. Mr. Valentine estimated the cost of the Ballard extension at $96,213 for a line 3.42 miles long.

Councilman Erickson, as a part of his plan to extend the city railway, Division "A," introduced a resolution at a recent meeting of the Council, by the terms of which the Puget Sound Traction, Light & Power Company would be forced to abandon operation of its Ballard Beach and Ballard North cars over the Fifteenth Avenue N.W. bridge, or grant to the city the right to operate municipal cars over the company's tracks on Third Avenue South and around Jackson Street loop. Heretofore the Puget Sound Traction Light & Power Company has declined to consider common user privileges on the Jackson Street loop because of its congestion.

Seattle Differences Settled

Eleven bills have been passed by the City Council of Seattle, Wash., which settle all differences between the city and the Seattle & Rainier Valley Railway. The bills cover in their provisions the granting of new franchises to the company, including the building of a new line on Genesee Street, the acquisition of common user rights by the city for the municipal line on Fourth Avenue, between Stewart and Jefferson Streets, and the exchange of transfers between the municipal railway and the company. These bills were the result of numerous conferences. By their provisions the franchise of the company is modified as to paving obligations, and the company is granted a franchise on Genesee Street and Fiftieth Avenue South from Rainier Avenue to Hudson Street. The bills also provide for the surrender of certain of the company's franchises. The company is relieved from planking and paving its rights-of-way along Rainier Avenue until such time as the Council decides that the improvement is necessary. Harry W. Carroll, city comptroller, is authorized to pay into court $41,700, representing a judgment awarded to the company against the city.

Increase in Wages in Reading.—The Reading Transit & Light Company, Reading, Pa., on April 1 increased the wages of the motormen and conductors to a maximum of 27 cents an hour from 26 cents. This applies to all the lines of the company in Reading, Norristown and Lebanon.

Constabulary Measure Passed in New York.—By a vote of eighty-one to sixty the Assembly of New York on April 4 passed the Mills-Wells bill creating a State constabulary force similar to that of Pennsylvania. Four troops of forty-five men each are to be provided. The measure was signed by the Governor on April 11.

Stone & Webster Representatives Meet.—Heads of departments, managers of properties, and others connected with Stone & Webster from all parts of the United States convened in Fort Worth, Tex., on March 26, for two days, to discuss problems that confront them. The sessions were executive and took the form of roundtable discussions.

Third Arbitrator May Be Unnecessary.—The questions of wages and working hours between the Detroit (Mich.) United Railway and its union employees may be settled without the aid of a third arbitrator. John A. Russell, arbitrator for the company, and Judge Edward J. Jeffries, the arbitrator appointed by the men, have held conferences, and it is understood they believe that an agreement satisfactory to both sides can be reached without the appointment of a third arbitrator.

Advertising the Cincinnati Election.—The friends of the proposed municipal rapid-transit loop in Cincinnati, Ohio, have resorted to publicity to prepare the public for the vote on the proposition, to be taken on April 17. Opinions of prominent business and professional men on the matter are set forth in the advertising space as well as results that will be attained by the passage of the grant. It is thought that this will have more weight than arguments presented in straight advertising style.

Municipal Men Seek Increase.—Wage increases aggregating $78,000 a year were asked by the platform men of the San Francisco (Cal.) Municipal Railway in a petition filed on April 5. There are 525 platform men who seek raises from $3 to $3.40 a day; 67 track men asked raises from $3 to $3.50 and 30 car repairers asked raises from $3.50 to $4. Timothy A. Reardon, president of the Board of Works, is quoted as follows: "The Municipal Railway is a public utility. As such it should pay its own way. But it cannot pay its own way if it has to bear this extra burden of $78,000 a year. The funds are simply not available."

Man Sentenced for Attempt to Wreck Car.—John Moffo was recently sentenced by Judge E. H. Reppert in the criminal court of Fayette County, Pa., to pay the costs and $500 fine and to serve a period of from four to eight years in the Western penitentiary on a charge of malicious injury to railroads. Moffo was suspected of having placed obstructions on the tracks of the West Penn Railways, Pittsburgh, Pa., on Dec. 27, 1916, which were seen by the crew of an approaching car before damage was done. Claim Agent T. B. Donnelly conducted a vigorous prosecution for the company and when the case was called for trial the defendant entered a plea of guilty.

Obnoxious Missouri Statute Amended.—Governor Gardner of Missouri has signed the bill amending the statute which prohibited a foreign corporation from holding more than 10 per cent of the stock of a company doing business in Missouri. This law was characterized some time ago as a deadener to transportation development within the State. The amendment is expected to do much to encourage new undertakings in the State when conditions have resumed a basis somewhat near normal. At present, however, the extraordinary high prices of all construction material, and the general unsettled condition, will probably prevent the undertaking of any new projects of magnitude.

Strike Dynamiter Resentenced.—Michael J. Herlihy, ex-financial secretary of the subway employees' local of the Amalgamated Association of Street & Electric Railway Employees of America, who pleaded guilty last month to an indictment charging him with setting off a bomb in the Lenox Avenue subway, New York City, on Oct. 25, was resentenced to Sing Sing on April 6 by Justice Tompkins in the criminal branch of the Supreme Court for not less than two years and four months and not more than four years and eight months. Herlihy had been sentenced to twenty years, but later he confessed, implicating four other men. District Attorney Swann recommended the reduction of sentence.

Montreal Committee Studying Railways Here.—The members of the Tramway Commission of Montreal, Que., are making an investigation of the street railway conditions in some of the principal cities of the United States. They were in Cleveland during the week commencing April 1. They had previously visited Chicago and Detroit. It is the purpose of this commission to draft a contract between the Montreal Tramways and the city of Montreal to cover a period of thirty-six years. Those in the party are the president of the commission, J. P. B. Cosgrain; C. P. Beaubien, Alphonse Verville, Charles Loredo, A. W. Stevenson, Raymond Beaudry, secretary; Dr. L. A. Herdt, consulting electrical engineer, and Mr. Playfair of the Montreal *Star*.

Bus Offer Amended.—The Fifth Avenue Coach Company operating the buses on Fifth Avenue, New York, made a new bid on April 5 for additional bus franchises, offering to operate 28 miles of new routes, more than doubling its present system. The lines proposed would give the city six north and south bus lines and three lines serving the central part of the city alone, with enough crosstown lines to link the longitudinal lines properly. Many of the new lines could be put in operation within ten days and all within six months. The company has issued an illustrated booklet "Motor Bus Relief for New York's Transit Needs," which deals with the present lines, the lines that are now proposed for operation and the terms which the company is willing to make with the city for operating the lines.

Appreciation of J. L. Willcut.—The April, 1917, issue of the *United Railroads Magazine*, published in the interest of the United Railroads, San Francisco, Cal., contained a two-page review of the life of the late Joseph Lewis Willcutt, and an appreciation of the man, together with a portrait. Mr. Willcutt, among the many other offices that he held at various times, was secretary and manager of the Market Street Railway, San Francisco. Early in 1887 the owners of that line acquired other properties, and Mr. Willcutt assumed the secretaryship and management of them. In 1900, owing to the many demands made upon his time by the rapid growth of the Southern Pacific Company, Mr. Willcutt resigned from the Market Street Railway, and his son, George B. Willcutt, now secretary and comptroller of the United Railroads, was elected to succeed him.

Decision Reserved in Buffalo-Niagara Falls Case.—The Public Service Commission for the Second District of New York, after an adjourned hearing, in Buffalo on March 30 reserved decision on the application of the Pennsylvania and the Delaware, Lackawanna & Western Railroads for permission to purchase the capital stock and the right-of-

way of the Frontier Electric Railway paralleling and contiguous to the high-speed electric line which the International Railway now has under construction between Buffalo and Niagara Falls. F. B. Lincoln, general manager of the Erie Railroad, which is the only serious objector to the enterprise, told the commission that he thought a satisfactory agreement could be made by which the Lackawanna and the Pennsylvania could use its line between Niagara Falls and Buffalo. The matter has been referred to previously in the ELECTRIC RAILWAY JOURNAL of Jan. 20, page 135, and Feb. 10, page 262.

Labor in the Toledo Grant.—Prof. William M. Leiserson of the Toledo University appeared before the Street Railway Commission of Toledo, Ohio, on April 5, and argued that provision be made in the community plan, under discussion, for an eight-hour day and a minimum wage for the employees of the railway. He advocated a board, made up of representatives of the employees, the company, and the public, to decide the matter of wages from time to time. Professor Leiserson advocated collective bargaining and also the right of the men to strike and the company to declare a lockout. Notice of a strike or lockout should be given from thirty to sixty days before the step is to be taken. Edward Usher, a member of the committee, and formerly president of the Toledo Federation of Labor, said that organized labor was beginning to look with unfriendliness on arbitration. Professor Leiserson said that organized labor always had to fight for what it got. Few points in the proposed franchise were discussed on this occasion.

Oakland Indeterminate Franchise Questioned.—Paul C. Morf, city attorney of Oakland, Cal., has forwarded an opinion to the president of the Railroad Commission of California to the effect that the resettlement franchise plan adopted at the election last November primarily in the interest of the San Francisco-Oakland Terminal Railways, is defective. He holds that the city cannot impose or confer on the Railroad Commission, a State body, power to make a survey of a public utility as provided for in the amendment, and therefore his opinion is that the city has no right to obtain a valuation from the Railroad Commission in connection with the proposed indeterminate franchises. While the decision may delay the progress of the negotiations in connection with the settlement, it is generally accepted that it is much better that any doubts about the proceeding should be raised at this time rather than later. Mayor Davie of Oakland is proceeding with the details, and has named an advisory committee of seven to prepare a resettlement franchise in accordance with the charter amendments.

Programs of Association Meetings

Railway Storekeepers' Association

The annual convention of the Railway Storekeepers' Association will be held at the Hotel Sherman, Chicago, Ill., on May 21, 22 and 23. The annual meeting of the Railway Materials Association will also be held at the same time and place.

Illinois Electric Railways Association

At the call of C. F. Handshy, president of the Illinois Electric Railways Association, the chairmen of all of the standing committees of that association were present or were represented at a meeting held in Springfield, Ill., on April 5. Plans were laid for the association activities during 1917. The next meeting will probably be held at Springfield, Ill., on May 18, and one of the subjects to be considered will be lightning protection for trolley wire and rolling stock. The data will be prepared by H. A. Johnson of the Chicago Elevated Railways, and John Leisenring of the Illinois Traction System. At a later meeting B. J. Fallon of the Chicago Elevated Railways plans to present an analysis of the wood tie situation as it now affects the electric lines in Illinois. It was also considered desirable to devote one meeting during the year to the subject of safety, and this meeting will be in charge of H. B. Adams, safety engineer of the Aurora, Elgin & Chicago Railroad.

Financial and Corporate

$33,800,000 Utility Financing in March

Increase Over February More Than $15,000,000, Over January More Than $40,000,000 and Over March, 1916, More Than $86,000,000

The record of public utility, railroad and industrial financing for March is of particular interest because of the conditions under which this total of $266,651,575 was placed. For most of the month there was pending as a deterrent the forthcoming Government loan and the loan of $25,000,000 to the State of New York, while the issues actually brought out included the $100,000,000 ten-year loan to the French Republic, the $150,000 000 loan of Canada in the interest of which a special campaign was conducted in the United States, the loan to the State of Louisiana, and other minor offering of political subdivisions.

EXTENT OF FINANCING

Such expressions of sentiment as were made by securities dealers for publication indicated in general that they considered that a condition existed which made advisable an attitude of marking time. Despite this, however, corporate financing for the month was more than $15,000,000 greater than in February, more than $40,000,000 greater than in January, and more than $86,000,000 greater than in the same month of 1916. The loans of $60,000,000 to the Pennsylvania Railroad and $45,000,000 to the New York, New Haven & Hartford Railroad, one long-term financing and the other emergency financing, were considered especially noteworthy on account of their size. Another issue that attracted attention was the $1,250,000 of notes for the Melbourne (Australia) Electric Supply Company, Ltd., referred to more in detail on page 708 of this issue. Of the total of March financing, $155,120,000 was contributed by the railroads and $77,680,000 by industrial corporations, leaving $33,851,575 for the public utilities. Amounts of bonds, notes and stocks issued by railroad, industrial and public utility corporations in March, and for three months, with the totals for each class of corporation, and for each class of security, follow:

March:	Bonds	Notes	Stock	Total
Railroad	$78,050,000	$76,770,000	$300,000	$155,120,000
Pub. utility	20,787,000	9,100,000	3,964,575	33,851,575
Industrial	22,000,000	24,200,000	31,480,000	77,680,000
	$120,837,000	$110,070,000	$35,744,575	$266,651,575
Three months:				
Railroad	$132,256,000	$132,570,000	$18,051,000	$282,877,000
Pub. utility	76,685,000	35,264,000	32,436,075	144,385,075
Industrial	130,130,000	80,050,000	105,163,000	315,343,000
	$339,071,000	$247,884,000	$155,650,075	$742,605,075

Approximately $101,992,000 out of the March total of $266,651,575 financing was for the purpose of retiring maturing securities.

DETAILS OF UTILITY ISSUES

The details of March financing as compiled by Dow, Jones & Company, publishers of the *Wall Street Journal*, show the following among the utility issues:

Company:	Security	Rate	Amount
Montreal Tram. & P. Co. 2-yr.	Notes	6	$5,350,000
Cincinnati Gas & Elec. Co. 1st	Bonds	5	1,936,000
United Nat. Utilities 3-yr	Notes	6	1,800,000
New Brunswick Power Co. 1st	Bonds	5	1,750,000
Duluth Street Ry. gen	Bonds	5	1,728,000
Erie Lighting Co. 1st s. f.	Bonds	5	1,650,000
Denver Gas & E. Lt. Co. cum. pf.	Stock	6	1,500,000
Utah Power & Light Co. 1st	Bonds	5	1,261,000
Melbourne (Aust.) El. Sup. Co.	Bonds	6	1,250,000
Birmingham Ry., L. & Pr. 2-yr.	Notes	6	1,200,000
U. S. Public Service Co. col. lien	Bonds	6	1,200,000
St. Cloud (Minn.) Pub. Serv. 1st	Bonds	6	1,032,000
New Bruns. Power Co. cum, pf.	Stock	7	1,000,000
Eastern Wisc. Elec. Co. 1st	Bonds	5	998,000
Ohio Cities' Gas Co.	Stock	..	964,575
Arkansas Val. Interurban 1st	Bonds	5½	900,000
Jacksonville (Fla.) Trac. Co. 2-yr.	Notes	6	750,000
Southern Public Utilities 1st	Bonds	5	703,000
Nat'l Gas. Elec. Lt. & P. ser. B.	Bonds	6	500,000
Alliance (O.) Gas & P. cum. pfd.	Stock	6	500,000

Annual Report

Harrisburg Railways

The comparative income statement of the Harrisburg (Pa.) Railways for the twelve months ended Dec. 31, 1915 and 1916, follows:

	1916 Amount	1916 Per Cent	1915 Amount	1915 Per Cent
Gross earnings	$1,015,004	100.0	$914,936	100.0
Operating expenses	$472,894	46.6	$397,392	43.5
Allowance for depreciation	95,476	9.4	93,425	10.2
Taxes, including amount reserved for unsettled taxes	80,000	7.9	78,750	8.6
Rentals of leased lines	157,550	15.5	157,550	17.2
Total	$805,920	79.4	$727,117	79.5
Net earnings	$209,084	20.6	$187,819	20.5
Income from investments	18,797	1.8	16,765	1.8
	$227,881	22.4	$204,584	22.3
Interest on bonds	148,608	14.6	147,957	16.1
Net income	$79,273	7.8	$56,627	6.2

The operations of the company were seriously affected, both by a decrease of revenue and an increase of expenditures as the result of a strike which started on July 16, and kept traffic below its normal amount for about two months. Despite this fact, however, the gross earnings for 1916 showed an increase of $100,068, or 10.9 per cent, as compared to those in 1915, while the net earnings gained $21,264, or 11.3 per cent.

Operating expenses increased $75,502, or 18.9 per cent, the depreciation allowance $2,051, or 2.2 per cent, and taxes $1,250, or 1.6 per cent. The increase in income from investments much more than offset the increase in bond interest, and the result for the year was a net income gain of $22,646 over the $56,627 figure of 1915. After paying a six-months' dividend of 1½ per cent, amounting to $31,500, and taking in the prior balance of $30,926, the balance on Dec. 31, 1916, totaled $78,700.

In regard to the jitney situation, the annual report of the company states that since the beginning of the new year there have been licensed under the city ordinance eighty-eight jitneys, which are operating in competition with the company. As none of these has received a certificate of public convenience from the Public Service Commission, proceedings have been instituted before the commission to compel the operation of unauthorized jitneys to cease, and require the issuance of certificates of public convenience to those, if any, which the commission may decide to be necessary. The matter is now pending before the Public Service Commission, March 10 having been set as the date for the hearing.

Utility Investments Recognized

Maine Has Amended Savings Bank Laws to Make Certain Utility Bonds Legal

The State of Maine has passed a bill amending the law so as to include certain bonds of public utility corporations not heretofore recognized as legal for investment. The amendment reads as follows:

"Savings banks may invest ('I') in the first mortgage bonds of any public service corporation located, wholly or in part, in the states other than Maine, named in paragraph 'f' (New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, Ohio, Indiana, Kentucky, Michigan, Wisconsin, Minnesota, Iowa, Illinois, Missouri, Kansas, and Nebraska), engaged in business of producing and distributing electric light and power when they otherwise comply with the provisions specified in paragraphs 'f' and 'g,' provided that the average gross income of said corporation for three years next preceding such investment shall have been not less than $200,000 each year, and the average net income of said corporation for the same period shall have been not less than twice the interest charges on the bonds outstanding secured by such mortgage, and all 'prior liens'; and further provided that such net income for the last preceding year shall have been not less than one and one-half times the interest charges on all the interest-bearing indebtedness of the corporation.

"The net income of the company, as described in this section, shall be its net earnings and income derived from property covered by the mortgage in question after payment of all operating expenses, maintenance charges, repairs, renewals, rentals and taxes, and all guaranteed interest and guaranteed dividends paid by or due from it.

"'J' In the first mortgage bonds of any public service corporation combining business of an electric railroad, light and power company, and an artificial gas company, or any two of them, which otherwise complies with the provision specified in paragraphs 'f' and 'g' and 'i' provided the average gross income of such corporation for three years next preceding shall have reached at least the sum of $300,000 per annum."

Foreign Financing

Two Recent Flotations Affecting Private Enterprises Show Willingness to Help in Enterprises Abroad

In the wake of the stupendous war loans that have been made in the United States to foreign countries there has followed a volume of financing of private undertakings in foreign lands which has been considerable in the aggregate and has in some cases contained elements of variety and unusualness that in their success speak well for the continued financing of properties abroad with American money. One of these issues was the recent small loan to the Melbourne (Australia) Electric Supply Company, Ltd., made through Lee, Higginson & Company.

Soon after hostilities began, the British Government put a ban on the raising of funds in the United Kingdom for financing the needs of corporations at home and overseas, including the British dependencies. The effect of this embargo was reflected in the financing returns of Great Britain for 1916, which showed that out of £585,436,400 raised there in 1916 the utility, industrial and other companies secured less than £10,000,000.

Terms of Melbourne Loan

One of the companies that felt it inexpedient to put off capital expenditure, however, was the Melbourne Company. As stated before, this financing involved only $1,250,000, but it was new, an experiment. Still, the offering was oversubscribed within a few hours. Bearing 6 per cent interest, the bonds were offered to yield 6¾ per cent. The bonds are convertible at the option of the holder on thirty days' notice into 7 per cent first cumulative preference shares at par after March 1, 1918, or into the ordinary stock at 150 at any time. For this purpose bonds will be convertible at $5 per pound sterling (being at the rate of £100 preference shares or £67 ordinary stock for each $500 of bonds). An interesting feature of this conversion privilege was the fact that the company is paying cash dividends of 7 per cent on the preference shares and 10 per cent on the $2,313,446 ordinary stock, and has paid at these rates for the last four years. At the time of the loan both classes of stock were quoted in the London market at prices above the rates of conversion for the bonds. Principal and interest are payable in the United States in dollars or in London in pounds sterling at current rate of exchange without deduction for any British or Australian taxes.

Another unusual foreign offering made here recently was that of $15,000,000 of ten-year 6 per cent convertible gold notes of the Central Argentine Railway, Ltd. In this flotation there was a New York syndicate composed of J. P. Morgan & Company, National City Bank, Lee, Higginson & Company, Kuhn, Loeb & Company, Guaranty Trust Company and William A. Read & Company.

This is one of the biggest systems in the world. It comprises 3305 miles of track and the lines out of Buenos Ayres are electrically equipped. An unusual feature in connection with this property is that the company's business is conducted under a perpetual concession and under an amended contract with the Government whereby the railway is entitled, without restriction, to charge such rates as will provide a net earning power of 6.80 per cent on the capital investment recognized by the Government, amount at the present time to more than $250,000,000. This issue was also disposed of quickly.

Cape May, Delaware Bay & Sewell's Point Railroad, Cape May, N. J.—The Cape May, Delaware Bay & Sewell's Point Railroad was sold on April 2, at receiver's sale, to Wilson & Carr, attorneys of Camden, for $55,500, free of all incumbrances.

Chicago (Ill.) Railways.—The directors of the Chicago Railways announce that the full annual interest of 4 per cent on the $2,500,000 of adjustment income bonds will be paid on May 1 from earnings of the fiscal year ended Jan. 31, 1917.

Citizens' Traction Company, Oil City, Pa.—The property of the Citizens' Traction Company was acquired recently by the Municipal Service Company, which is now offering $2,231,000 of first lien collateral trust sinking fund 5 per cent bonds dated March 1, 1917, and due March 1, 1942, but callable, all or part, on any interest date at 103 and interest. The authorized capital of the Municipal Service Company consists of $20,000,000 of bonds, $300,000 of 6 per cent notes, $2,000,000 of preferred stock and $2,000,000 of common stock. Of these amounts there are outstanding $2,231,000 of bonds, $250,000 of 6 per cent notes, $1,100,800 of preferred stock and $900,100 of common stock.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.—The Ohio Utilities Commission has authorized the Cleveland, Southwestern & Columbus Railway to issue its first consolidated mortgage twenty-year, 5 per cent bonds to the amount of $201,836. The proceeds from this issue are to be used to reimburse the treasury for money not secured by the issue of stock, bonds or notes, and other evidence of indebtedness for the period from Jan. 1, 1915, to Aug. 31, 1916.

Cleveland (Ohio) Railway.—The operating revenue of the Cleveland Railway for February was $751,500, an increase of 5.29 per cent over the same month last year. The receipts for the month from the 1-cent charge for transfers were $65,630. Notwithstanding this, the report shows an operating deficit of $45,658, and overexpenditures in the maintenance account of $5,031. The actual deficit was $37,578, and the interest account was reduced from $457,696 to $434,744. The number of rides was 29,560,953, an increase of 4.61 per cent over February, 1916.

Detroit (Mich.) United Railway.—The Detroit United Railway has declared a quarterly dividend of 2 per cent payable on June 1 to stock of record of May 16. This is an increase of one-fourth of 1 per cent over the previous quarterly declaration.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—Paine, Webber & Company, Chicago, Ill., are offering at 95 first and refunding mortgage 5 per cent gold bonds of the Eastern Wisconsin Electric Company dated March 1, 1917, due March 1, 1947. The total authorized issue of these bonds is $20,000,000 and the amount issued $998,000. To retire underlying bonds there have been reserved $3,084,000 of the new issue. The company has authorized $5,000,000 of 7 per cent preferred stock and $2,000,000 of common stock. Of these amounts $1,200,000 of preferred stock and $700,000 of common stock are outstanding. The properties are under the management of Kelsey, Brewer & Company, Grand Rapids, Mich. Paine, Webber & Company are also offering for investment the 7 per cent cumulative preferred stock of the Eastern Wisconsin Electric Company at a price to yield 7 per cent. The organization of the company was noted in the ELECTRIC RAILWAY JOURNAL for March 3, page 407.

Georgia Railway & Power Company, Atlanta, Ga.—The Georgia Railway & Power Company has declared a dividend of 2¼ per cent on its first preferred stock, payable on April 20, to stock of record of April 10. Of the dividend, three-quarters of 1 per cent will be applied to dividends accrued previous to Jan. 1, 1917, and 1½ per cent will be on account of the regular quarterly dividend for the quarter ended March 31, 1917.

International Railway, Buffalo, N. Y.—A petition has been filed with the Public Service Commission for the Second District of New York by the International Railway for authority to issue $1,458,717 of 5 per cent bonds under its refunding and improvement mortgage, and to use $102,000 of said bonds authorized last year.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The following applications for permission to issue bonds have been made to the Ohio Public Utilities Commission: Youngstown & Sharon Street Railway to issue $667,000 of bonds to the Mahoning & Shenango Railway & Light Company for betterments and extensions. Youngstown & Niles Railway to issue $350,000 of bonds to the Mahoning & Shenango Railway & Light Company for improvements and for refunding purposes. The Mahoning Valley Railway to issue $280,000 of bonds to the Mahoning & Shenango Railway & Light Company. The proceeds of the several bond issues will be used to construct the new Youngstown-Niles line on the south side of the Mahoning River, complete the proposed new carhouse in West Federal Street, purchase new cars, and for like improvements.

Monongahela Valley Traction Company, Fairmont, W. Va.—A quarterly dividend of 1¼ per cent has been declared on the $6,782,037 of common stock of the Monongahela Valley Traction Company, payable on April 16 to holders of record of April 11. This compares with 1 per cent paid quarterly since January, 1916, and an extra 6 per cent in stock in January, 1917.

Netherlands Tramways, New York, N. Y.—G. L. Boissevain, president of the Netherlands Tramways, has sent a letter to stockholders announcing that he has sold to Hope & Company, bankers of Amsterdam, for clients of theirs all of the stock of the Electrische Spoorweg-Maatschappij owned by the Netherlands Tramways, amounting to 14,750 shares, of the par value of 250 guilders each, for a sum, which, after payment of certain obligations of the Electrische Spoorweg-Maatschappij, and of the Netherlands corporation, net the sum of $734,790. The board of directors has directed that this sum be distributed pro rata among the preferred stockholders of record of April 2, 1917, amounting to $48.98 per share. A special meeting of the stockholders of the Netherlands Tramways has been called for May 3 next to vote on a resolution calling for the dissolution of the corporation.

Philadelphia Company, Pittsburgh, Pa.—A syndicate composed of Ladenburg, Thalmann & Company, Blair & Company, Hayden, Stone & Company, Brown Brothers & Company, Montgomery, Clothier & Tyler, and Henry & West is offering for subscription at 99 and interest yielding more than 6 per cent $7,000,000 of Philadelphia Company, two-year 5½ per cent collateral gold notes, dated April 2, 1917, and maturing April 2, 1919. The purpose of this issue is to refund $2,000,000 of collateral trust gold notes due May 11, 1917; to refund $650,000 of funded debt which matured during the fiscal year ended March 31, 1917; to reimburse the treasury in part for capital expenditures made during the year and to provide $3,000,000 for capital requirements.

Poughkeepsie City & Wappingers Falls Electric Railway, Poughkeepsie, N. Y.—The Public Service Commission for the Second District of New York has authorized the Poughkeepsie City & Wappingers Falls Electric Railway to make a new mortgage to the Equitable Trust Company, New York, N. Y., securing an issue of $5,000,000 of 5 per cent first mortgage sinking fund gold bonds, of which $596,000 will be issued immediately in exchange, par for par, for $346,000 of first mortgage 5 per cent bonds due on July 1, 1924, and $250,000 of second mortgage 6 per cent bonds due in 1937. No new bonds have been sold.

Public Service Corporation of New Jersey, Newark, N. J.—The New Jersey Board of Public Utility Commissioners has approved an issue of $2,000,000 of stock at par by the Public Service Railway, controlled by the Public Service Corporation of New Jersey.

St. Joseph Valley Traction Company, Elkhart, Ind.—A new board of directors has been elected for the St. Joseph Valley Traction Company consisting of John W. Fieldhouse, James H. States, H. E. Bucklen, Jr., H. R. Bucklen, E. R. Quigley, Edwin A. Warfield and J. D. Wood. The trustees of the property, James H. States, John W. Fieldhouse and Edward A. Warfield, have called in Bion J. Arnold, Chicago, to study the situation and advise procedure, in the expectation that the business of the company can be materially increased over the 76 miles which it operates out of Elkhart. The property is now valued at $4,000,000 and has been built without the issuance of bonds.

Dividends Declared

Columbus, Newark & Zanesville Electric Railway, Springfield, Ohio, quarterly, 1½ per cent, preferred.

Dayton & Troy Electric Railway, Xenia, Ohio, quarterly, 1¼ per cent, preferred; quarterly, 1¼ per cent, common.

Detroit (Mich.) United Railway, quarterly, 2 per cent.

Kansas City (Mo.) Railways, $2.50.

Manchester Traction, Light & Power Company, Manchester, N. H., quarterly, 2 per cent.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., quarterly, 1½ per cent, preferred.

Nashville Railway & Light Company, Nashville, Tenn., quarterly, 1¼ per cent, preferred.

Newport News & Hampton Railway, Gas & Electric Company, Newport News, Va., 6 per cent, preferred; 5 per cent common.

Philadelphia Company, Pittsburgh, Pa., quarterly, 87½ cents, common.

Puget Sound Traction, Light & Power Company, Seattle, Wash., quarterly, 75 cents, preferred.

West Penn Railways, Pittsburgh, Pa., quarterly, 1¼ per cent, preferred.

West Penn Traction Company, Pittsburgh, Pa., quarterly, 1½ per cent, preferred.

Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Feb.,	'17	$146,526	*$113,138	$33,388	$35,650	†$2,262
1 " "	'16	144,233	*97,716	46,517	36,531	9,986
2 " "	'17	306,319	*229,332	76,987	71,410	5,576
2 " "	'16	293,094	*198,878	94,216	73,186	21,030

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

1m., Feb.,	'17	$68,776	*$40,521	$28,255	$18,933	$9,322
1 " "	'16	62,406	*34,185	28,221	17,779	10,442
12 " "	'17	844,757	*475,477	369,280	217,077	152,203
12 " "	'16	791,812	*409,036	382,776	212,841	169,935

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Feb.,	'17	$102,177	*$68,653	$33,524	$29,700	$3,824
1 " "	'16	96,183	*59,764	36,419	28,570	7,849
12 " "	'17	1,246,829	*844,466	402,363	358,896	43,467
12 " "	'16	1,125,769	*736,168	389,601	356,898	32,703

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m., Feb.,	'17	$217,275	*$164,986	$52,289	$66,304	†$14,015
1 " "	'16	198,398	*128,085	70,313	65,761	4,552
12 " "	'17	2,911,408	*1,843,347	1,068,061	810,201	257,860
12 " "	'16	2,671,434	*1,539,328	1,132,106	798,964	333,142

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

1m., Feb.,	'17	$268,158	*$172,293	$95,865	$63,969	$31,896
1 " "	'16	227,472	*136,706	90,766	61,802	28,964
12 " "	'17	3,131,624	*1,913,180	1,218,444	759,411	459,033
12 " "	'16	2,529,856	*1,511,278	1,018,578	754,790	263,788

GRAND RAPIDS (MICH.) RAILWAY

1m., Feb.,	17	$103,932	*$73,700	$30,232	$17,392	$12,840
1 " "	'16	103,429	*64,435	38,994	14,486	24,508
12 " "	'17	1,305,380	*847,091	458,289	193,341	264,948
12 " "	'16	1,186,079	*831,255	354,824	166,787	188,037

LAKE SHORE RAILWAY, CLEVELAND, OHIO

1m., Feb.,	'17	$120,326	*$87,189	$33,137	$36,466	†$3,329
1 " "	'16	106,507	*76,660	29,847	36,326	†6,478
12 " "	'17	251,915	*183,116	68,799	72,923	†4,124
12 " "	'16	219,876	*153,479	66,397	72,435	†6,037

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

1m., Feb.,	'17	$54,793	*$51,350	$3,443	$15,444	†$12,001
1 " "	'16	50,574	*39,292	11,282	16,085	†4,803
12 " "	'17	816,699	*579,192	237,507	186,476	51,031
12 " "	'16	745,820	*481,350	264,470	190,732	73,738

NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.

1m., Feb.,	'17	$23,885	*$23,896	†$11	$7,987	††$7,958
1 " "	'16	22,358	*21,698	660	7,985	††7,283
8 " "	'17	239,557	*202,625	36,932	63,897	††26,588
8 " "	'16	256,775	*205,008	51,767	63,979	††11,779

PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.

1m., Feb.,	'17	$36,002	$20,495	$15,507	$12,517	$2,990
1 " "	16	33,725	17,628	16,097	12,583	3,514
12 " "	'17	522,913	250,277	272,636	150,488	122,148
12 " "	'16	471,793	227,610	244,183	147,606	96,577

WEST VIRGINIA TRACTION & ELECTRIC COMPANY, WHEELING, W. VA.

1m., Feb.,	'17	$85,112	*$39,983	$45,129	.....	.....
1 " "	'16	82,400	*39,601	42,799	.....	.....
12 " "	'17	986,855	*505,858	480,997	$335,214	‡$155,269
12 " "	'16	914,882	*462,638	452,244	328,526	‡132,471

*Includes taxes. †Defic't. ‡Includes non-operating income.

Traffic and Transportation

Operating Rules for Wisconsin

Railroad Commission of This State Requires Its Approval on Operating Methods and Specifies Certain Equipment

The Wisconsin Railroad Commission has issued a set of eight operating rules which it considers applicable to all electric railways in the State for promoting safety and adequacy of service. In the announcement the commissioners stated that certain features in the operation of each property may require special treatment, and also that the problem confronting the small road is different from that confronting large roads. They, therefore, prescribed at this time only rules involving few details, but "look forward to a time when a more comprehensive set of standard rules may reasonably be required." The following rules will become effective after thirty days, with the exception of Rules 3 and 4, which bcome effective on Jan. 1, 1918:

Rule 1. Each electric railway operating in the State of Wisconsin shall file with the Railroad Commission its book of rules governing operation of cars or trains, together with a copy of all orders, bulletins or notices now in force modifying or supplementing said book of rules, and shall hereafter file with the commission a copy of changes, modifications and supplements within five days after such changes, modifications and supplements are issued. Before a new rule book is put in force, it shall be submitted to the commission for approval.

Rule 2. Each electric railway operating interurban service shall file with the commission a copy of each interurban official trainmen's time-table, and each time-table issue for the use of the public within five days of the date such time-table takes effect.

Rule 3. Each electric railway shall submit to the commission for approval plans and specifications for such pilots, fenders or life guards as it may desire to install on any car or class of cars, together with a full description of the class and kind of service generally rendered by said car or class of cars. After Jan. 1, 1918, no motor car or locomotive (snowplows and sweepers excepted) shall be operated in regular or special service unless equipped with fenders, pilots or life guards which have been approved by the commission.

Rule 4. Each electric railway operating interurban service shall equip all its main-line switches on interurban track with targets for day indication and, in addition, lights for night indication on or before Jan. 1, 1918.

Rule 5. All cars or locomotives in operation over city, suburban or interurban track shall be under full control at reduced speed prepared to stop on approaching all facing spring-point switches.

Rule 6. All cars operating on interurban track shall carry at least one marker independent of power from the trolley wire showing red to the rear when in service between sunset and sunrise.

Rule 7. Plans and specifications for all new cars to be built or purchased, and plans for the remodeling of all old cars shall be submitted to the commission for approval. Plans and specifications shall show the principal dimensions and weights of car body and trucks; height of main floor and platforms above the rail, with a notation or table showing floor and platform height of all other cars that may be operating on the same railway system; height and dimensions of all steps; location and dimensions of all doors and passageways; method of operation of all doors; location and dimensions of all grab handles and similar devices; location, dimensions and spacing of seats; type, number and location of heaters, air ducts, steam or water pipes, and ventilators; type, location, dimensions and complete description of pilots, fenders or life guards, and of any devices designed to prevent telescoping of cars in collisions; description of braking equipment, including com-

pressors, governors, valves, brake cylinders and reservoirs; location of motorman's valves, and the ratio of braking power to weight of car, loaded and light; and such other features as the commission may require.

Rule 8. Before operating any one-man cars each company desiring to institute such operation shall submit to the commission the plan of operation of the proposed one-man cars showing the route over which such cars are to be used, the number of railroad tracks to be crossed, and the characteristics of each crossing, method of operation of doors and emergency exits, and such other details as the commission may require. The commission's approval shall be required before one-man cars may be placed in regular service.

Washington Jitneys Organize

W. R. Crawford and eleven others, representing jitney operators of Seattle, Wash., have filed articles with the Secretary of State incorporating the Mutual Union Association, an organization designed to permit jitneys to operate in Washington, notwithstanding the recent Supreme Court decision which holds bondsmen of jitney operators to $2,500 liability for each passenger injured in a jitney accident. This decision was reviewed in the issue of this paper for April 7, page 666. The insurance company is to be made up of members of the jitney drivers' union in the various cities of the State. Under the State law the new company must qualify to insure against accident, health and fire before being accepted by the State insurance commissioner as a company legally qualified to do business in that State.

The question of whether the jitney mutual insurance organization can also be so admitted to utility and fidelity insurance business under the present insurance laws of Washington has been submitted to the attorney general. The Pacific Coast Casualty Company and its successors have not written any surety bonds since the Supreme Court decision, which makes a jitney operator liable for all injuries that may be charged to the operation of the vehicle, rather than limiting the liability of the company to $2,500.

Seven-Cent Fare Authorized

Commission Grants One-Cent Increase on All Rates and Says New Schedule May Still Be Inadequate

The Public Service Commission of Massachusetts has authorized the establishment of a 7-cent fare unit on the Worcester & Warren Street Railway, Brookfield, Mass., effective April 1. Workingmen's tickets, valid week days between the hours of 5 and 7 both morning and evening, will be sold at the rate of fifty rides for $3.00. The previous cash fare was 6 cents, with workingmen's tickets at the rate of 100 for $5. The age limit for children carried free has been reduced from six to five years. An extra fare will be charged for every package carried by a passenger on the car platform.

In the entire history of the property, dividends of from 2 to 4 per cent have been paid in only four years. The 1916 net divisible income, after paying operating expenses and fixed charges, was only $1,083, or about 1 per cent on the capital stock outstanding, and only $156 was set aside for depreciation during the year. The earnings have been decreasing since 1903, although the fare was increased in 1905 from 5 cents to 6 cents. The total earnings last year were the lowest since 1897.

Assuming no decrease in traffic as a result of the increase in fares, the company estimated that the additional revenue derived from the increase, based on the fares collected in the fiscal year 1916, would be $8,141. Allowing for the increase in wages of about $2,000 annually, which was granted in 1916, but not for the added cost of materials and supplies due to prevailing high prices, the company estimated that on the basis of operating expenses and taxes for 1916, and without any further provision for depreciation, the additional revenue required to pay interest on the authorized funded debt and 7 per cent on the stock would be $9,968. The condition of the property also needs improvement. The commission doubts if the proposed new schedule would enable the company to earn even 6 per cent upon its present capitalization. The opposition centered chiefly in the proposed complete withdrawal of workingmen's tickets, and the company agreed to sell these at the 6-cent rate. Regarding the new fare the commission said:

"A 7-cent cash fare is open to objection on many grounds, and it may seriously be doubted whether such a fare will result in any substantial net benefit to the company. In this case, however, the change is open to less than the usual amount of objection, for the percentage of short-haul traffic is comparatively small, and the fare zones are comparatively long. In most of the zones the rate would be less than 2 cents per mile, even with the 7-cent fare. Furthermore, in view of the history of the company and the character of the territory in which it operates, it is reasonably entitled to make any experiments in fares which may have the effect of improving its financial condition and enabling it to continue in operation and gradually to improve its property. This was, it seems, the view of the representatives of the towns interested and the reason for the final withdrawal of the opposition."

Fares Raised in Ontario Cities

The Utilities Commission of Fort William, Ont., and the Public Utilities Commission of Port Arthur, an adjacent city, met in joint session on March 1 and adopted a new schedule of fares for the Port Arthur Civic Railway, operated by the latter commission and the Fort William Electric Railway. The increase in rates was to be made effective early in April.

The new schedule provides for one fare in each city thereby making two fare zones. The ordinary fare will be 5 cents, and six tickets will be sold for 25 cents, good from 5 a. m. until midnight. Workmen will be allowed eight tickets for 25 cents, good during certain morning and evening hours, and Sunday tickets at the same rate, valid from 5.30 a. m. until midnight. Children under fourteen years of age will be allowed ten tickets for 25 cents and students will be carried at the same rate between 8 a. m. and 5 p. m. on school days. A 10-cent fare will be charged from midnight to 5.30 a. m. good for a through ride.

During a discussion on the change in fares at a meeting of the Port Arthur Board of Trade on March 6, the consensus of opinion was that the fare should be high enough to permit the operation of the road to be profitable even if a 10-cent fare for all classes were necessary in each city. Mayor Cowan is said to be in favor of the higher fares, but the present increase is scarcely enough in his estimation. It was suggested that a straight 5-cent fare might be a feasible remedy for the situation. The City Council of Fort William has passed a resolution approving the new fare schedule.

Stock Sold to Employees

The Bangor Railway & Electric Company, Bangor, Me., has announced a plan for the sale of the common stock of the company to employees on the partial-payment plan. The stock is of the par value of $100 a share, and has been on a dividend basis of 2 per cent per annum since May 1, 1914. Present earnings are reported considerably in excess of this dividend requirement. The employees are free to accept or reject the offer to participate in the earnings of the company by becoming stockholders. Employees must be in the service six months, however, before they are permitted to subscribe.

The price to the men has been fixed at $40 a share. This nets a return of 5 per cent at the present dividend rate. The men are permitted to subscribe for one share for each $150 of wages received during the six months preceding April 1. No interest will be charged to the employees on the unpaid balance of subscriptions. One dollar per share per month will be withheld from the pay of each employee who elects to subscribe, and dividends paid will be credited on the purchase. At the present dividend rate, if the monthly payments are continued regularly by those who subscribed on April 1, the stock will be fully paid for by Feb. 1, 1920. Provision is made for the suspension of payments by the men in cases of sickness and other emergencies.

New Orleans Service Survey

Public Service Commissioner Points Out Problems Before Special Traffic Committee

V. K. Irion of the Public Utilities Commission of New Orleans, La., has issued a statement concerning the work before the special commission about to investigate the traffic over the railway lines of the New Orleans Railway & Light Company and report methods for its improvement. He said in part:

"The committee to investigate street railway traffic in New Orleans and to work out a plan for betterment of the service, has a man's size job on its hands, if it is to perform the work outlined for it in such a manner as to satisfy both sides in the controversy. The undertaking is difficult, complicated and laborious, requiring an enormous amount of work, pains and technical skill, and the result of its labors should be awaited patiently and hopefully by the public.

"To develop a plan by which the railway patrons will be guaranteed satisfactory service without materially curtailing the revenue of the company is the problem which has to be solved. The public demands, and must have, adequate service. The company cannot stand a curtailment of revenue to any great extent. Will the committee be able to reconcile these conflicting situations? It is to be hoped that each member of this committee will be able to enter upon the discharge of his duties with an open mind, free from prejudice or bias, and with a disposition fair to all parties concerned, in order that the findings of the committee, in the public estimation may not be weakened.

"The general opinion seems to be that the solution of the transportation problem lies in the employment of more cars on the various lines during rush hours. While this may, and no doubt does, have some bearing on the problem, there are many other elements involved in making a thoroughly adequate service. There are the schedules, for instance, which bear a very important relationship to good service, and the condition of the physical properties of the corporation also cuts a large figure in the case. It is hardly possible to develop a safe and satisfactory service unless these physical properties are maintained at a reasonably high standard of efficiency. This is a phase of the situation which should receive careful consideration."

President Loree Discusses Complaints

Leonor F. Loree, president of the Delaware & Hudson Company, which controls the United Traction Company, the Hudson Valley Railway and other properties, conferred at Albany, N. Y., recently with representatives of cities and villages of the Capitol District regarding complaints as to transportation service. President Loree promised to remedy all present defects in service on the steam lines of the company and to increase the equipment of the United Traction Company and the Hudson Valley Railway. He told the officials at the conference that the Capitol District should have a population of 2,000,000. A deeper Hudson was a certainty, but the Government should have recognized the need years ago. The age of co-operation on the part of big corporations was here. His company would at all times welcome suggestions as to how it could aid. He promised the same spirit of helpfulness on behalf of the United Traction Company.

One of the speakers complained of withdrawal of transfers and suspensions of local service on the Albany-Troy and Albany-Cohoes electric lines, and of the local service in Troy, Watervliet and Cohoes. He also suggested that Albany-Troy through cars and local Troy-Watervliet cars make a loop by using both bridges at Troy. Mr. Loree said his road would welcome a belt line arrangement if it was found to be the right remedy. Mr. Loree said that although the Delaware & Hudson Company had invested millions in the Hudson Valley Railway it had never paid because the property served an unprogressive territory. Mr. Loree said that the United Traction Company since 1911 had rebuilt, bought new or improved several hundred cars. He pleaded that delays in getting equipment delivered were never more severe than now.

Governor Vetoes Jitney Measures

Governor Ernest Lister of the State of Washington recently vetoed the measure placing jitneys and auto stages under the control of the Public Service Commission, and the second jitney bill providing for the bonding of jitneys, taxicabs and auto stages in cities of the first, second and third classes, failed to get into the House in time for action, and is dead for the session. As a result, liability bond companies will not write jitney insurance in cities of the first class, where a bond of $2,500 for each jitney is now required.

F. B. Kliphouse, secretary of the Spokane Jitney Association, recently reported that as local jitney men are unable to obtain bonds, they have concluded to ignore the bonding law. Instead of a surety bond, they will give a liability bond.

Mayor Fleming of Spokane has announced that a new and stringent ordinance governing the jitney bus business in Spokane will be drafted and presented to the City Council for passage within the next few weeks. The Mayor is reported to have said:

"I have no intention of running the jitneys out of business. We must, however, have regulation which will guarantee safety and service to the public. We have been denied this power up to now, but the decision of the State Supreme Court in the Bellingham, Wash., ordinance case puts a different complexion on the matter."

I. R. T. Replies to Suggestions

Suggestions for improvements in the service of the Interborough Rapid Transit Company, New York, N. Y., as reported in this paper for March 31, page 619, which were made by members of the Merchants' Association, have been answered by Theodore P. Shonts, president of the company. The abolition of stub tracks at South Ferry and the substitution of loop tracks to provide a continuous interchange between east and west side elevated trains is said to be impossible due to the lighter structure of the west side lines. The frequent interchange of trains would necessitate practically the entire reconstruction of these tracks to accommodate the heavy equipment used on the other lines in order to insure safety under all conditions of coupling the cars. Moreover, the continuous operation of trains would increase the difficulty of maintaining schedules by eliminating the interval of time at South Ferry which acts as a schedule equalizer.

Mr. Shonts said further that the construction of additional stairways and entrances to elevated stations is contemplated and that experiments are being made with folding gates on elevated cars and a design of sliding gate is also being worked out. It is said that the elimination of the stops of local subway trains at Grand Central Station during the rush-hour periods would throw two serious burdens on the express service, on the adjacent local stations, and on the express platform at Fourteenth Street. No reply was made to the matter of limitation of packages, etc., other than a statement of requirements as specified by the sanitary code of the Board of Health and of the regulations governing the distribution of newspapers.

Bay State Has New Publication

Triangle Talks is the name of the new publication issued by the Bay State Street Railway, Boston, Mass., the first number of which is dated April 14. It will be published weekly "to acquaint employees of the company with the business of the organization of which they are a part, create more good-will, assist in effecting economies in operation and help make conditions which will insure the public more satisfactory service." The first issue contains a personal message from President P. F. Sullivan to his co-workers, in which he explains to them fundamental factors in the financing of a corporation and how the employees can assist their employer. He reviews the development of electric street car operation and the changes that have tended to make it unprofitable and finally appeals for full-hearted co-operation on the part of all.

Want Speed Limited in Cleveland.—The local branch of the Amalgamated Association of Street & Electric Railway Employees at Cleveland, Ohio, has asked that a maximum limit of speed for street cars be included in Councilman Kadlesek's traffic ordinance pending before the City Council. The men contend that the speed at which cars are now operated in the congested district is too great for safety.

Increase in Freight Rates in Illinois.—The recent increase in freight rates granted by the Public Utilities Commission of Illinois consists of a 5 per cent increase applying to coal, livestock, explosives and steel. No other commodities are included, and there were no increases in class rates. The increase goes into effect on April 15. It will affect all common carriers in the State which have filed a schedule of rates.

High-Speed Cars for Detroit United.—Eight new high-speed interurban cars have just been placed in service by the Detroit (Mich.) United Railway, the order for which was placed more than a year ago. The equipment is such that the cars may be operated separately or in trains. Eight more heavy interurban cars have been ordered for spring delivery, making a total of thirty-two new cars placed in service by this company in a period of a few months.

Pennsylvania Commission Bars Jitneys.—A recent decision issued by the Public Service Commission of Pennsylvania refused Adele Hartel a certificate of public convenience for the privilege to operate a jitney on Baltimore Avenue from Cobb's Creek to Lansdowne, near Philadelphia. The decision was so rendered as to apply also to the cases of two other prospective operators who sought similar privileges. The issuance of certificates was opposed by the Southern Pennsylvania Traction Company, which operates in the territory.

Good-Service Department Organized.—The Georgia Railway & Power Company, Atlanta, Ga., has just organized a good-service department, with Paul D. Reid as manager. Mr. Reid was previously assistant to W. H. Glenn, vice-president and operating manager. The work of the new department will be to handle all suggestions for improvements in the service with a view toward pleasing the public so far as possible. It will study the problems in co-operation with other departments. Another function of this department will be to determine possible improvements in the company organization.

Skip-Stop Pleases Patrons in Detroit.—The skip-stop plan has now been in operation for several months on some of the lines of the Detroit (Mich.) United Railway. Officials of that company feel that this form of express service has won the approval of the public and that patrons would object to a return to the former system of operation. In fact, many patrons have urged that the distance between stops be increased to three and even five blocks. In its weekly publication, *Electric Railway Service*, the company expresses the opinion that the success of the plan would seem to warrant its trial on other lines.

Hotel Guide Issued by "Shore Fast Line."—The Atlantic City & Shore Railroad, Atlantic City, N. J., has just issued a four-page vestpocket hotel directory for the use of its patrons, especially strangers in the city. When a conductor is asked the location of a certain hotel, he presents the passenger with one of the directories after checking off the particular hotel from the alphabetical list. This form of courtesy has provoked a considerable amount of favorable comment. The company has adopted for publicity purposes the designation "Shore Fast Line" as a title for its entire system. This name appears on the folder.

United Traction Specifies Fares.—Following the attempt to compel a reduction in fares as reported in this paper for April 7, page 667, the United Traction Company, Albany, N. Y., has announced a tentative fare schedule for its line from Albany to Troy and intermediate points. It provides transfer privileges and a 15-cent fare for a through ride. Certain variations are included which specify a 10-cent fare for some patrons, and no transfers are issued in some cases. The company feels that discrimination is apparent, and that further changes are necessary. It was stated that the Albany Chamber of Commerce would oppose the 10-cent rate from Schuyler Bridge to Albany before the Public Service Commission.

Jitney Restrictions Urged by Railway Men.—The platform men of the Los Angeles (Cal.) Railway, in a mass meeting held on March 22 to discuss a proposed demand for a 15 per cent increase in wages, appointed a committee of 250 to appear before the City Council and demand that the city restrict jitney-bus competition. The sentiment was expressed that the city should enact legislation which will permit the railway to compete with the buses on an even basis. Speakers asserted that the Council has discriminated against the railways in favor of the bus companies and that a readjustment was necessary before an increase in wages could be hoped for, and this seemed to be the sentiment of the men. The City Council recently adopted an ordinance fixing license rates for passenger-carrying buses at $11.25 per quarter for five-passenger to $34 for thirty-passenger vehicles. This was an increase of about 30 per cent over the old rates.

Railways Handle Revival Crowds.—The problem of transporting the crowds numbering at times 20,000 people that attend the Billy Sunday meetings in New York, which began on April 8, is not so acute as it has been in other cities. The Fifth Avenue Coach Company has been granted permission by the city to extend some of its routes to the tabernacle site at 168th Street and Broadway, and a schedule is maintained of about one bus per minute. The buses provide an open-air service, and will no doubt be an important factor in moving the crowds during the three spring months of the campaign. The subway trains of the Interborough Rapid Transit Company remove from the 168th Street station, without undue congestion, that portion of the crowd choosing this route, and the people are requested to use the adjacent subway stations to reduce the congestion at that point. With the surface cars and other methods of travel to and from the tabernacle, the effect on either system is not equal to that of the rush hours.

Traffic Over the New Washington-Oregon Bridge.—During the first month of operation of the interstate bridge over the Columbia River, between Portland, Ore., and Vancouver, Wash., the average number of passengers on each street car crossing the structure was sixteen. The Portland Railway, Light & Power Company, which operates the cars on the bridge, pays 25 cents toll each time a car crosses the bridge, and 3½ cents for each passenger. On this basis, the company pays in toll slightly more than 5 cents out of the 15-cent fare charged each way to Portland or Vancouver. On this basis, the company now receives less money for hauling passengers into Vancouver or Portland than it did before the bridge was opened. The company had estimated that the average number of passengers per car would approximate twenty-one. When the bridge was opened, the round-trip fare between the two cities, which had been 25 cents, was increased to 30 cents.

Accident Warning by Illinois Secretary of State.—A neat little folder admonishing automobile drivers to use great caution in crossing railway tracks is being sent by the Secretary of State of Illinois with the license certificate to automobile drivers. On the front cover of this folder a statement signed by the Secretary reads as follows: "In sending you the inclosed card, I wish to call your attention to the large number of persons whose lives are unnecessarily sacrificed in accidents on railroad grade crossings each year. It seems to me that many of these accidents can be prevented if the drivers of automobiles would use ordinary care when crossing railroads at grade. I urge you to examine the contents of this folder carefully and to be guided by the good advice contained therein." The inside of the folder contains further information regarding the increasing number of automobile accidents at grade crossings throughout the United States. An illustration is given which shows a crossing watchman displaying a large disk on which appears the word "Stop," and it is stated that this method of warning travelers is now used by many roads. This information comes to the automobile driver from a source which demands attention and must arouse some thought on his part. It is a commendable idea for all states to follow, and one which the railways can encourage.

Changes in Public Service Personnel

Some Information Regarding Individuals Affected by Recent Rearrangement of President McCarter's Staff

The several officials of the Public Service Corporation of New Jersey whose duties have been changed in accordance with the plan outlined in last week's issue of the ELECTRIC RAILWAY JOURNAL have taken up their new work during the past few days. The careers of these men have been intimately tied in with the development of the Public Service property so that the following details will serve as at least a partial history of that development.

George J. Roberts, who retires from the first vice-presidency, came to Public Service from the United Gas Improvement Company in 1907. He was graduated from Stevens Institute of Technology in 1884, and began his career with four years of steam railroad work. This he regretted at the time, as he found the future in the railroad field unpromising and turned to the gas industry which seemed more promising. Laying his railroad years on the shelf he determined to learn the gas business from the bottom up, and as a result soon fitted himself for the position of construction engineer with the U. G. I. He was at first engaged on gas plants for this company in different parts of the country, but when it became interested in electrical properties Mr. Roberts was selected as one of the men to represent the owners in this field. He studied this business as he had the gas business, and when, in due course, the company began to take on street railways he was able to utilize his knowledge of the electrical as well as the railroad field. The U. G. I. had no railway operators in its organization, so he took a leading part in the new phase of the company's activities.

His experience of twenty-three years fitted Mr. Roberts well for the position which he has occupied in Public Service for ten years. He has been in close touch with the operating problems of all of the component properties. Last fall he was obliged to undergo surgical operations for troubles from which he had long suffered, and which finally obliged his retirement to his farm in Charlottesville, Va. It is his intention to remain here until he has regained his full strength.

Edmund W. Wakelee, who becomes a vice-president of Public Service, was a member of the New Jersey Legislature for twelve years, ten in the Assembly, the rest in the Senate. He became Assemblyman from Bergen County to fill an unexpired term and was later elected three times. In 1903 he was leader of the majority in the Senate at the time, being the youngest Republican Senator. He was also at one time president of the Senate. When he was in the Assembly Mr. Wakelee was also majority floor leader.

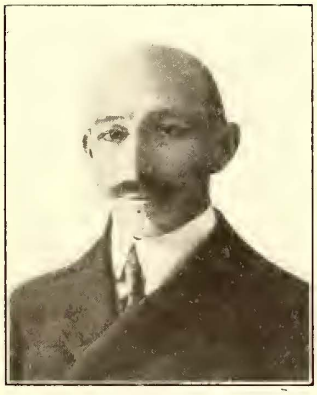
During the formative period of the New Jersey & Hudson River Railway & Ferry Company (now the Bergen Division of Public Service Railway), Mr. Wakelee was its legal representative and was receiver for one of the underlying companies. He was also head of the legal firm of Wakelee, Thornale & Wright and still retains an interest in this organization.

Mr. Wakelee joined Public Service law department about four years ago as assistant general solicitor. He has represented the company in its dealings with municipal bodies, State agencies, etc. He became at once a member of the executive committees of the operating companies and of the public relations committee of the corporation. As vice-president he will have particularly to do with public relations matters.

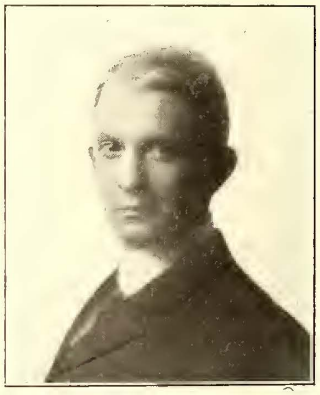
P. S. Young also becomes a vice-president of Public Service. Although originally a gas man he is well known in the electric railway field through his interest in the American Electric Railway Accountants' Association, of which he is a past president. He came from London, England, to New York in 1886 and spent the following four years on a ranch in the West. After five years spent with the Omaha (Neb.) Gas Company he became auditor of the U. G. I. and in 1897 was appointed assistant general agent at Jersey City. Later he was successively assistant treasurer and secretary of the Hudson County Gas Company and comptroller of Public Service when it was formed in 1903 and treasurer also in 1914. Shortly thereafter he was appointed vice-president of the operating companies also. Aside from his interest in accounting matters Mr. Young has been active in the commercial side of the work of the company and served a term as president of the National Commercial Gas Association. For nine years he has had charge of the commercial department of Public Service, on both the gas and electric sides. He is well known also for his sympathetic and practical interest in the development of the young men on his staff and outside of it, especially encouraging the taking of correspondence courses and college courses when practicable. Mr. Young holds the degree of Bachelor of Commercial Science from New York University.

Dudley Farrand, formerly general manager of Public Service Electric Company, becomes an assistant to President McCarter. He has been in the local electrical industry for thirty years, beginning as clerk in the office of the Newark Electric Light & Power Company when just out of Newark Academy. At the time the company had a small arc and incandescent lighting business. Mr. Farrand has continued with the same company and its successors. By way of contrast with the merger of electrical equipment of 1887 in Newark it is of interest to note that his last important act as general manager of the electric company was to close a contract for a 50,000-kw. turbine unit, which is to be delivered in 1919.

Mr. Farrand has always taken an active interest in the electric railway. He was one of the incorporators of the New Jersey Street Railway, about 1898, and was a director of the Consolidated Traction System which absorbed it. On the lighting side he was manager of the People's Light & Power Company, in which position he made a record for speedy restoration of service after the destruction of the company's power house by fire. In 1899 the scope of this company was enlarged and it became the United Electric Company of New Jersey, Mr. Farrand becoming general manager. On the formation of Public Service with its several departments he was appointed general manager of the electrical department, and when the operating company organization was put through in 1910 Mr. Farrand became vice-president and general manager of the Public Service Electric Company.



G. J. ROBERTS



E. W. WAKELEE

P. S. YOUNG

DUDLEY FARRAND

John L. O'Toole also becomes assistant to the president of Public Service Corporation, being promoted from having charge of its publicity department. During the eight years since he left the city editor's desk of the Newark *Evening News* he has done much more than publicity work in the usual sense of that term. In fact, as a member of the company committee on public relations since its formation in 1913 he has had much to do with organizations representing communities as well as with the general public. Mr. O'Toole was with the *News* for sixteen years, during the latter half of which he was city editor.

J. L. O'TOOLE

The new treasurer of Public Service, T. Wilson Van Middlesworth, is a man of thirty-three, who has by consistent attention to detail earned steady promotion. He was born and still lives in New Brunswick, where he graduated from the city high school. After a business college course in Newark he became a clerk in the office of the engineer of the Essex & Hudson Gas Company in 1902. A year later this with other properties was taken over by Public Service, young Van Middlesworth along with it. He was first made secretary to J. P. Dusenberry, the treasurer, and a year later stock transfer clerk. In 1909 he became cashier and in 1911 assistant treasurer.

The men mentioned above are all Public Service Corporation men, whose general jurisdiction includes the railway and the railroad, together with the other operating organizations. The corporation organization changes have been accompanied with some promotions in the operating ranks. Among these is the change in title and duties of Martin Schreiber from engineer of maintenance of way to chief engineer of the Public Service Railway. Mr. Schreiber has had charge of the design and construction of the new terminal in Newark as well as many other structures of importance. He is a graduate of Ohio State University, class of 1899, in mechanical and electrical engineering, and secured his first practical experiene with the Cleveland Electric Railway as eletrician and engineer. He has been with his present employer for a period of fourteen years, during which time he has constantly been entrusted with more and more responsibility.

T. W. VAN MIDDLESWORTH

MARTIN SCHREIBER

Mr. Schreiber is a "joiner" in that he takes an active part in many associations in the field of his interest. He was president of the American Electric Railway Engineering Association for a term and has served effectively on many committees of this and other technical associations. He is widely known also as the present chairman of the American Association committee on company section and individual membership.

Personal Mention

Eugene Cooper has been appointed treasurer of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.

J. R. Abercrombie has been appointed secretary of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.

Frank W. Brooks, president of the Detroit (Mich.) United Railway, has returned from a six weeks' trip to California and Honolulu, Hawaii.

Frank R. Coates, president of the Toledo Railways & Light Company, Toledo, Ohio, has been appointed a member of the Toledo welfare commission.

Gilbert E. Porter has been appointed assistant to F. W. Shappert, traffic and industrial agent of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

Gen. Edwin W. Hine, assistant to the president of the Public Service Corporation of New Jersey, Newark, N. J., has been granted a leave of absence for one year on account of military duties as an officer of the New Jersey National Guard.

E. J. Billings, formerly superintendent of power of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., operated by H. L. Doherty & Company, New York, N. Y., has assumed the duties of a general efficiency engineer for the Doherty organization.

W. S. Murray of McHenry & Murray, engineers, New Haven, Conn., has been elected president of the Housatonic Power Company, which supplies power to part of the lines of the Connecticut Company, New Haven, and also does a general lighting and power business.

Charles E. Foster, heretofore secretary and treasurer of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., has been appointed comptroller of the Crew Levick Company, Philadelphia, Pa. Both of these companies are subsidiaries of the Cities Service Company, New York, N. Y.

Paul D. Reid, who for six years was private secretary to W. H. Glenn, vice-president and operating manager of the Georgia Railway & Power Company, Atlanta, Ga., has been appointed manager of the good-service department. This is a new department of the company, organized to keep in touch with public needs and criticisms, with a view toward perfecting the service.

Alvah J. Clement has retired from the position of cashier and paymaster of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y. He has been in the employ of the company since the line was opened between Rochester and Albion in September, 1908. The employees with whom Mr. Clement has been associated presented him with an amethyst ring and a pearl scarf pin as a token of their esteem.

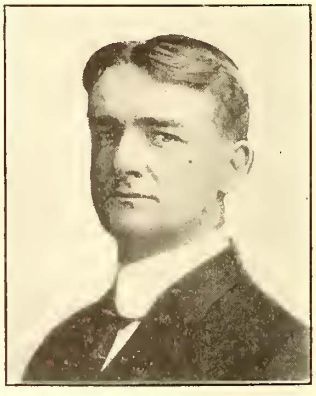
James A. Braden, who has been freight, passenger and claim agent and manager of publicity of the Northern Ohio Traction & Light Company, Akron, Ohio, has resigned to enter the advertising business. He will open an office in Cleveland. Mr. Braden has acquired a wide experience in advertising and publicity work. He was formerly for ten years advertising manager for the Diamond Rubber Company, Akron.

James F. Hamilton and **James P. Barnes** were the guests at a dinner at the Hotel Claridge, New York, on April 11, given in honor of their recent appointments as general managers respectively of the Rochester and Schenectady electric railway systems. About sixty were present, and the affair was opened by singing the "Star Spangled Banner," led by a quartet of soldiers and sailors. Later there were a number of speeches in which those present felicitated Messrs. Hamilton and Barnes, as well as their companies, upon the recent appointments. Charles C. Castle presided.

Oscar T. Crosby, publicist, explorer, engineer and electric railway executive, has just been nominated by President Wilson for appointment as Assistant Secretary of the Treasury. Mr. Crosby has agreed to accept the appointment with the understanding that he is to be released for military duty as a reserve major of engineers if his class is called to service. Mr. Crosby was for many years very closely identified with electric railway construction and operation, being one of the pioneers with Frank J. Sprague and later an executive of large railway properties in Washington, D. C., Wilmington, Del., and Trenton, N. J. More recent activities have included exploration in the Soudan, Thibet and Borneo, active interest in the proposed International Court of Decree and Enforcement and as resident manager in Belgium of the work of the American Commission for the Relief in Belgium and northern France. After his return from Thibet Mr. Crosby published a most interesting account of his travels in that country in a book entitled "Thibet and Turkestan." He is also the author of a book on "Strikes" and of a large number of essays in the fields of engineering and politico-sociology.

Daniel L. Turner, who has been acting chief engineer of the Public Service Commission of the First District of New York since the appointment of Alfred Craven as consulting engineer of the commission in October, 1916, has been made chief engineer. Mr. Turner was graduated as a civil engineer from Rensselaer Polytechnic Institute of Troy with the class of 1891 and for several years was an instructor in that institution and later in Harvard University, where he conducted courses in topographical, railroad, hydraulic, water-power, canal, river and irrigation engineering and also engaged in consulting practice. In 1900 he joined the engineering staff of the Rapid Transit Commission in New York as assistant engineer. He became general inspector of stations in 1905 and continued in that capacity with that commission and the Public Service Commission, later becoming chief of the transportation department. In 1912 he was appointed division engineer supervising the subway construction which cost about $30,000,000, and the next year was made deputy engineer in direct charge of this work. Mr. Turner, by reason of his long connection with the transit development of the city, is thoroughly familiar with both construction and transportation problems which it involves. He is a member of the A. S. C. E., the Boston Society of Civil Engineers and the Municipal Engineers of New York City.

R. N. Graham has been appointed manager of railways of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, succeeding Richard T. Sullivan. Mr. Graham was born in Jackson, Ohio, in 1877, and was graduated from the University of Arkansas with the class of 1898. He then practiced law in Joplin, Mo., until 1908 and during this time served as a member of the Missouri Legislature from the Joplin district. Mr. Graham entered the electric railway field through a connection of several years with the legal departments of the Houston (Tex.) Electric Company and the Galveston-Houston Electric Railway. In 1916 he was appointed assistant manager of railways of the Mahoning & Shenango Railway & Light Company in charge of the transportation department, and in his new capacity will have charge of all the railway lines of this company including city lines in Warren and Youngstown, Ohio, and New Castle and Sharon, Pa., and interurban lines connecting those points and other important centers in the Youngstown iron and steel district. While Mr. Graham was a member of the bar his work in Missouri, Kansas, Oklahoma and Texas dealt with municipal and corporation problems and this experience has fitted him eminently for the duties he now assumes.



R. N. GRAHAM

Richard T. Sullivan, who for the last year has been manager of railways of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has been appointed general manager of the company and all its subsidiaries. The Mahoning & Shenango System comprises about 200 miles of interurban and street railway lines which extend into Pennsylvania and serve all the principal centers in this territory, which is an important iron and steel district. Mr. Sullivan was born in Newton, Mass., and was educated in the public schools there, the Massachusetts Institute of Technology and Harvard University, taking the degree of electrical engineer at the latter institution in 1906. He subsequently became connected with the properties of the Stone & Webster Management Association and in 1908 was appointed general superintendent of the city and interurban railways of the Houston (Tex.) Electric Company, which position he held for eight years. During that time, in addition to his duties, he was engaged in many investigations which necessitated extensive trips to the principal cities of the North and East and the Pacific States. While a resident at Houston, Mr. Sullivan made many friends and took a prominent part in civic affairs, in club and social life. In April, 1916, he was appointed to the position which he has just relinquished and his work since that time has been such as to warrant his present promotion.

R. T. SULLIVAN

Ralph M. Sparks, formerly general passenger agent of the Bay State Street Railway, Boston, Mass., has been appointed assistant to the general manager. Mr. Sparks is well known in the electric railway field. He was educated at Purdue University, where he took a civil engineering course. For a time he was employed as timekeeper and foreman of the Union Traction Company of Indiana, Anderson, Ind., and later was an assistant in the engineering corps of the Chicago & Eastern Illinois Railroad. In 1910 he was engaged by President Sullivan to handle special work for the Bay State Company, and in 1912 was appointed general passenger agent. He has very recently handled a large number of special reports for the late Henry E. Reynolds, who was until his death assistant general manager of the company. Mr. Sparks' varied experience in the company and his personal contact with the public can be regarded as invaluable in the preparation for his new and responsible work.

Obituary

Henry A. Everett, Cleveland, who recently disposed of his interest in the Northern Ohio Traction & Light Company, Akron, Ohio, died at Pasadena, Cal., on April 11. Mr. Everett was born in Cleveland on Oct. 16, 1856. For a number of years he was secretary and treasurer of the East Cleveland Railway, of which his father was president. Under the Everett regime the company was one of the first to adopt electricity as motive power. Subsequently Mr. Everett entered the independent telephone field, and also the interurban electric railway field. Among his first interurban projects was the Akron, Bedford & Cleveland Railway, now a part of the Northern Ohio Traction & Light Company system. Later he was identified with other electric railways, as in Toledo, Toronto, Detroit and Columbus, as well as with the telephone interests in Canada. Mr. Everett was one of the first to recognize the possibilities of electric traction, especially for interurban service, and his courage, backed by his financial resources, greatly stimulated electric railway development in the early days. During his later years, although not in good health, he maintained an active interest in his electrical properties. At the time of his death he was one of the vice-presidents of the Lake Shore Electric Railway, and was also interested financially in the London (Ont.) Street Railway.

Construction News

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

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

RECENT INCORPORATIONS

*Transcona Electric Railway, Winnipeg, Man.—Application for incorporation has been made to the Manitoba Legislature by the Transcona Electric Railway to construct a line in Transcona and in the municipalities of Springfield and East Kildonan to Winnipeg or St. Boniface, to connect with any lines in operation or to be built by the Winnipeg Electric Railway. The office of the company will be in Winnipeg. Capital stock, $1,000,000. The provisional directors are E. P. Garland, E. Frith, C. W. Chappell, R. Siderfin and L. Palk, all of Winnipeg. Mr. Palk is claim agent of the Winnipeg Electric Railway.

*Dickinson & Northwestern Railway, Dickinson, N. D.—It is reported that this company has been granted a charter for the construction of a 40-mile electric railway. W. L. Richards, Dickinson, is interested.

FRANCHISES

Los Angeles, Cal.—The Pacific Electric Railway has received a forty-year franchise from the Board of Supervisors to construct and maintain an electric railway along certain public roads and highways of Los Angeles County, consisting of a standard-gage single and double-track spur over and across Covina Boulevard, along Railroad Avenue and over and along Clark Street and Los Angeles Street, single-track spur over and across Covina Boulevard and along Railroad Avenue from the north right-of-way of the Pacific Electric Railway, Covina line to Alderson Avenue, double-track spur over and across Clark Street to the Southern Pacific Railroad Company's right-of-way, single-track spur over and across Los Angeles Street.

Atlanta, Ga.—The committee on electric and other railways has recommended to the City Council that the Federal Construction Company receive a one year's extension of time on its franchise, until April 25, 1918, in which to begin construction of its line in Atlanta. [March 17, '17.]

Springfield, Ill.—The Springfield & Carbondale Railway has asked the Public Utilities Commission of Illinois for a certificate of convenience and necessity to construct its proposed line from Springfield to Carbondale. C. H. Forrester, 76 West Monroe Street, Chicago, president. [March 10, '17.]

Indianapolis, Ind.—The Terre Haute, Indianapolis & Eastern Traction Company has asked the Board of Public Works of Indianapolis for permission to lay additional track from Holmes Avenue northwest over the company's right-of-way to the Indianapolis motor speedway.

Ithaca, N. Y.—The Ithaca Traction Company has asked the City Council of Ithaca for a franchise to construct a single track extending north from State Street on Meadow Street, thence easterly along private right-of-way to Railroad Avenue to Tioga Street, making a loop connecting State Street, Meadow Street, Railroad Avenue and Tioga Street.

Milford, Ohio.—The Cincinnati, Milford & Loveland Traction Company has received a ten-year franchise from the City Council to furnish light and power to Milford.

*Gettysburg, Pa.—The Washington, Westminster & Gettysburg Railway has received a franchise from the City Council to construct a line in Gettysburg.

Green Bay, Wis.—The Green Bay & Eastern Railway has received from the Wisconsin Railroad Commission a certificate of convenience and necessity for the construction of its proposed line from Green Bay to Manitowoc, with extensions eventually north to Sturgeon Bay and south to Sheboygan. William M. Willinger, Manitowoc, president. [April 29, '16.]

TRACK AND ROADWAY

Fort Smith Light & Traction Company, Fort Smith, Ark.—Surveys are being made by this company for an extension to Jenny Lind and Greenwood.

*Dolly Varden Mines Railway, Victoria, B. C.—Hon. Mr. Oliver, Minister of Railways, recently introduced a railway bill into the House covering the construction of the Dolly Varden Mines Railway, giving the Dolly Varden Mines Company, Ltd., power to construct and operate either a steam or electric railway of either standard or narrow gage, from a point near the Wolf Group of Mineral Claims, 18 miles up the Kitzault River down the river course to a public highway, thence along the highway down the river valley to Allis Arm. The company may also build and operate branch lines, each branch not to exceed 10 miles in length. The company is given the right to occupy a 25-ft. right-of-way upon any part of the public highway mentioned.

Chicago, Peoria & Quincy Traction Company, Peoria, Ill.—Sam Woolner, promoter of the Chicago, Peoria & Quincy Traction Company, has made a proposition to the citizens of Quincy for the extension of the proposed interurban road from Peoria to Quincy through the coal fields of Rushville. He asks that a promoting company with a capital stock of $25,000 be formed in Quincy to pay preliminary expenses, and if that is done agrees to enter into a contract with the investors to extend the road into Quincy. He further agrees to refund the $25,000 when the road is completed in addition to a bonus of a like amount in stock in the road. No other subscriptions locally will be liable until the cars are operating between Rushville and Quincy. The same conditions apply concerning stock between Rushville and Peoria. All bills and expenses to be paid out of the $25,000 put up by local financiers will be presented to the Quincy investors in legal form. [April 29, '16.]

*Vincennes, Ind.—An interurban line between Vincennes, Ind., and Lawrenceville, Ill., is being proposed by E. B. Denison, Buffalo, N. Y., and associates.

*Topeka, Kan.—The construction of a 100-mile electric railway from Topeka, through Pottawatomie and Riley Counties to Randolph, is being considered by the Topeka Chamber of Commerce. E. C. Newby, Randolph, promoter.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—This company has purchased Gray's Wharf in Gardiner, with a river frontage of more than 500 ft. The company plans to expend about $100,000 in the improvement of the property. An order has been placed for two large electric cranes which are to be used to facilitate the rapid unloading of vessels and barges. The principal product handled will be coal, which will be shipped by electric freight to the various plants of the railway and other sections where desired.

Berkshire Street Railway, Pittsfield, Mass.—This company will reconstruct its tracks on State and Union Streets, North Adams.

Mascoutah-Belleville Traction Company, Belleville, Mo.—Master in Chancery Tecklenburg at Belleville recently recommended the sale of property of the Mascoutah-Belleville Traction Company and the appointment of a new receiver. The company was promoted in 1909 and was capitalized for $150,000. Right-of-way was acquired and some bridges built, but no rails were laid. Of the capital stock $30,000 was subscribed by Belleville and Mascoutah residents.

Interborough Rapid Transit Company, New York, N. Y.—On March 31, under direction of the Public Service Commission for the First District of New York, the Interborough Rapid Transit Company placed in operation an additional portion of the White Plains Road extension of the first subway between 219th Street and 238th Street, the Bronx. Operation as far as 219th Street was begun on March 3. One remaining portion of the line yet remains to be placed in service, namely, that between 238th Street and 241st Street, the opening of which, however, must be delayed until certain construction work is completed. The Public Service Commission has awarded to the Ramapo Iron Works, New York City, the lowest bidder, at $28,170, a contract for the

supply of special work for use on the Jerome Avenue branch of the Lexington Avenue subway, the Broadway subway in Manhattan, and the Livonia Avenue extension of the Eastern Parkway subway in Brooklyn.

Long Island Railroad, New York, N. Y.—This company has purchased a six-lever Saxby & Farmer interlocking machine and attendant apparatus from the General Railway Signal Company, New York, to be installed at Sayville, N. Y., by the railroad company's forces.

Union Railway, New York, N. Y.—A public hearing has been announced for April 20 by the Board of Estimate and Apportionment at the City Hall upon the proposed contract of the Union Railway, which has made an application for a franchise to construct, maintain and operate a street surface railway upon and along Amsterdam and Nagle Avenues and Dyckman Street. The proposed line will extend from West 207th Street to the right-of-way of the New York Central Railroad Company at or near the foot of Dyckman Street, as an extension to its existing system.

Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio.—This company contemplates the construction of an extension from Blanchester to Wilmington.

Oklahoma (Okla.) Railway.—Right-of-way is being obtained by the Oklahoma Railway for a 5-mile extension.

***Kitchener, Ont.**—The construction of an electric railway between Guelph and Kitchener is being considered. It is understood that the project is to be part of the proposed hydroelectric line.

***Essex Terminal Railway, Walkerville, Ont.**—It is reported that this company will make surveys for an electric railway from Ojibway to Amherstburg. Owen McKay, engineer.

Dallas Northwestern Traction Company, Dallas, Tex.—An order has been placed by the Dallas Northwestern Traction Company for 50,000 cross-ties, and it is expected that construction between Denton and Krum will be begun within a few weeks. E. P. Turner, Dallas, president. [March 24, '17.]

Olympia Light & Power Company, Olympia, Wash.—This company will immediately begin laying tracks for its line on West Fourth Street.

Seattle & Rainier Valley Railway, Seattle, Wash.—Walter F. Brown, general manager of the Seattle & Rainier Valley Railway, states that work will be begun at once on the construction of a double-track line on Dearborn Street, between Seattle Boulevard and Rainier Avenue, as well as on the construction of a new line on Genesee Street, and the transferring of the company's tracks from private right-of-way to Rainier Avenue, between Thistle Street and Fifty-first Avenue South, aggregating approximately 3 miles of new construction.

Tacoma, Wash.—City Engineer A. L. Nicholson of Tacoma, Wash., has been instructed by the Council to make a survey and prepare an estimate of the cost of constructing an extension to the municipal car line across the tideflats to the plant of the Todd Shipbuilding & Construction Company. Mayor Fawcett states preliminary work on a single-track line from the present terminus at the city limits will begin before May 1. It has been estimated that the extension will cost about $40,000. This does not include the cost of the viaduct over the network of tracks at the shops of the Chicago, Milwaukee & St. Paul Railway Company. Engineer Nicholson estimated the cost of double track, with loops at either terminus, at $110,000.

Monongahela Valley Traction Company, Fairmont, W. Va.—The eventual construction of an interurban line to connect Parkersburg, W. Va., and Marietta, Ohio, with Fairmont has been announced by the Monongahela Valley Traction Company. The route of the proposed line is via New Martinsville and the Ohio River. The Mannington line will be extended to New Martinsville, 20 miles. From New Martinsville to Sistersville the lines of the Tyler Traction Company will be used temporarily. The Parkersburg-Marietta system will be connected by building a new line about 30 miles long.

Lewisburg & Ronceverte Electric Railway, Lewisburg, W. Va.—It is reported that the Lewisburg & Ronceverte Electric Railway has been purchased by H. L. Van Sickler and W. S. Coursey, who contemplate improvements.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—This company will construct car inspection sheds at 800 Mission Road, at a cost of $16,000.

Georgia Railway & Power Company, Atlanta, Ga.—Work will be begun about May 1 by the Georgia Railway & Power Company on the construction of a new carhouse at Marietta and Ashby streets. The building will be of brick and cement construction and will have a capacity of about seventy-five cars. The cost is estimated at about $40,000.

Fort Wayne & Decatur Traction Company, Decatur, Ind.—Plans have been prepared by the Fort Wayne & Decatur Traction Company for the construction of a new passenger station and a new freight station at Jackson and Second Streets, Decatur.

Interborough Rapid Transit Company, New York, N. Y.—In the belief that it will add greatly to the convenience of the public, the Public Service Commission for the First District of New York has approved a plan by which the mezzanines at Fortieth Street and near Forty-second Street over the Times Square express station on the Broadway subway will be connected and a wide mezzanine constructed to cover substantially the whole station area. It is estimated that the work will cost about $150,000, but the advantages to traffic resulting will be more than sufficient to warrant the expenditure.

Northern Ohio Traction & Light Company, Akron, Ohio.—Construction of a new terminal station has been begun by the Northern Ohio Traction & Light Company at North Main Street, Akron. The building is designed for twelve stories, but only four will be built this year. Steel and terra cotta blocks will be used. The first floor plan provides for a large waiting room, ticket offices, restaurant, etc., and the offices of the company will be located on the second and third floors.

Oklahoma (Okla.) Railway.—Work will soon be begun by the Oklahoma Railway on the construction of a new station at Edmond, Okla., at a cost of $10,000.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, Philadelphia, Pa., William S. Twining, director, until 12 o'clock noon, on April 17, for additional steel superstructure and appurtenant work to provide station platforms on the Frankford Elevated Railway at Huntingdon Street (Contract No. 520). Copies of plans and specifications may be obtained upon deposit of $10, to be refunded upon return of plans.

POWER HOUSES AND SUBSTATIONS

Pacific Electric Railway, Los Angeles, Cal.—This company will construct a new substation at Alhambra.

Fort Wayne & Decatur Traction Company, Decatur, Ind.—This company's power house was recently destroyed by fire, causing a loss of about $50,000.

Interborough Rapid Transit Company, New York, N. Y.—This company will construct a new two and four-story boiler plant at its yards at 239th Street. The structure will be 57 ft. x 101 ft., and will cost about $70,000.

Youngstown & Sharon Street Railway, Youngstown, Ohio.—This company will extend its transmission line to Lisbon.

Pittsburg County Electric Railway Company, McAlester, Okla.—This company will install a new engine in its generating plant to take the place of an engine that was recently wrecked by an explosion.

Jackson Railway & Light Company, Jackson, Tenn.—A contract has been awarded by the Jackson Railway & Light Company to E. G. Parrish, Jackson, for an addition to its power house.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—During the coming summer the Milwaukee Electric Railway & Light Company will construct a new steam generating plant on the shore of Lake Michigan just south of St. Francis. The initial capacity will be 65,000 kw., which will ultimately be increased to 200,000 kw.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Overhead Manufacturers State Delivery Conditions

Standard Materials Shipped from Stock—Non-Standards Difficult to Promise—Large Orders of Standard Materials in Six Weeks or Longer

Delivery conditions on maintenance and construction materials are now in such a changeable state that authoritative information from the manufacturers should be of interest. A letter recently addressed to the producers of the larger part of the overhead line materials used in electric railway industry has brought prompt statements regarding the deliveries which these manufacturers are now in a position to make.

Shipping Standard Catalog Articles

The first question put to the manufacturers referred to overhead line materials for maintenance work, these materials to be standard catalog articles, not special in any way —"Could you make shipment from stock within thirty days?" One manufacturer replied that "Up to the present time we have been able to ship standard catalog articles of line materials from stock in a great majority of cases. Very few cases have required more than thirty days. The exceptional cases are caused usually by demand largely in excess of previous experience on the particular article, even after taking into consideration the increased buying movement of the past several months. Where additional stock is dependent on malleable iron castings or steel products, the delay will range anywhere from six weeks to three months. There have been a few extreme cases even worse than this."

Another manufacturer states, "We can ship over 90 per cent of the devices appearing in our catalog from stock in reasonable quantities. The remainder, if made of brass or composition metal, can be supplied in ten days, or if of malleable iron in four to six weeks." A third manufacturer can promise shipment of catalog line materials from stock or within thirty days.

Deliveries of Special Designs

With regard to deliveries of orders for special overhead materials, that is, something not regularly listed, one manufacturer points out that the time of deliveries would depend on the pattern and the material required but would take at least twice the length of time required for standard production. Another manufacturer says that deliveries on special overhead materials can be made in from six to eight weeks, and a third manufacturer states that it is impossible to set down the time with any accuracy. On this point, he says:

"Articles requiring new patterns, tools, etc., are especially difficult to handle, because our pattern and tool departments are already working under a heavy overload. Even after a delay of from three to six weeks and sometimes longer, to make up pattern equipment, the malleable and bronze castings have to be secured with an additional delay ranging from three weeks to three months. Then there are manufacturing processes which vary in time, depending upon the design of the article. Altogether it is hard to state definitely what can be done with special articles, but it is certain that there will be long delays and expenses all out of proportion to the intrinsic value of the devices, compared with some similar standard articles."

Deliveries of Large Orders

The third question put to the manufacturers was: "How are the production conditions for the shipment of a large order of construction material of standard catalog articles?" One manufacturer replies that a very large percentage could be shipped from stock if the customer would accept the manufacturer's recommendation for such material. Another says that production conditions in the plant are such that materials can be got out in thirty days, providing the raw materials for the make-up of the order are in stock, but if the order exceeded the supply of raw materials delivery would be contingent upon raw material deliveries which would be about as follows: "Malleable iron castings, six to eight weeks; structural steel, two to three months; Porcelain insulators, four weeks, and brass castings, three weeks."

Another manufacturer, discussing production conditions for a large shipment of line construction material, states: "Our stock of standard overhead materials is arranged with the idea of taking care of new construction requiring quantities often much larger than would be necessary for the average run of maintenance orders. Under the present conditions there are apt to be several items in a bill of material which are short for one reason or another, so that it is safer on the average construction job to figure on at least six or eight weeks' shipment."

This summary, based upon replies from large and responsible manufacturers, confirm the judgment of most electric railway line departments that in these times of rapid changes it is best, wherever at all possible, to confine their orders for line construction materials to articles of standard manufacture rather than to ask for special designs.

Car Building Plants Busy

Orders for 1917 Will Probably Exceed Those for 1916—Delivery Dates Difficult to Fix

Based upon the opinions of several car builders, and also upon the number and character of rolling stock items published weekly in this department of the ELECTRIC RAILWAY JOURNAL, the statement can assuredly be made that the car orders for the first half of 1917 will considerably exceed those for either half of 1916. The orders from the Eastern roads have been made up largely of city cars for service on heavily-traveled lines, while the Western properties have ordered many lightweight, safety (one-man) cars. One car builder recently made the statement that on account of the orders for light-weight cars already on the books, and for a number of other orders which are expected to be placed, he was confident that his company's business for 1917 would exceed that of any year since 1912.

Prices and Deliveries

Car prices are at least 30 per cent higher than the average for 1916, and the car builder's shops are now fairly well filled. Orders are also in sight for a substantial amount of business. Deliveries cannot be set definitely by the car builders, first on account of the raw material situation, and second because of the delay in the receipt of specialties. It is safe to say, however, that the car builder can now guarantee to build bodies and trucks within the time a purchaser can have the electrical equipment delivered for installation. There have been some notably long delays in the deliveries of cars caused by the inability of the roads to procure certain specialties or parts of the electrical or air-brake equipment. One car builder was forced to hold an order of several cars for three months simply for the reason that the gears were not delivered. This, of course, works a hardship on the car builder, because his money must remain tied up for this length of time without interest.

Reports indicate that the steel delivery situation is working out better than for the last twelve or fourteen months, but it must be remembered that car builders cannot now obtain options on raw materials as they did formerly. This applies principally to steel and iron. There is also a possibility that the government may require the steel makers to give preference to its orders, which in turn will interfere with production promises as already made by car builders.

The electric railways are paying their bills to the car builders better than for several years past, and very few cars are being ordered on the car trust plan, as has been the case in former years.

Electric Railway Purchasing Agents and Storekeepers Should Organize

By S. R. Dunbar
Purchasing Agent, Union Traction Company of Indiana

I have noted with interest the consideration given the possibility of a Purchasing Agents' Association, in the "Manufactures and Markets Department" in the April 7 issue of the Electric Railway Journal, as well as the editorial on the subject. The editorial which suggests the advisability of the appointment of a committee of the Engineering Association rather than the organization of a separate Purchasing Agents' Association, strikes me as being a correct analysis of the subject. A separate association would meet with the difficulty of getting attendance at meetings. Then again, the purchasing agent's problems are so much those of other departments in his own company and of the section in which his company is located that the getting together of purchasing agents separately would not solve their problems as well as the problems of other departments of the industry are helped by association of the men in the companies concerned.

I have often thought about the matter and have not been able to get away from the two points raised above, that is, lack of authority with other departments to get things going in the way that the purchasing agent would prefer that they should go and the local nature of the purchasing agents' problems. Small local gatherings in different localities might be of value, but it seems hard to get even these started and kept going.

Price matters do not require much discussion, and information regarding them and where materials can be bought can be easily obtained by mail or telephone.

So I think co-operation of other departments with the purchasing department, and *vice versa*, can be best secured through the appointment of a committee of the Engineering Association to consider the purchasing agents' problems rather than through a separate organization.

Market Conditions Better

Conditions affecting labor in the East, around Pittsburgh and other neighboring points, are far more critical than the manufacturers' inability to secure raw material, according to W. H. Smaw, purchasing agent of the Georgia Railway & Power Company, who recently returned from a ten-day trip during which he visited Cincinnati, Cleveland, Pittsburgh, Mansfield, Ohio; Philadelphia and New York City. Mr. Smaw's statement is as follows: "The steel mills and other sources of raw products seem to have gone tonnage mad. They are interested in nothing but big items, bulk orders. Consequently, manufacturers of finished products are finding many difficulties in the way of getting the mills to accept their orders for special stuff. However, conditions are improving, instead of growing worse, as had been feared. Deliveries are getting better. War conditions may upset calculations to some extent, but it is my opinion that the disturbance will not be great among the items in which we are most directly interested. War will not affect labor conditions except favorably, and prices will not be allowed to run wild. I anticipate that the government will be able, through the enactment of regulatory measures, to see that there are no runaway markets and will control prices absolutely within maximum limitations."

Selling Costs Should Be Reduced

Better Co-operation with Railway Supply Men Needed—"Yes" or "No" Policy Advisable

By L. W. Horne
General Manager Horne Manufacturing Company, Brooklyn, N. Y.

That the electric railways should strive for better purchasing methods is very apparent in the minds of many railway supply men. Few purchasing agents or master mechanics realize that the selling expense on a good many articles is at the present time more than the manufacturing cost, and on all the accessories handled by this company it is almost equal to the manufacturing cost. The big railways are now endeavoring to anticipate their needs, but the small railways do not, or perhaps can not. The average railway makes a concern in the railway supply business waste a lot of time which ultimately has to be paid for by the railway. The master mechanic of an average road cannot take time or has not the facilities to write out his requirements unless he writes them out in longhand. When a railway supply man calls on the average master mechanic with whom he is acquainted the usual query is "Where have you been for the last six months? If you fellows would come around occasionally you might get some business. I wanted some of your stuff last month."

If this master mechanic stopped to think what the cost of a trip to New England, western New York or western Pennsylvania amounts to in comparison to twenty minutes' time and a 2-cent stamp, he would realize what increased selling cost in the form of traveling expenses means to the railway supply man. Orders from the small electric railways that in the aggregate would amount to considerable if the 2-cent stamp method were used, are too small to warrant personal solicitation of the supply man because of the exorbitant selling expense. If the railway supply man had a method of being informed by a railway company that it was going to be in the market for a small amount of material, the matter could be handled profitably to both.

With this idea in view, the Horne Manufacturing Company has sent out a postcard on which is listed a number of items, such as hand brakes, trolley catchers, trolley bases, wheel guards, copper, malleable or bronze castings, sand boxes and traps, etc., with a paragraph asking the master mechanic to check off the items in which he is interested or for which he is in the market and with instructions to mail this card in to the company. In many cases the master mechanic or superintendent of equipment does not see this card or any other advertising literature, because it is destroyed by some clerk in the department before it is called to the attention of the man actually interested. To this the railways answer that they get so much advertising literature that they cannot possibly pay attention to all of it. Nevertheless, the different manufacturing companies must send out expensive bulletins to all in order to catch those men that are interested in some of their products.

It is usually found that the more trips a railway supply man makes on the road the better success he has. That is, the more calls that are made on the same man the better chance the supply man has of getting the business. In fact, he may have to call four or five times before the general manager, purchasing agent or master mechanic even remembers him. The reason for this is that there are too many supply men personally soliciting business. Very often it is necessary for the selling agent to make three or four trips in order to close a comparatively small order. If the railway men would take a definite "yes" or "no" atttitude toward the railway supply man's products, this would be a different matter, but usually they will not give the salesman a definite "no," even when they have made up their minds absolutely that they will not use his equipment. Yet it is obvious that they could save themselves a considerable amount of time and save the selling agent a considerable amount of expense by telling him frankly that his product would not be used.

Whatever can be done by scientific buying or otherwise to reduce materially the cost of selling must ultimately have its effect on prices, and this should be of vital interest to both the railway man and the manufacturer or supply man.

Loose Leaf Literature vs. the Big Catalog

C. E. R. A. Standardization of Literature—Big Catalogs Not Always Kept—Engineers Prefer Late Data

By R. M. Hemming
Superintendent of Motive Power, Union Traction Co. of Indiana

I have read with much interest the article by Allan Bond, advertising manager of the Ohio Brass Company, in the Electric Railway Journal of March 31, 1917, page 623.

For many years past and at the present time I have been very enthusiastic over loose leaf publications in almost every form. Some years ago I had the pleasure of reading a paper before the C. E. R. A. on this subject. It was generally conceded that the installation of loose leaf publications was the common sense and practical thing to do whenever it was consistent except where the cost of producing in some special cases was prohibitive. I have particular reference to periodicals.

This is a matter of standardization pure and simple. I cannot see the common sense for such a tremendous variation of sizes of catalogs.

However, since the reading of the paper before the C. E. R. A. numerous concerns began immediately thereafter to change their method of publication from a solid binder to loose leaf. The loose leaf proposition should particularly appeal to all concerns at this time on account of the increased cost of paper and the cost of production in every way.

Mr. Bond speaks about many of the recipients of manufacturers' catalogs not having an office force or organization to make a loose leaf file practical. I cannot agree with him, as I think you will find as many solid bound catalogs go to the waste basket as you will find renewals or supplements to loose leaf publications. Mr. Bond is of the opinion that a solidly bound catalog, although known to the producer to be six months or a year old, is better than a loose leaf affair, whose up-to-dateness is unknown to either the owner or manufacturer that supplied it. Certainly there is every reason for the manufacturer who produces the catalog either solidly bound or loose leaf form to see that the date of its publication and its bulletin number are conspicuously printed thereon. I have received numerous solidly bound expensive catalogs that did not bear either a catalog number or the month or year when it was published. Therefore, a catalog of that type to me would be as good as obsolete and it will find its place in the waste basket. Any progressive engineer likes to be up-to-date and progressive and prefers to deal with a progressive manufacturer.

Much Track to Be Bonded in 1917

Notwithstanding the abnormal conditions of the copper market with the wire base about 39 cents, indications are that there will be more track rebonded during the coming year than during any year since 1912. Deferred maintenance work is responsible now for activity in the bonding field. Many roads have hesitated about putting their bonds in first-class shape because of the loss of revenue during 1913 and 1914 and of the high prices for material and labor in 1915 and 1916. Good operation demands that the bonding now receive attention, and the orders placed and in prospect confirm the manufacturer's opinion that 1917 will see more rail bonds installed than was done in any of the preceding five years. During the first few days of March, for example, one company received orders for more than 26,000 bonds. The greatest activity seems to be in the Atlantic Coast States, and this was true for the business placed during 1916 as well. The Pacific Coast roads did a comparatively large amount of bonding during 1915. Consequently, their orders for 1916 were small, but indications now are that considerable work will be done during 1916, particularly by the Pacific Electric Railway.

Some of the lines throughout the country which have undertaken or are actively considering comparatively large amounts of bonding work for the 1917 season include the Long Island Railroad, the American Railways Company properties, the Kansas City Railways, Lehigh Valley Transit Company and the Illinois Traction Company. The Canadian Northern Railroad is now installing 8000 bonds for its Montreal tunnel electrification project. These are being put on with the Ereco electric bonding equipment. Orders for the Central States interurban territory are not particularly large for any single property but show that bonding maintenance work is being planned for most all of the roads which have not overhauled their bonding recently. The Electric Railway Improvement Company recently shipped 7600 bonds by express from Cleveland to the Long Island Railway at New York. When it is noted that these were 32-in. 400,000-circ. mil. bonds, the size of the shipment will be recognized. These bonds were shipped by express because of the freight embargo on the Eastern roads.

Electrical Exports Doubled

For the seven months ended Jan. 31, 1917, the electrical exports of American manufacturers amounted to $28,217,968, compared with $15,638,569 for the corresponding seven months of the year previous. The increase here, which is almost 100 per cent, can be accounted for to a considerable degree by increase in prices. There has been, however, a marked increase in the demand of foreign markets for American goods. Conspicuous figures are those for insulated wire and cable and for motors. During the last year and a half the exports of these articles have been increasing almost constantly. In the last eighteen months insulated wire and cable has practically doubled in price. Even on this basis, though, there has been an actual gain in volume of wire exported. The prices of motors, of course, have increased to a considerable extent, but it is doubtful if the prices have increased to such an extent as to offset the apparent gain in exports.

CURRENT PRICES FOR MATERIALS

Quoted Apr. 12

Copper (electrolytic)	New York, 34 cents per pound
Rubber-covered wire (base)	New York, 39 cents per pound
No. 0000 feeder cable (bare)	New York, 39 cents per pound
No. 0000 feeder cable (stranded)	New York, 39½ cents per pound
No. 6 copper wire (insulated)	New York, 36½ cents per pound
No. 6 copper wire (bare)	New York, 39 cents per pound
Tin (straits)	New York, 54⅝ cents per pound
Lead	New York, 9⅜ cents per pound
Spelter	New York, 10¼ cents per pound
Rails, A. S. C. E., O. H.	Mill, $40 per gross ton
Rails, A. S. C. E., Bess	Mill, $38 per gross ton
Wire nails	Pittsburgh, $3.20 per 100 pounds
Railroad spikes, 9/16 in. and larger	Pittsburgh, 3.65 cents per pound
Steel (bars)	Pittsburgh, 3¾ cents per pound
Sheet iron (black, 24 gage)	Pittsburgh, 5.35 cents per pound
Sheet iron (galv., 24 gage)	Pittsburgh, 6.55 cents per pound
I-beams over 15 in.	Pittsburgh, 10 cents per pound
½-in. galv. extra high strength steel wire,	New York, $7.04 per 100 ft.
⅜-in. galv. high strength steel wire	New York, $3.52 per 100 ft.
⅜-in. galv. Siemens-Martin wire	New York, $2.60 per 100 ft.
5/16-in. galv. Siemens-Martin wire	New York, $2.00 per 100 ft.
Galvanized barb wire and staples	Pittsburgh, 4.05 cents per pound
Galvanized wire (ordinary)	Pittsburgh, 3.85 cents per pound
Cement (carload lots) with rebate for sacks,	New York, $2.12 per barrel
Cement (carload lots)	Chicago, $2.16 per barrel
Cement (carload lots)	Seattle, $2.60 per barrel
Sand in large lots	New York, 50 cents per ton
Waste, No. 1 white	New York, 14 cents per pound
Linseed oil (raw, 5-bbl. lots)	New York, $1.07 per gallon
Linseed oil (boiled, 5-bbl. lots)	New York, $1.08 per gallon
White lead (100-lb. keg)	New York, 10¼ cents per pound
Turpentine (bbl. lots)	New York, 50 cents per gallon

OLD METAL PRICES

Copper (heavy)	New York, 29 cents per pound
Copper (light)	New York, 24½ cents per pound
Red brass	New York, 20 cents per pound
Yellow brass	New York, 19 cents per pound
Lead	New York, 8 cents per pound
Zinc	8 cents per pound
Steel car axles	Chicago, $40 00 per net ton
Iron car wheels	Chicago, $22.50 per gross ton
Steel rail (scrap)	Chicago, $30.00 per gross ton
Steel rail (relaying)	Chicago, $39 per gross ton
Machine shop turnings	Chicago, $10.00 per net ton

Purchases for Foreign Tramways

Owing to the industrial conditions abroad on account of the war some of the European tramways are purchasing material in this country for current supplies. One of these is the Société Générale de Chemins de Fer Economiques, a large Belgian holding company, with headquarters formerly in Brussels but now in Paris (during the war). This company owns and operates electric tramways in Florence and

Milan and other places in Italy, Madrid in Spain, Cairo in Egypt, Damascus in Syria, in several places in France and Belgium, and in many other cities in Europe and Asia. The purchases are being made through Dr. C. O. Mailloux, consulting engineer, 20 Nassau Street, New York, who represents the concern here, and have included trolley wire, line materials, commutators, springs, steel-tired wheels, rails and other supplies, besides some repair parts for steam locomotives for steam tramway lines also owned by the concern.

ROLLING STOCK

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., is considering the purchase of cars.

International Railway, Buffalo, N. Y., is reported to have placed an order with the G. C. Kuhlman Company for cars with practically the same specifications as those of the fifty cars already ordered, details of which were printed in the ELECTRIC RAILWAY JOURNAL for March 31, 1917.

Lehigh Valley Transit Company, Allentown, Pa., noted in the ELECTRIC RAILWAY JOURNAL of March 24 as ordering twenty-four center-entrance, front-exit, double-end cars from The J. G. Brill Company, has specified the following details for this equipment:

Date of order	March, 1917
Delivery	During August
Builder of car body	Brill
Type	Center Entrance
Seating capacity	60
Weight (total)	42,000 lb.
Bolster centers, length	26 ft. 6 in.
Length over bumpers	47 ft. 0 in.
Length over vestibule	46 ft. 0 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	11 ft. 1⅝ in.
Body	All steel
Interior trim	Statuary bronze
Headlining	Agasote
Roof	Arch
Air brakes	West. S M E
Axles	4½ in. A. E. R. A. Standard
Bumpers	Rico Anti-Climbers
Car trimmings	Statuary bronze
Control, type	HL
Couplers	Tomlinson
Curtain fixtures	Curtain Supply
Curtain material	Pantasote
Designation signs	Keystone
Door operating mechanism	Brill
Gears and pinions	Westinghouse
Hand Brakes	Horne
Heaters	Cooper Hot Air
Headlights	94-watt incandescent
Journal boxes	Brill
Lightning arresters	GE
Motors, type and number	4—West. 514A
Motors	Outside
Registers	International MMR5
Sanders	Brill hand
Sash fixtures	Brill
Seats, style	Brill
Seating material	Rattan
Springs	Brill
Step treads	Feralun
Trolley catchers	Ohio Brass
Trolley base	Nuttal No. 13
Trolley wheels	Automatic Ventilator
Trucks, type	Brill 77 E-1
Ventilators	Automatic
Wheels (type and size)	Davis 26 in.

TRADE NOTES

Western Electric Company, Inc., New York, N. Y., announces the opening of a branch house at New Haven, Conn.

American Electrical Works, Phillipsdale, R. I., have sent out a notice to customers requesting that they return all reels and spools as promptly as possible.

William P. Bonbright & Company, Inc., announce the removal of their offices to the Equitable Building, corner Nassau and Cedar Streets, New York City.

F. C. Thomas has resigned as superintendent of the Canadian Tungsten Lamp Company to become re-associated with the Westinghouse Lamp Company at Bloomfield, N. J.

Johnson Fare Box Company, Chicago, Ill., has secured an order for 350 fare boxes of the double-dial coin and metal ticket registering type from the Denver Tramway.

General Electric Company, Schenectady, N. Y., announces the receipt of an order from the International Railway, Buffalo, N. Y., of three 2000-kw. and one 1000-kw. rotary converters with transformers and switching equipment.

Galena-Signal Oil Company, Franklin, Pa., through its secretary F. French Miller, announces that effective April 5, George A. Barnes has been appointed manager and F. R. Stakelum, assistant manager of the railway department.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order from the Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa., for sixteen No. 514-C motors to be used on double-truck interurban cars.

Cities Service Company, New York, N. Y., at the annual meeting elected two new directors, J. C. McDowell of Pittsburgh and M. R. Bump of New York, to succeed A. Bevin and C. T. Brown. The stockholders approved the increase in the authorized preferred stock of $40,000,000 and in the authorized common stock of $10,000,000.

National Tube Company, Pittsburgh, Pa., is distributing photographs of a piece of 8-in. National line pipe which was subjected to a torsional stress of 713,000 in.-lb. This pipe, which resembles a twisted garden hose, weighs approximately 29 lb. per foot, and the walls are approximately 1/3 in. thick. This is quite a curiosity and many purchasers would not have believed that 8-in. pipe could be subjected to any extraordinary punishment.

Esterline Company, Indianapolis, Ind., announces the appointment of James G. Biddle as district sales agent for Esterline efficiency instruments for the State of New York and the New England States, with the principal office for this territory at 90 West Street, New York City. The home office of James G. Biddle, 1211 Arch Street, Philadelphia, Pa., has for a number of years been the sales agent of this company in eastern Pennsylvania and New Jersey, which is to be continued. The New York office is in charge of H. H. Sticht, resident sales engineer.

ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y., has issued bulletin X-263, "Automatic Substations Permit Larger Savings at Des Moines," which was reprinted from the ELECTRIC RAILWAY JOURNAL of Jan. 13, 1917.

Northern White Cedar Association, Minneapolis, Minn., has issued a bulletin of official specifications of the Northern White Cedar Association governing the manufacture and grading of white cedar posts, poles, etc.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is distributing leaflet 2492-C on its reversing planer motors. These motors range in capacities from 10 hp. to 75 hp. and operate at 230 volts direct current.

Union Switch & Signal Company, Swissvale, Pa., has issued bulletin No. 87 on its forge shop, describing and illustrating the methods used in the manufacture of railroad forgings, gray iron, mild steel, brass bars and aluminum castings.

Peter Witt, patentee of the front-entrance, center-exit car, has issued a descriptive bulletin, "The Car Rider's Car," describing this car and the service it is performing on a number of lines. At the present time there are 311 cars of this type in service and 129 in the course of construction.

Delta-Star Electric Company, Chicago, Ill., has issued a carefully prepared booklet describing its high-tension equipment, including its wood tower and standard steel tower outdoor substations and auxiliary equipment. This includes pole-top switches, lightning arresters, carbon-tetrachloride fuses and choke coils. This eighty-page booklet contains more than 100 illustrations of typical installations of the above equipment. Several pages are devoted to fuse tests and a number of oscillogram records of these tests are given.

New Publications

1917 Income Tax Procedure. By Robert H. Montgomery. The Ronald Press Company, New York, N. Y. 461 pages. Cloth, $2.50.

The sales points of this book are its definiteness and authoritativeness. In other words, it answers clearly and positively ninety-eight out of every hundred questions that confront lawyers and accountants in dealing with the federal income tax. For this reason it should be a very valuable reference book to the electric railway auditor or attorney who has to handle the tax reports. The material in the book is well analyzed and indexed.

Mediation, Investigation and Arbitration in Industrial Disputes. By G. E. Barnett and David A. McCabe. D. Appleton & Company, New York, N. Y. 162 pages (without appendices). Cloth, $1.25, net.

This is a timely work on a subject of great importance in the electric railway industry, and the way in which the authors have explained the shortcomings, virtues and accomplishments of agencies for mediation, investigation and arbitration should prove interesting. The book presents detailed plans for the formation of both state and federal boards upon a voluntary basis with no powers of prohibiting strikes.