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PREPAREDNESS IN THE SCHOOLS A combination of the boy scout and safety-first idea for schools, which has proved very successful in Brooklyn, is being advocated by Col. E. C. Spring of the Lehigh Valley Transit Company before the school board at Allentown, Pa. Briefly, the idea is to have a safety patrol for each school, consisting of ten or twelve of the larger boys who would reach the school earlier than the rest and would station themselves outside of the building where accidents might occur, as at street intersections, and guard the younger children from accidents. Such a plan would be beneficial not only to the younger children, but to those who participated in this guard duty by giving them a sense of responsibility under direction in the performance of an honorary duty. Such service is enjoyed by the average boy, as shown by the boy scout movement as well as by the practice in some schools of having military battalions, and is the foundation of the plan now current of introducing a regular system of military drills into more of the schools. The only question in matters of this kind is in keeping up the *esprit de corps*, but this would have to be the task of the director in charge of the work. The Brooklyn plan is one which should commend itself to school principals, as it would be of benefit to all concerned.

ON PRYING GOOD COPY LOOSE The men in an electric railway system who have to do with the physical equipment are not as communicative regarding their work as are those in departments in which publicity is a natural and, in some cases, necessary part of the work. This is not due to their unwillingness to give out, for the benefit of others, the results of experience and study, but rather to the fact that they consider "doing things" to be more important than telling about them. And yet, if the industry is to advance, there must be interchange of facts and views through the technical press. The difficulties in the way of prying loose the information that practical men most prize are humorously referred to in a letter from S. L. Foster printed in last week's issue. Mr. Foster is a railway pioneer who has solved many difficult equipment problems. Moreover, he has shown his willingness to practise what he preaches by furnishing to our equipment columns several suggestive articles describing devices which show originality, practicability and adaptability. While Mr. Foster has not used many words in his letter he has said a great deal, and we commend his suggestions to our present and prospective contributors.

STANDARDS SHOULD CHEAPEN COST Of late there has become evident a rather widespread belief that full advantage is not being taken of the standards established by the American Electric Railway Engineering Association. From a technical standpoint the practice outlined in the Engineering Manual of the association is literally invaluable. It is developed not only at considerable direct expense to the association, but also at great personal effort on the part of the committee members, whose selection, because of their intimate knowledge of the various phases of the industry, gives each report a technical value unsurpassed by any other source of information. Nevertheless, the association standards are not being universally used, and the incongruity of their lack of recognition is at least disquieting, especially because the smaller railways, for whose benefit the standards are particularly designed, have, as a rule, no standards of their own to interfere. On the larger roads local standards have been developed, and there seems to be a tendency to regard this fact as a sufficient reason for adhering to them in preference to the standards of the association. Here, perhaps, is a partial answer to the problem. The large companies, which are the large buyers, frequently do not buy according to association specifications. Instead, orders for standard material come from the smaller roads whose annual demands are insignificant, as witnessed by the pitifully small tonnage of rail rolled to standard design. Is there, then, any object for the manufacturer to sell association standard material by making attractive quotations on it? And is there any incentive for the small road to demand it when its use involves no visible return? We are inclined to doubt it, and as a corollary believe that the conditions are chargeable largely to the insular attitude of larger companies.

EFFICIENCY IN ADVERTISING We published last week a letter from a purchasing agent regarding the vast amount of catalogs and advertising literature received by him and of its frequent duplication on account of being addressed from obsolete or inaccurate mailing lists. He wonders how much printed matter, postage and clerk hire is wasted because of these inaccurate and careless methods. He further wonders how many advertising pages could be purchased in trade periodicals with the money which is so wasted. Were it possible to arrive at such a comparison as this suggests, the figures would undoubtedly run to astonishingly large proportions. There is little conception of the enormous amount of advertising liter-

ature which comes through the mails to all electric railway officials. The manufacturer sending out such material rarely visualizes the fact that some hundreds of other manufacturers are mailing similar material at the same time. Advertising pages of trade periodicals, however short they may be of perfect efficiency, furnish at least these advantages. They come to the recipient in convenient form for reference. They are already classified and indexed for his convenience, and are therefore self-filing. They come to him in one size and one shape and so bound together that in one document he has ready reference to all sorts of subjects. They are certain to be addressed properly because the recipient is paying for his subscription and would be sure to complain if copies of the paper were not received. Finally, as these advertising pages come to him weekly, or at other regular intervals, he always has them before him when he is ready to buy, whereas circulars reach him at irregular intervals and may be received just after he has placed the order. Hence, trade paper advertisements have this trinity of virtues: They go where they are wanted, in the form they are wanted and when they are wanted. While the value of trade literature and catalogs cannot be questioned, the methods of their distribution seem fairly open to debate. A solution might be to use the advertising pages of the trade publication, in a more extended way, to advertise selling literature, with an increase of efficiency and results to all concerned.

UNCERTAINTY OF UTILITY INVESTORS

The article by Mr. Bauer published elsewhere in this issue should be of particular interest to electric railway operators because of the emphasis laid upon one point whose importance these days is becoming more widely recognized—*i.e.*, the necessity of relieving the investors' uncertainty in regard to the stability of public utility securities. Without a doubt the present chaotic state of utility valuations and restrictions on the rate of return has made investors display at least a hesitancy toward increasing their utility holdings, notwithstanding the sums needed for utility developments. If electric railways and other utilities are henceforth to be valued and have their rates regulated to give a certain return, it is highly necessary that the basis of valuation be more simplified and that a plan be adopted for an automatic control over the rate of return.

Like Mr. Bauer we are not inclined to argue here for any particular basis of valuation to begin the process of simplification, but merely to stress the fact that some definite, clear-cut basis ought to be selected. The one chosen should be liberal, taking full cognizance of past hazards and of what the investors might reasonably be supposed to have expected in view of the past indefiniteness of rate regulation. Yet it must be a compromise, too, for the utilities cannot afford to force the highest possible valuation endurable by the public, any more than the public can profit by insisting upon any policy not generally fair to existing investments. The whole problem is to look ahead, and in the light of future re-

quirements select a valuation basis for all companies that will in the sum total give substantial justice to existing properties.

As regards the rate of return to be allowed under Mr. Bauer's plan, we wish to emphasize the point that electric railways should be recognized as hazardous undertakings. Even their monopolistic features, as far as railway operation is concerned, have not rendered them immune to labor troubles, charges for obsolescence due to changes in the art or the competition of private automobiles and jitneys. Still another hazard is the possibility of the future municipal purchase of the line at a depreciated price. As citizens we hope this danger is not great, but it is one which the investor naturally will take into consideration. This factor of risk should receive due weight in establishing the rate of return.

Anyone who believes that the electric railway business, owing to its monopolistic character, is free from financial problems and dangers need only look over the statements of the companies for the past twelve months, as reported in our financial columns, and to read the analyses of conditions which are presented in our pages from week to week. If any more concrete statement is desired he can consider the petition just presented by the California roads to the Railroad Commission in that State, asking for assistance in the solution of their financial problems, brought about mainly by the jitney, by antiquated franchises and by the increasing burden of taxation.

Again, we are firmly of the opinion that some sort of a bonus plan for good management without any municipal guarantee of the return would constitute the most proper and equitable method of dealing with the investor. To our mind the support of utility operation through the taxing power, so as to relieve the company from the responsibility to its stockholders of earning the allowed return would be inadvisable, for the city would be doing what it was never created to do—paying for service to a few citizens by taxing all, or possibly burdening all with the results of utility inefficiency of management. The utility itself should be made responsible for earning the return, and since this would be known in advance the investor could enforce the recognition of the risk involved. But some bonus or profit-sharing scheme should be adopted in regard to any excess over the return allowed, for this is the best earnest of efficiency in management and honest accounting.

The plan outlined by Mr. Bauer in its general principles is not new. Several electric railway companies are now operating under franchises which provided for a revaluation and a regulated return with bonus for good management. The results on the whole have been satisfactory. His plea is for an extension of the idea, and we believe that some such plan is well worthy of consideration at least where resettlements are necessary. In all cases, however, the points already mentioned should be observed and the equity of the railway company as regards the value of its property and a fair rate of return on it should be protected.

PUTTING SNAP INTO THE FREIGHT BUSINESS

The 1915 report of the committee on freight and express traffic of the Transportation & Traffic Association contained some statements which merit more than passing attention during these times of stress in the electric railway business. The committee urged that if relatively the same expenditures were made for freight equipment, facilities and advertising as for these elements of the passenger business the freight business would show a much larger increase. That this statement was founded on fact is illustrated by the experience of the two Maine companies described in an article by F. E. Wood, their general freight agent, in this issue.

The rapid increase in the freight business of these companies and the fields which are opening up for the creation of new business have proved to be sources of encouragement and inspiration. Under such conditions initiative and originality are stimulated, and unexpected problems of unique character present themselves for solution. Take for example the potato situation mentioned by Mr. Wood. With soil and climate favorable for potato culture the farmers were not raising potatoes on any considerable scale, because of obstacles which were readily surmountable under suitable leadership. These farmers might have got together and organized for co-operative storage and distribution, much to their own profit. But organizing talent which is so vital to the electric railway is not lying around loose on the farm, although it is being developed greatly in some sections through agricultural education. It remained in this case for the electric railway to step in and take the lead. If the response is as good as it promises to be, the community will have a new industry and the railway a new source of traffic.

One feature of the electric freight and express business which appeals to us as a fundamental reason for its continuing strength is that the electric railway is by its very nature equipped to do certain business that the steam roads cannot do or can do only at a loss. This might be termed the "retail" end of the freight business. Frequent and speedy service in the transportation of shipments of moderate size is a special business, and the ponderous steam-hauled train is not adapted to it. The electric freight organization can relieve, or rob if you please, the steam road of this work on one hand, and can build up an original business on the other, and can profit greatly thereby.

During a few years past the electric railway income from passenger business has dropped off, or at best has increased slowly. Jitney competition has had a transient influence in depressing passenger income, and the private automobile will always be with us. The forces which have acted to render the automobile a permanent rival of the trolley car are not effective in the freight and express field. Competition exists here, to be sure, but it is economic competition, and the best service for the least money will win. And in certain lines the electric railway can furnish the best service if it will go after the business.

ELECTRIC RAILWAY NEEDS IN CALIFORNIA

Considerable significance attaches to the communication just sent to the Railroad Commission of California by a committee representing practically every electric railway company in that State and which sums up the urgent needs of the situation which these companies now face. An abstract of the communication appears on another page. California is now enjoying very prosperous conditions in many lines of industry, but it would seem that a crisis is at hand for the electric railways, nearly all of which have suffered severely from several contributory causes in the last year or two. If their affairs can now be shaped to suit conditions, if such franchise rehabilitation and regulatory measures as are needed can be secured, there will be opportunity for the electric railways to share in the improved financial conditions. It is well known, however, that any change in legislation or regulation which will make conditions easier for the public utility corporation, is not easy to secure nowadays, and the desired results, therefore, cannot be expected unless the need is made very clear to legislative bodies and is backed up by proof that the action desired is entirely fair. The fact that all the various companies are giving united support to this matter and have prepared for the commission a statement and request on which there is unanimous agreement, is in itself evidence that there is an urgent need for remedial measures, and that such measures would benefit all alike. Briefly, the companies ask for regulation for the jitneys, some workable form of franchise, such as one with an indeterminate term, and relief from burdensome and wasteful taxation requirements, such as the paving tax. The idea of indeterminate franchises was not received with favor some years ago because it did not then fit in with the general plan under which electric railways operated, but under present conditions, with commission control to regulate company finances the matter takes on an entirely different aspect, and the old plan of granting franchises for stated periods may very well work only hardship on all concerned.

The situation now is that if strict regulations are to control the operations of a public utility, and at the same time permission to grow and to meet the changing conditions of the times is withheld, the organization must very soon collapse. Certainly no such condition is desired for electric railways in California by the public, by the Railroad Commission or by any other legislative body. The facts of the serious difficulties which the California companies now face have been frankly stated and the commission is asked to investigate on its own account. This is a critical time for the public utilities involved, and we trust that the promised investigation of the subject by the Railroad Commission will bring with it some means of relief. If the commission is willing, in addition to enacting measures that regulate corporations, to extend those corporations help when this can be done in fairness to all, there is now an excellent opportunity for demonstrating such a policy.



BUILDING UP A FREIGHT BUSINESS—TYPICAL LUMBER TRAIN, TURNER (ME.) LINE, L. A. & W. ST. RY.

How One Electric Railway Is Building Up Profitable Freight Traffic

The Cumberland County Power & Light Company and the Lewiston, Augusta & Waterville Street Railway Have in a Year Developed a Gross Freight Business of More than \$100,000—Prompt Service, Convenient Terminal Facilities and Co-operation with Producers and Shippers Were Factors in This Achievement

By F. E. WOOD

General Freight Agent Cumberland County Power & Light Company, Portland, Me.

ON Dec. 1, 1914, the Lewiston, Augusta & Waterville Street Railway and the Cumberland County Power & Light Company made definite arrangements to take over the operation of express cars over their lines on Jan. 1, 1915. Previous to this time service was given through an express company, which made all rates and handled all operations, paying a proportion of its revenue to the railroad for the use of cars and track, for power and for the wages of motormen. The class of goods handled represented express shipments of light weight at high rates, and the development of freight service at freight rates was neglected excepting that a few carload shipments of lumber were handled around Lewiston.

When the railroad took over the operation, freight service at freight rates, governed by the official classification, was established. It was soon found that many of the past practices resulted in confusion, an example being the making of rates at any time without record by local agents. It was impossible to obtain records of special rates issued by these agents, and the whole

organization lacked a uniformity which was later established only after months of effort.

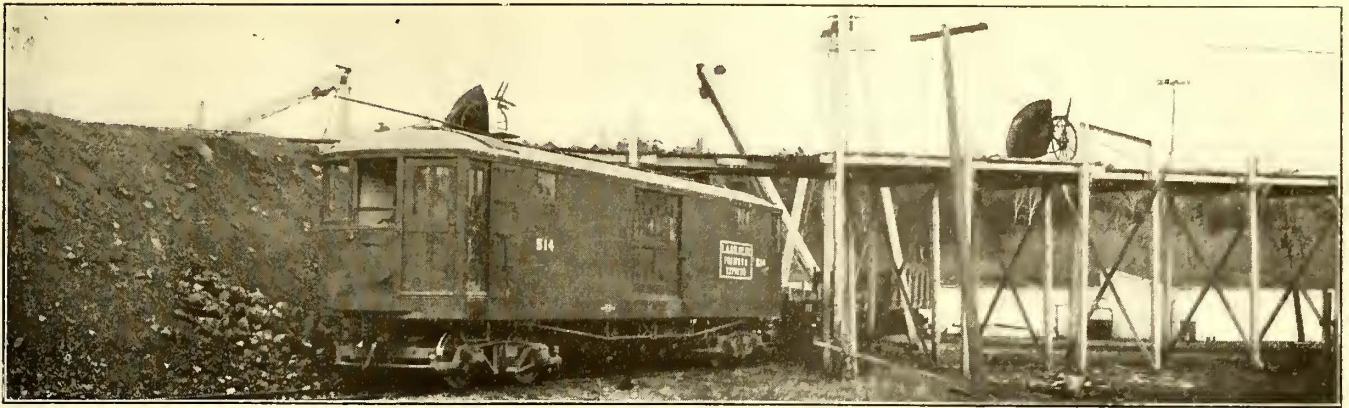
Along with many other handicaps were the equipment, which was old and worn, and the terminal facilities in large towns, where the business was handled at many points from the middle of the streets. However, in spite of these handicaps, by the introduction of freight rates and fast and frequent service, together with solicitation of business, the freight receipts in April exceeded those of January by seven times, increasing each month without fail thereafter, and the first year's operation produced a gross revenue to the company of \$102,904.52.

FREIGHT SERVICE AND EQUIPMENT

Electric freight service operating over these properties covers approximately 175 miles of line through manufacturing and farming territory, serving a population of more than 235,000. The principal cities served are Portland, Lewiston, Auburn, Augusta, Brunswick, Waterville, Bath, Biddeford, Saco, Gardiner and Hal-



BUILDING UP A FREIGHT BUSINESS—SWITCHING STEAM RAILROAD FREIGHT CARS IN LEWISTON, ME.



BUILDING UP A FREIGHT BUSINESS—COAL DOCK AT HALLOWELL, ME., SHOWING FREIGHT CAR AND TRAILERS

lowell. In addition there are a number of smaller towns and villages between which the territory is principally agricultural, while certain sections also furnish lumber, granite and gravel.

The service consists of regular scheduled runs to all points from the three most important centers, Portland, Lewiston and Augusta, with fast and frequent service as required by the demands of the territory. This service takes care of the less-than-carload shipments of fruits, vegetables, meats, groceries, hardware, dry goods and all other commodities drawn from the larger centers to the smaller cities and towns. The heavier commodities, such as livestock, canned factory products (vegetables and fish), coal, lumber, cord wood, stone, gravel, brick, etc., are handled by trail cars, hauled by the regular motor cars used in taking care of the less-than-carload freight. These cars are fitted with M. C. B. radial couplers and automatic air brakes.

The equipment consists of thirteen motor cars, twenty-nine flat trailers, two box trailers, and two small four-wheel trailers. The locomotive motor cars are of 60,000 lb. capacity, 40 ft. in length, and they are electrically heated. The flat and box trail cars are of 60,000 lb. capacity, and their length is 35 ft.

CHARACTERISTICS OF THE BUSINESS

Every effort is being made for the satisfactory handling of high-class freight, as this portion of the business is steady the year through, while the carload work is heaviest during the winter months. Lumber is hauled to the line to better advantage on sleds and the market is better in the winter. The crops of the previous summer are held by the farmers for good market prices and shipped in greater part between November and May. The flow of freight is, in greater part, less-than-carload from the larger points, the carload shipments coming to the cities and towns. The

inward freight consists of apples, potatoes, hay, cord wood and lumber.

Connections with the steam railroad at outlying points permits the handling of steam freight cars at various sidings along the country lines, thus giving the farmers a means of shipping through to distant points without transfer of goods. Connections and through rates with boat companies permits shipping and receiving goods from Boston and New York via water.

Express service, including pick-up and delivery of package freight, is handled over the lines in the regular freight cars under an agreement with an express company, the railroad not being a party to this service other than transporting the goods for the express company.

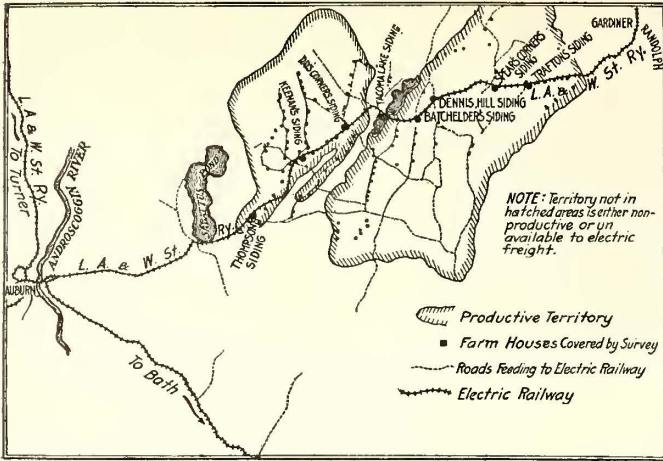
Comparison of the population of the territory served with that of street railroad properties in other sections of the East would lead to the conclusions that a small business would be all that could be expected. However, the character of the country is such that on the Lewiston, Augusta & Waterville division, with the fewest inhabitants per mile of track, the freight is heaviest, this being especially true of the easily handled carload business. It follows that a conclusion as to the amount of business to be expected cannot be drawn from an estimate of the number of people to be served.

HANDLING L.C.L. FREIGHT

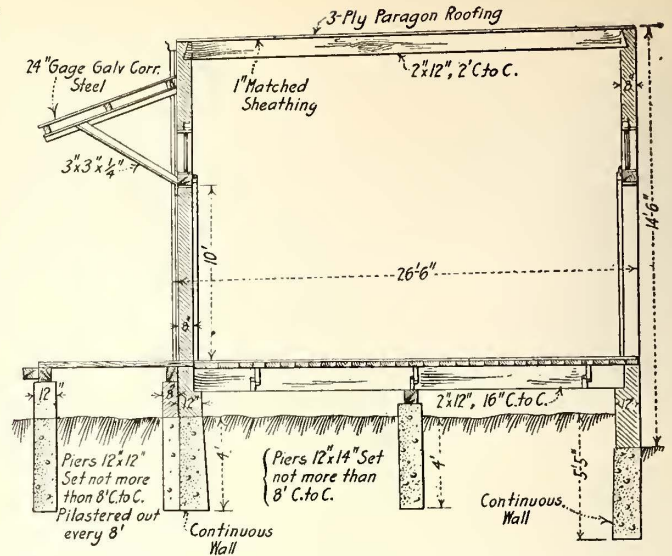
While the carload business is attractive and remunerative, the revenue is not all derived from that source; in fact, few carload lots are moved that are not accompanied by a motor car packed with less-than-carload freight. Located a considerable distance from large metropolitan centers, the territory is necessarily self-supporting to a considerable degree. This condition has led to the establishment of wholesale houses exceeding in size those of larger cities not similarly located. Portland is the most important distributing center,



BUILDING UP A FREIGHT BUSINESS—L. A. & W. ST. RY. FREIGHT HOUSE AND CAR ON EASTERN STEAMSHIP DOCK, BATH, ME.



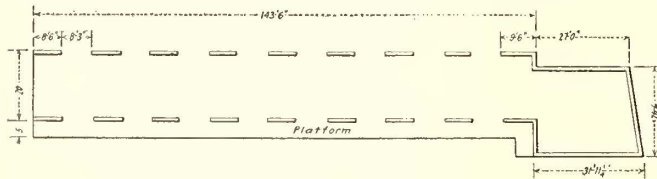
BUILDING UP A FREIGHT BUSINESS—MAP OF DISTRICT COVERED IN RECENT FARM SURVEY, L. A. & W. ST. RY.



BUILDING UP A FREIGHT BUSINESS—CROSS-SECTION OF FREIGHT SHED IN PORTLAND, ME., C. C. P. & L. CO.

therefore the greater portion of less-than-carload freight is handled at that point. All near-by towns are covered by two trips daily, in some cases three. The long-run service consists of a through train each night from Portland carrying freight for Lewiston, Gardiner, Augusta and Waterville. Goods shipped on this car arrive at night or in the early morning, and are on delivery at 9.30 a. m. at the Waterville terminus of the line. Lewiston is the second center as regards quan-

cluding accounting, schedules, claims and filing of tariffs. The assistant general freight agent has charge of the detail operation and of the men on the Lewiston, Augusta & Waterville division, and has a voice in the general plan and method of all operations. The auditor is directly under the general accounting office, but the freight accounting is taken care of by the freight auditor in the general freight agent's office and under his direction.



BUILDING UP A FREIGHT BUSINESS—OUTLINE PLAN OF FREIGHT TERMINAL IN PORTLAND, ME., C. C. P. & L. CO.

tity of less-than-carload goods forwarded, but it is first in producing carload lot business, trains of three to five cars being no unusual sight.

ORGANIZATION OF THE FREIGHT DEPARTMENT

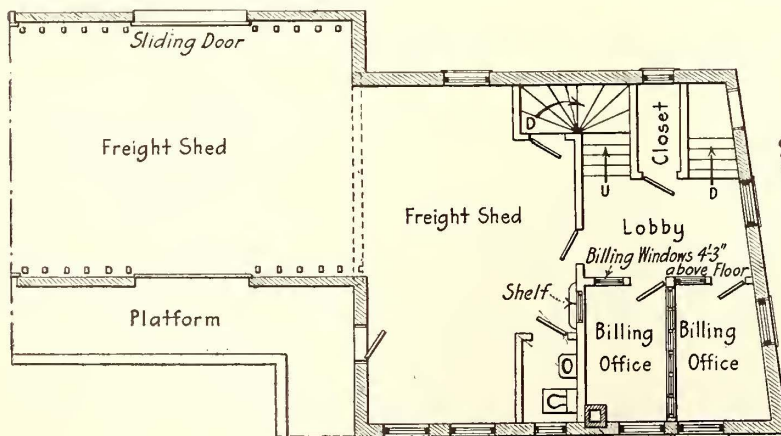
The organization consists of a general freight agent, an assistant general freight agent, an auditor and a traveling representative, together with necessary agents, clerks and car men.

The general freight agent, located at Portland, has charge of all operations in the freight department, in-

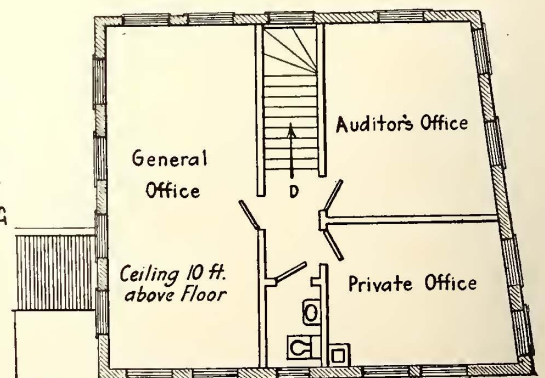
The system of accounting is built around the use of unit system single waybills, made in five copies at one writing on a billing machine, distributed as follows: Copy No. 1 is used for making forwarded reports, and is sent to the auditor; copy No. 2 is the freight receipt and accompanies the goods; copy No. 3 is the freight bill for collection; copy No. 4 is the waybill and is forwarded to the reporting station under cover, from which the received report is made, and copy No. 5 is the forwarding office copy, filed in numerical order. Daily reports are forwarded to the auditor and a balance is made monthly.

Reports for the whole line are made only at designated stations, which are the larger points, seven in number. The waybill shows the point on which a shipment is to be billed for reporting, also the point of actual destination, the latter point being the destination of the goods to which the rate is shown.

The billing point is determined through the use of



First Floor Plan



Second Floor Plan

BUILDING UP A FREIGHT BUSINESS—PLANS OF HEAD HOUSE OF FREIGHT TERMINAL IN PORTLAND, ME., C. C. P & L. CO.

the next reporting station beyond the actual destination of goods. The practice does away with the delay and errors experienced in securing reports from agents, who in smaller towns cannot devote all of their time to the freight business, having other work to do. It also permits the company to maintain agencies at a small expense, which could not be done if numerous reports were required from the man in charge of the station.

NEW FACILITIES FOR HANDLING FREIGHT

As the business has developed the need for stations, sidings and cars became pressing and, as the "child seemed worthy of its keep," the company dealt generously with the freight department. The car equipment and other facilities have been greatly increased, including the building of new freight houses in Lewiston, Augusta, Gardiner and Portland.

At Lewiston a frame freight shed, 80 ft. x 20 ft. in size, was completed in June, 1915. Within sixty days negotiations had to be opened for the purchase of additional land. At the present time there are two freight houses in Lewiston, the second one being 100 ft. x 20 ft., with a yard 75 ft. wide and 300 ft. deep. At the rear three yard tracks, each approximately 100 ft. long, are used for delivery of carload freight. Confusion incident to the use of one shed for inward and outward freight is avoided by designating one house to receive freight to be forwarded and the other for freight on hand to be called for.

At Portland the business was handled in a shed 110 ft. x 35 ft., having the track inside the building. This allowed a floor space of 90 ft. x 24 ft., with a 90-ft. x 6-ft. platform on the team side. This building was erected a number of years ago by the street railway and used until recently by an express company. After six months of use as a freight house the congestion became such that the company was compelled to figure on larger quarters.

As the old building was remote from the wholesale district and on a steep grade, it was deemed advisable to secure a location which would eliminate a long, difficult haul. A lot, 69 ft. x 269 ft. in dimensions, was therefore selected on Commercial Street, running through to Fore Street. A wider lot would have been acceptable, but owing to the congestion of business houses and wharves, difficulty was experienced in securing even the allotment mentioned.

THE NEW FREIGHT HOUSE IN PORTLAND

The new freight house is of brick, 25 ft. wide and 170 ft. long, including platforms. The plans are reproduced herewith. The head house is two stories in height, the general freight agent, auditor and agent having offices on the second floor. Two small billing offices, a supply closet and a hall are located downstairs.



BUILDING UP A FREIGHT BUSINESS—FIRST FREIGHT SHED IN LEWISTON, ME., L. A. & W. ST. RY., BUILT JUNE, 1915



BUILDING UP A FREIGHT BUSINESS—UTILIZING A LOADED EXPRESS CAR FOR ADVERTISING PURPOSES

One billing office has a window opening into the freight shed, delivery bills being issued through this window to customers calling for freight.

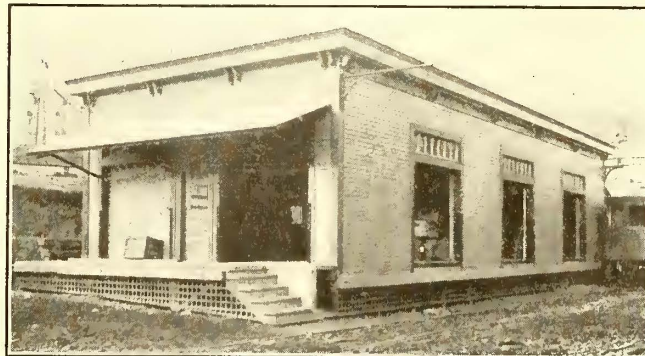
The offices are sheathed and plastered, and fitted with a semi-indirect electric lighting system, doing away with the necessity for desk lamps. A lavatory is located on each floor, and heat is furnished from a steam plant located in a small cellar under the front of the building. The agent's office overlooks the yard, enabling him, from his desk, to see teams loading or unloading freight.

The track comes in from a siding on the street, and runs along one side of the building, extending about 50 ft. beyond the rear platform. The siding in the street is used only by freight cars, thus permitting any shifting or placing for loading that may be desired. On account of the extensive use of "low gear," under-slung wagons the height of the team side of the receiving platform was made to vary from 18 in. to 47 in. by suitably grading the yard. As the filling for the yard was placed in freezing weather, it was covered with 3-in. planking to avoid difficulty when the frost leaves the ground. This planking is to be removed next summer and replaced by granite block paving.

The freight-shed floor is double, of ½-in. spruce laid on 3-in. planking. The use of thin upper surface boards permits renewal without excessive cost when the floor becomes rough. All of the freight-house doors are of the sliding type, wooden construction, covered on the outside and the edges with heavy tin. The new shed was opened on Feb. 21, 1916, and is answering its purpose admirably.

DEVELOPING NEW BUSINESS

While the country served by this railway system is productive at the present time, the possibilities for an increase are large. A canvass of the outlying farms was recently made, and a card index of the information



BUILDING UP A FREIGHT BUSINESS—FREIGHT HOUSE IN AUGUSTA, ME., L. A. & W. ST. RY.

secured was prepared, showing in detail the information in regard to the size and products of each farm. The purpose of this survey was not alone to impress upon the farmers the shipping facilities of the railways, but also to secure general information which may be used by the company to formulate a plan for increasing productiveness by providing storage for large quantities of products until the market requires them. It was hoped also to assist in establishing a "farmers' exchange" at some large distributing point.

The canvass was made by a company employee during the early winter. He was furnished with a horse and buggy, and he put up at night with the farmers in the locality where he happened to be. A personal interview with each farmer was sought for the purpose of enlightening him as to the company's intentions and the means and facilities offered, making it clear that the company planned to do all in its power to aid the farmer.

The card index, with an accompanying map, shows the location of each farm, the name of the owner, his acreage, crops and stock, the length of his hauls to the electric road and to the steam railroad, his attitude toward the electric road, and his suggestions or criticisms regarding the plans outlined by the agent.

This work has proved to be valuable to the company for purposes of record, and has further resulted in the building of small shelters and platforms at country crossroads. It has established also the necessity for building lumber loading wharves in order to prevent the hauling of lumber several miles across our line to the steam railroad. In addition, land has been purchased at reasonable figures to which lumber may be hauled and stored while sledding is good, remaining there until a market is secured. This feature assured the electric road the haul when the shipment is made, and stimulated business by reason of the fact that sales are made locally instead of goods being sent out of the State.

"GETTING NEXT" TO THE FARMERS

To further interest the farmers a special car was sent over the line at an appointed time and all were invited to visit it. The general manager, general superintendent, general freight agent, assistant general freight agent and other employees accompanied the car and a general discussion and talk was given at each stopping point.

This "get-together" gave the farmers assurance directly from the road officials that the company was interested in their welfare and made clear to them the plans by which their interests were to be furthered. They were promised a reduction in the charge for hauling steam railroad cars, the handling of fertilizers and grains at low rates, the building of platforms and shelters where needed, a storage shed at one point for hay, lumber wharves, etc. The company also, as an experiment, promised to build a potato storage shed of 15,000 bushels capacity. The purpose of this shed is to stimulate the interest in potato raising, as the use of such a shed permits the farmer to hold his crops during cold weather until higher prices can be secured. Without this shed production is discouraged, as the crops must be moved and sold at the approach of freezing weather regardless of prices which the potatoes will bring. It is the intention of the company to build a small shed to start and, if the results are favorable, extensions will be made later.

A study of conditions revealed the fact that the soil and climate between Lewiston and Waterville are at least as favorable for the raising of potatoes as those of the Aroostook County district, located farther north in the State. Production in that country is heavy and has

come about through having a "hand at the wheel," and the proper concentrated effort. It is felt that this company's modest start may be the means of injecting new life into the territory along its lines, and lead eventually to the development of a second potato raising section of importance in the State of Maine.

A PROFITABLE COAL-HANDLING PROPOSITION

The pursuit of new business by the department is not altogether along the line of agricultural products, as a new venture was added in the fall of 1915 in contracting for the hauling of 2500 tons of coal per year to a textile mill. This mill is several miles from a railroad so that the securing of fuel entailed excessive drayage charges. The mill officials agreed to the placing of a siding in their yard for the delivery of coal, if any saving could be offered as an inducement. Inability to make physical connection with the steam railroad necessitated the formulating of plans for the handling of the coal in the electric railway company's own cars, and the securing of the coal at tide water. The resulting arrangement involved the leasing of a dock, the placing of a spur track and the building of an elevated runway over which the coal could be wheeled and dumped when taken from the vessel. The coal is shipped to the mill trestle as needed. Loading from the pile is accomplished by means of an electric, endless-chain, bucket machine, which elevates the coal and drops it into gondola cars below. This venture has been successfully carried through and the possibilities of handling coal on a still larger scale are receiving attention.

GENERAL CONSIDERATIONS IN ELECTRIC FREIGHT HANDLING

As the facilities and equipment for handling freight improve the field of operation broadens, and the transportation of heavy carload material becomes a regular part of the work together with the smaller high-class freight. The elasticity and rapid movement create a demand on the part of the shippers for a means to ship through freight via electric to steam railroads or boat connections, allowing them to take orders up to the last minute and still have goods in the market on time.

The people are told by this company that the service to their towns will be what they make it. In other words, we can give towns two or more deliveries a day if they will support them, and it takes less business to support this service than to support equal service furnished by the steam railroad. This is true because the cost of operation of an additional car does not compare with that of an additional steam freight train. It is also a simple matter to vary schedules to suit the requirements at various points, and the ability to do this gives those concerned the elasticity of service desired.

Another feature of the electric freight service that appeals to the public lies in the fact that the organization, being a local affair, is able to give satisfaction without the complainant being sent here and there to different officials, being finally referred to some office located miles away. In such a case, on account of the expense and time involved, the matter must be taken up by correspondence, oftentimes without result through the peculiar ability of the complaint department to tire out the ordinary complainant.

In our case here in Maine it is safe to say that the short period of operation has given time for but a small portion of the possible development. The freight nearest and easiest of access has been our mainstay; but we feel that the limit of the prospect is still far removed, and that the future is laden with possibilities for heavier tonnage and increased earnings.

Relieving the Investor's Uncertainty

Terms for Employment of Private Capital in Public Service Should Be Defined—Author Discusses Automatic Control Through Fixing of Valuation and Rate of Return—Flexibility and Elasticity of Return—Single Valuation Basis Will Give Substantial Justice

By JOHN BAUER

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INVESTMENT conditions in railroad and other public utilities are in a chaotic state. This fact appeared clearly in the papers and discussion at the recent mid-year meeting of the American Electric Railway Association in Chicago [ELECTRIC RAILWAY JOURNAL, Feb. 5] as well as at the Conference on Valuation held in Philadelphia on Nov. 10-13, 1915, under the auspices of the Utilities Bureau [*ibid.*, Nov. 13 and 20, 1915.] At present investors do not know where they stand. Their rights are undefined; the burdens and restrictions placed upon the companies seem to be constantly increasing; investors are hesitating to furnish new capital for the public service. Construction and improvements have fallen off greatly in recent years, which undoubtedly has been caused to a considerable extent by the unclear methods of regulating rates and limiting the return on investments.

DIFFERENCE BETWEEN THEORY AND PRACTICE IN RATE REGULATION

In theory rate-making is a legislative function, which is especially delegated to a commission. Usually nothing is said in the law as to the control of return on investment. The rates fixed by the commission must be reasonable, and the principal test of reasonableness is that they must be high enough to cover operating expenses and bring a fair return on the property devoted to the public service. A lower schedule would be viewed by the courts as confiscatory and therefore unconstitutional.

The theory of the law sounds reasonable enough. The difficulty is that the theory has not been worked out in sufficient detail so as to form a clear and definite policy capable of exact and practical administration. It does not make clear what the valuation is upon which a return should be allowed; it does not fix an adequate standard by which a reasonable return may be determined, and particularly it provides no administrative machinery for the regular control of these matters. Every case must be considered by itself; a separate valuation must be made and a rate of return established. The investor's interest, therefore, appears directly antagonistic to the public or the consumers. Each step in the case furnishes ground for dispute; the company urges every possible claim for value and return, while the representatives of the public work for the lowest possible reduction of the figures. The hearings extend into months or years; huge volumes of more or less useless evidence are accumulated; finally the decision is a rough compromise, accomplishing little toward permanent determination of principle or method.

THREE WAYS OF STRAIGHTENING TANGLE

Something, it seems, should be done to straighten out the present tangle. We cannot continue indefinitely with such uncertain and cumbersome methods. The interest of the public, as well as that of the investors, demands that the confusion be cleared up. Construc-

tion and improvements have already been interfered with too much. There are three conceivable ways out of the present situation: (1) Give up the regulation of rates and return altogether, except for the prevention of gross discrimination; (2) turn to public ownership and operation, or (3) define the terms under which private capital is employed in the public service, *i.e.*, make clear the rules by which the control of return on investment is to be determined.

The first is really not a possible way. While it would undoubtedly be preferred by the corporations, so that they would be free to fix rates according to what the traffic would bear and make all the profits that they could, the public would not stand for such a step backward. Public utilities are recognized monopolies; competition is wasteful and foolish and is practically impossible to maintain. Monopoly is inevitable, but the public will scarcely be willing to offer itself up freely to exploitation.

The second way, government ownership and management, has been extensively discussed and is bound to be considered with increasing seriousness in the future. Many experiments have been tried; some have been very successful, but it is difficult to give a fair verdict as to the general results. Conditions in this country, however, do not appear especially favorable to a successful extensive trial of public ownership. It seems to be opposed to the mass of opinion and is unsuited to our political and administrative organization. While it may not be inherently unworkable, and it may very well be the method of operation that will finally become effective, it will require extensive and thoroughgoing reconstruction of public administration. It will necessitate a centralization of authority, and a continuity and permanence of position, which as yet we seem to consider inconsistent with democratic government.

The third way offers the only practical immediate solution of the unsatisfactory situation—namely, to define the terms under which private investment is made for public purposes. This would be in harmony with the general theory that has been applied to public utilities, *i.e.*, private ownership and public control, except that the investors' rights would be clearly determined.

NEED OF A DEFINITE POLICY

In a sense, private utility investments are loans which are entitled to a return from the public. The difficulty is that when a loan has been made and the money has been irrevocably sunk in property, both the amount of the loan and the rate of return become indefinite quantities. While both the amount and the rate must be reasonable, they are not fixed in a business way, controlled by the usual methods of accounting, but are finally determined by the judgment of a commission. Suppose the government attempted to borrow money outright in this fashion, how many investors would trust their funds to such haphazard dealings? Could business men borrow capital under such loose terms?

Does it not seem surprising that any new capital is put into utility enterprises?

A definite policy should be enacted through legislation, clearly setting forth the rights of investors, creating stability in the utility enterprises and establishing regulation along sensible and permanent lines. If such policy were reasonably worked out, it would undoubtedly stand the test of constitutionality. All the present machinery of regulation is really a by-product of rate regulation. But if we wish to control the return on investment, why not do so directly, providing a clear plan and furnishing the administrative machinery for the purpose?

FIXING THE RETURN ON FUTURE INVESTMENTS

If we intend to limit the return on investment, it seems that the amount of the investment and the rate of return should be definitely fixed, so that control would be simply a matter of accounting, carried on automatically, not involving formal proceedings before a commission. The following paragraphs will outline a plan by which control could be thus automatically determined. In the discussion of the plan it will be necessary to distinguish between existing and future investments. In regard to the latter, definite control can be obtained without much difficulty. The investment entitled to a return would reasonably be the amount of money or fair equivalent actually put into the property through the issue of securities, and the fair rate of return would be the rate that actually induced investors to furnish the capital.

If in any case funds are raised through the issue of bonds, the procedure would be no different than it is now. The mortgage definitely fixes the rate of interest paid on the face value. If when the bonds are actually issued, the rate of return required by investors is greater than the rate fixed by the mortgage on the par value, the bonds would sell below par, and the other way about, they would sell above par. In any event the purchaser, or the lender to the utility, would get on the money actually provided the market rate of return—the rate which induced him to make the loan. This would then be a settled matter, determined on a contractual basis, not subject to change.

But if funds are raised through the issuance of capital stock, substantial changes would have to be made from present methods. Stocks would have to be treated in the same way as bonds—the rate of return would have to be definitely fixed on the par value, and then the price of the actual issue would be determined by market conditions. The difference between bonds and stocks would simply be a matter of risk. The interest on the bonds would constitute a preferred claim on the income of the company as a whole. Consequently the rate of return required on investment through stocks would be higher than for bonds. If the dividend rate is definitely fixed, then again when stock is issued, if the rate of return demanded by investors is greater than the rate on the par value, the amount paid will be less than par, and the other way about, more than par. Legal provision would have to be made for the issuance of stock below par. The return would be based on the actual investment, and the rate would be determined by agreement. What other method would be reasonable?

The idea carried throughout the following discussion is that the return allowed should be as stated in the stock and bond certificates, and no more; that securities should be issued by the order or consent of a commission; that the price or rate for service should be freely fixed so as to give full opportunity to earn the return, but that the responsibility of earning it should rest upon

the business, and that any excess profits above the stipulated return should go to the public in the form of a franchise tax. The question, however, may well be raised whether in the case of stocks it would not be desirable to permit a return above the rate fixed on the certificates, so as to stimulate efficiency of management. If this should seem desirable, a bonus or profit-sharing scheme might be devised and made a part of the general policy. But the details should be definitely worked out, so that the rights of the stockholders would be clearly stated and the matter handled through the accounts.

RETURN WOULD BE FLEXIBLE TO MEET CHANGING CONDITIONS

There are various technical points in the scheme which would have to be clearly settled, but which cannot be discussed within the limits of this paper. Perhaps it should be emphasized, however, that while the rate of return would be fixed, it would still be flexible to meet the changing market conditions as securities are issued and new capital is required. For illustration, let us assume that the dividend rate be fixed at 7 per cent; then the elastic element would be the price paid for \$100 par value of the stock. If at the time a particular issue is made the market rate of return should be 8 per cent, then the actual investment for every \$100 par value would be \$87.50; a dividend of \$7 a year would be 8 per cent on this amount. If, however, the market rate should be 6 per cent, the actual investment per \$100 par value of the stock would be \$116.66, and the dividend of \$7 a year would furnish a 6 per cent return. Thus, while the rate would be fixed by contract as stated in the stock or bond certificate, the actual rate realized by investors and paid by the public would be determined by the market conditions at the time the securities were issued. It would be a matter of agreement, which would be a definite obligation upon the public and would state clearly the rights of the security holders.

GUARANTEEING THE RETURN

The question would naturally be raised whether if the return on investment is limited, the amount should not be guaranteed. The answer is that the policy under discussion is elastic enough to permit what seems best. As here outlined, the idea is that the responsibility should be placed upon the business to earn the return stated on the bond or stock certificate. But we might well guarantee the amount, supporting it by the taxing power. If this seemed desirable, the risk of return would be reduced to a minimum, and new capital could be obtained at a correspondingly low rate. If no guarantee is given, but a free chance is granted for earning the fixed return, the rate required by capital would be determined accordingly. The important point is that the conditions upon which capital is obtained be clearly stated so that they can be understood by reasonably intelligent men. If the conditions are clear, investors may be left to take care of themselves. They may be presumed to act intelligently.

COULD SUFFICIENT CAPITAL FOR DEVELOPMENT BE SECURED?

Another important question is whether under the proposed plan sufficient capital could be obtained for the reasonably necessary utility developments. There seems to be no particular reason why not. Even now the bulk of utility investments is made through the issue of bonds, on which, as far as the bondholders are concerned, the return is limited in the way suggested. The plan here is to place the limitation upon stock as well as bonds. The method of financing new enterprises

would be essentially the same as now, except that the risk of the promoters and the obligations of the community would be clearly established. Simply the speculative element as to public interference would be removed.

Let us assume that J. G. White & Company or Stone & Webster were to agree to the construction of a new electric railway. The problem of promotion and finance would be the same as now, except that they would know that the dividend rate on the stock issued could not be greater than the rate stated (say 8 per cent), but that a free chance would be granted to earn that rate. The amount of cash that the promoters or outside underwriters would be willing to contribute for the par value of the stock would depend upon the risk that seemed to be involved in the project. If the risk corresponded to a 10 per cent return, the stock would be issued for \$80 cash per \$100 par value. The stockholders' rights for the future would be fixed once for all. The commission could not, subsequently, when the business had become firmly established, lower the rate of return which originally represented the risk element. But later, when the project had proved to be a success and the risk had been greatly reduced, if new capital were received for the extension of business, then additional stocks would be issued at a correspondingly favorable rate, say, 8 per cent. Then \$100 par value of 8 per cent stock would bring \$100 cash. Still later, with further reduction of risk, the 8 per cent stock might be sold on a 6 per cent basis, \$100 par value for \$133.33 cash.

The investors taking new securities would always be paid in proportion to the risk of the business at the time of the issue. There would be a fixed bargain between them and the public. This agreement could not be disturbed. If a community wishes a street railway or any utility, or an improvement in service, it must be willing to pay for capital in proportion to the risk connected with the business. This is an economic fact which cannot well be escaped. If this is clearly provided for in the plan of regulation, capital will be forthcoming according to the eagerness with which people want service. The general scheme suggested, while providing definite control, is elastic enough to meet the varying risk in utility enterprises.

HOW EXISTING PROPERTIES WOULD FARE

There would probably be a fairly ready agreement, among students of public utility finance, that the plan outlined would work satisfactorily for new projects or future investments. The real difficulties appear in applying the scheme to existing properties. Here the situation is chaotic; every possible plan for straightening it out will encounter grave obstacles. The present confusion, however, cannot well be permitted to stand permanently in the way of progress. It should be met squarely and intelligently, and reduced to order for the future. More or less heroic measures will be necessary, but they should nevertheless be taken so that we may know where we stand and that utility developments may continue according to public needs.

Reasonable adjustments should be definitely made for all existing properties so as to permit exact regulation for the future. The situation should be met by a clearly formulated legislative policy. If reasonable, it would probably be allowed to stand by the courts. First, it should provide a definite method of valuation that may be applied to all existing utilities. Then it should require an official valuation of every property that is subject to regulation. The results should be taken upon the books of the company, and should be the amount upon which a return would be allowed in

the future. The valuation would be a permanent amount, and the rate of return should be fixed. We should then be on clear ground. For the future, any additional investment would be treated as already explained. Regulation would then be an automatic and a simple accounting matter.

To illustrate how existing investments might be treated, we may assume a company with \$400,000 of 5 per cent bonds outstanding and with \$600,000 of capital stock. Suppose that the official valuation amounts to \$700,000. This would be the sum upon which a return would be allowed. If the rate be fixed at 6 per cent, the net annual return would be \$42,000. Of this amount \$20,000 would go to the bondholders, whose rights would not be disturbed, and \$22,000 would go to the stockholders. This would be equal to a fixed dividend rate of $2\frac{2}{3}$ per cent. The existing stock might be given preferential rights. Then for the future, all new stock might be limited to 6 per cent—to correspond more nearly to the probable market rate upon which new issues would be made. All excess earnings above the stipulated interest and dividend payments would go to the public, unless a clear bonus or profit-sharing scheme were provided.

BASIS OF VALUATION SHOULD BE SETTLED

The scheme as outlined would require that the legislature determine definitely the basis of valuation by which the amount of any existing investment should be determined, as well as the rate of return that should be allowed. This is a matter of public policy to be determined by the legislative branch of the government, not by the courts. The latter could exercise veto power only in case the policy established should be unreasonable and should violate some constitutional provision.

It is not intended here to argue for any particular basis of valuation, but to urge a clear formulation of a rule which reasonably intelligent men can understand. Whatever basis be selected, it ought to square with the ideals of future regulation that we wish to establish, and at the same time should conform fairly with our sense of justice toward existing investors. It should have regard for broad public considerations. The purpose should not be to cut valuation to the lowest point that might be permitted by the courts, or to place it as high as the extreme patience of the public would endure. What is needed is definite control in the future, and no question of narrow personal justice should be permitted to stand in the way of a reasonable rule. Full consideration should be given to the inducements that led investors to put their capital into the utilities, and to their reasonable expectations under the indefinite situation of the law.

The basis should be reasonably simple, so that it can be readily understood and can be applied without hair-splitting refinements. The minuteness of many physical appraisals that have been made would be simply ridiculous, if it were not too serious a public matter. Such procedure is inordinately expensive, clogs up the machinery of regulation, and finally produces no more reliable results than would be obtained by rougher methods. Undoubtedly the present valuation of interstate railroads is being carried to absurd extremes. A large proportion of the work will be useless. If the results are finally to be used for the purpose of regulation, with a clearly defined method, the valuation might be made at a reasonable cost and probably with no less fairness to the investors.

Care should be taken that the individual concepts or bases of valuation be clearly distinguished. In the controversy that has been carried on over the actual *versus* the reproduction cost, usually there has been confusion

as to what precisely was meant by actual cost. There are several actual cost concepts, and they are not substantially equivalent. The policy should be clear as to the various controversial matters covering definitely all intangible items, organization expenses, going value, property installed at public expense, money or other property contributed by the public, etc. No detail as to principle should be left unclear so that its determination would be left to varying individual judgments of the commissions or the courts. Even with principle completely worked out, there would be plenty of room for difference of opinion in the actual valuation, especially if some form of property appraisal be adopted as the fundamental basis.

SINGLE METHOD WILL GIVE SUBSTANTIAL JUSTICE

However liberal the basis of valuation selected might be to existing investors, there would be some individual hardships incurred through the application of a thorough-going policy. After all, most of the companies have not yet been subjected to regulation. For the most part they have been free to charge such rates as the traffic would bear, making all the profits that they could. Obviously a reasonable basis of valuation would cause loss to investors who had purchased their holdings at prices determined by the unregulated earning power. Such losses, however, cannot well be avoided, although in some cases they may cause serious personal hardships. The rules adopted should be fair, but clearly they cannot protect all vested interests or claims.

The point to be emphasized, however, is that if we wish to get out of the present muddle we must adopt a single method and apply it to all cases. Otherwise, who would say what rule should be adopted in a particular case? How could a valuation of all properties be made? If a single method is worked out along sensible lines, substantial justice will be done, and more cannot be expected, if we really wish to cut through our confusion. If the method is in general reasonable, what the courts have said in the past about value in rate cases would not matter, for they could not interfere with a constitutional legislative policy.

If we do not adopt a single rule, a general valuation would become impossible because of administrative difficulties. Each case would have to be argued on its own special merits. The time required would overwhelm the commissions, and the expense would be too great to undertake. If a definite single method were adopted, however, we should get along better with present rate cases, even if a thoroughly systematic plan of regulation were not undertaken. The administrative machinery would not be choked up with the details of the procedure.

ADJUSTING THE RETURN ACCORDING TO STABILITY

While a single rule of valuation should undoubtedly be applied to all existing investments, probably some elasticity should be provided in fixing the rate of return permitting adjustment according to the stability of the particular business. It would seem unreasonable to apply the same rate, say, 7 per cent, to all cases, when the risk varies greatly from one concern to another. In one case 10 per cent might be earned easily, while in another not even 5 per cent would be obtainable. The rate allowed in any case might be what would have to be paid for new capital. While this would be an indefinite factor, it would be settled once for all, so that the situation would be clear for the future. For simplicity of administration, all properties might be grouped into three or four classes, each class being granted a fixed rate according to the general risk of the class.

If the plan that has been outlined were adopted, many

more or less arbitrary adjustments would have to be made as to existing investments in order to bring clearness out of the present confusion. Yet for the future we should know where we stand. If we do not define the terms at which capital is provided, we shall probably not get the funds that are reasonably necessary for future utility developments. The present situation cannot well continue. The alternative to the plan proposed is outright public ownership and management. We are probably not ready for that. The scheme outlined would be fair to investors, would be elastic to meet the varying capital requirements and would provide definite and automatic regulation of return. The commissions would be freed from the time-consuming and irritating details of the present rate cases, and could devote their energies to co-operation with the companies in the improvement of the service.

Return on Railway Investment

Boston Chamber of Commerce Urges Fair Return and Provision for Depreciation on Electric Railways

THE Boston (Mass.) Chamber of Commerce joint committee on transit facilities and public utilities, of which Edwin S. Webster of Stone & Webster is an active signatory member, has issued a report on the street railway situation within Massachusetts. The report sets forth the necessity of a fair return to the investor and of adequate provision for depreciation. The committee advances these views to assist the Public Service Commission in its investigations of electric railway economics and development, holding: (1) That it is vitally essential in the interest of the public that suitable and adequate transportation service be provided at a fair price—service commensurate with the legitimate and increasing requirements of the community served; (2) That the income of a transportation company must be sufficient so that when it is economically, honestly and efficiently managed it will be possible to set aside proper reserves and pay a fair return on its properly invested capital.

FAIR RETURN ON PROPERLY INVESTED CAPITAL

In order that a company should be able to pay a fair return on its properly invested capital, the report states, it should have sufficient income to pay all its operating expenses, to set aside proper reserves, to pay the interest on its bonds and other borrowed money, and to pay a fair dividend to its stockholders—a dividend sufficiently large and stable to attract new money to the enterprise whenever the increasing demands of the community require additional facilities and therefore new capital. The report of Mr. Webster and his associates says that in any growing community a street railway must always be adding to its power, tracks and equipment in order to keep abreast of the legitimate demands of the public; but if the road is not earning enough to pay reasonable dividends on its stock, it is impossible to raise the necessary capital by the sale of new stock, because it is contrary to the policy of the State to allow new issues to be sold for less than par, and if the market price of the old stock is less than par, as it surely will be with insufficient dividends, it will naturally be impossible to sell new issues for higher prices than the old ones are selling at in the open market. The only remaining method is to burden the road by raising the necessary capital through the sale of bonds, but under the Massachusetts laws these properly cannot be issued to an amount greater than the par value of the stock outstanding at the time, and when bonds to this amount

have been issued and stock is unsalable, the resources of the road for raising new capital are at an end.

This is exactly the situation, the report states, that confronts some of the important transportation companies in Massachusetts. The situation is very serious and calls for prompt and vigorous action if disastrous results to the communities affected are to be avoided. The improvement of financial condition through expense reduction or income increase, or by both, is a problem that must be solved promptly by the Public Service Commission.

OBSOLESCENCE

The report emphasizes the necessity for accumulating during the life of the property sufficient funds to replace its parts when these are obliged to go out of service. Regarding obsolescence and inadequacy, the report says: "Obsolescence may be defined as a condition resulting from changes in the art whereby the character of the service required is so altered or the efficiency of apparatus providing corresponding service is so improved that, although still physically capable of doing the work for which it was designed, it is no longer able to provide economically the service required. When this condition arises, it is for the interest of the public that the obsolete equipment be replaced with up-to-date equipment, and it is for this purpose that we require a reserve for obsolescence.

"That this is a real and not an imaginary contingency is shown by the tremendous changes that are to-day taking place in the methods of generating power. For example, first-class reciprocating engines in condition to operate for many years to come are being replaced by the modern steam turbine, not because the old engines are worn out and not fit for service, but because they are obsolete or inadequate and uneconomical to operate as compared with the modern steam turbine. These renewals cannot appropriately be paid for from funds charged to capital account, for that would have the ultimate effect of piling up additional capital with only the original plant and equipment to show for it. In fact, the final result would be the same as if stock-watering had been practised in the beginning.

"Some of the leading English railway systems are an example of the evils resulting from this practice. For many years they paid for renewals by issuing new securities, with the result that in spite of cheaper labor their freight rates are much higher than in this country, and even with the high rates they are unable to pay reasonable return on the investments. Thus it will be seen that they suffer a double injury—the stockholders now get no proper return and the public is forced to pay higher rates for the service. Your committee believes that it is essentially for the good of the public service of the street railways of Massachusetts and equally good for the railways themselves, that the State, either by law or by a regulation of the Public Service Commission, should without delay require all of these companies to set aside proper reserves for depreciation, including obsolescence and inadequacy."

RETURN TO THE INVESTOR

The report concludes with the statement that it is not sufficient that the return on the investment should barely equal a legal rate of interest and thus perhaps escape the constitutional limitations against confiscation, for while capital already invested cannot escape, new capital will not seek investment under such conditions. No intelligent investor will subject his property to the risks of a business for a compensation no greater than that which can be obtained by an investment free of risk. The language of the commission in the Middlesex & Bos-

ton case emphasizing the necessity for the protection of honest investments in public utilities is cited in conclusion. Henry Howard is chairman of the joint committee.

Economics of Rush-Hour Service

Expert Evidence in Hearing on Bay State Conditions Dispels Common Opinion that Peak-Load Traffic Is a Bonanza

AT a recent continued fare increase hearing before the Massachusetts Public Service Commission, the Bay State Street Railway presented important evidence relative to the high cost of rush-hour service in order to offset the popular view that peak-load traffic is extremely profitable. Prof. Albert S. Richey of the Worcester (Mass.) Polytechnic Institute, superintendent of transportation for the company, stated that according to popular opinion rush-hour service is performed by a street railway at a less cost than the ordinary business,

or at a lower cost than the average expense of handling the service, but that any increase in the volume of business can really decrease the cost of production only when the increase is distributed so as to make possible a more efficient use of the existing equipment. Whenever that increase is concentrated so as to require more equipment, the cost of production per unit of service is increased, and hence the cost of peak-load service is greater than that of normal service.

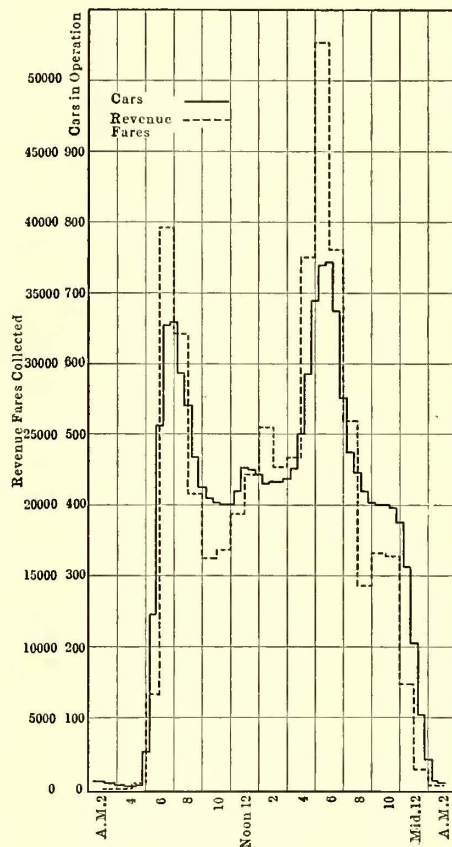


CHART SHOWING NUMBER OF CARS IN WINTER SERVICE AND REVENUE FARES FOR BAY STATE STREET RAILWAY

A rate schedule, to be equitable to all consumers of a public utility should make consumers who need and create the peak-load service pay a price which will be commensurate with the extra cost of the service which they are receiving. This principle is generally appreciated in the making of electric lighting and power rates, but it is rarely recognized in rate-making for street railways. If it is not possible for a street railway to charge a higher rate during the rush hours, it seems reasonable that the company be allowed to charge at least the same rate of fare as during the non-rush period rather than be required to suffer decreases through workingman's tickets, etc.

Professor Richey presented the accompanying chart of the present operation of the Bay State Street Railway car service, showing the number of cars in winter

service over the entire system at each half-hour period for twenty-four hours on a week-day schedule. The winter service is in operation two-thirds of the year. The figures are for the number of cars regularly operated daily, which varies little from the records of the last few winters. Extra cars are not included. The chart also shows the number of revenue fares collected over the system by hours, the latter being based on the average of three normal days' operation in October. These three days average within 0.5 per cent of the average daily revenue fares collected throughout the fiscal year 1915.

To determine the additional cost of rush-hour service, Professor Richey stated that it was first sought to ascertain the cost of operation per car-hour of the cars in operation at different times of the day, later reducing that to the cost per passenger. There is a certain proportion of the investment which would be necessary whether the cars ran with an absolutely even number throughout the entire twenty-four hours, and another portion which is dependent upon the maximum number of cars in operation. Thus, the investment in track and roadway is necessary without regard to the concentration of service, and so with trolley wire. Proportional to the maximum amount of service, however, are the investment in rolling stock, the capital represented by part of the power station investment, the investment in feeders and a portion of the operating expense. The minimum pay of platform men, who are compensated for six hours' time, makes up from 22 per cent to 25 per cent of the total revenue, but it is not possible to use all these men during the entire six hours daily. Moreover, signal operation is dependent upon the maximum number of cars required, for many lines will be signaled purely on account of their rush-hour traffic, and a good deal of the telephone expense is properly chargeable to such traffic. Much of the accounting is also properly chargeable in this way, *e.g.*, the conductor's day card, which requires just as much paper and practically as much time in the auditing department for the car that is on the street one hour per day as for the car in service the whole day.

About \$1,300,000 or 30 per cent of the permanent investment in electric line construction, Professor Richey felt, is chargeable to rush-hour requirements. The cost of cars and other railway equipment wholly dependent on the maximum service is about \$9,250,000, divided \$5,250,000 for cars and \$4,000,000 for electrical equipment of cars. The cost of power substation buildings and equipment is not wholly proportional to the maximum number of cars operated, because it is possible to draw on the stations' peak-load capacity during rush hours, so that only 75 per cent or about \$5,000,000 of this item is chargeable to rush-hour traffic. Then the proportionate amount of engineering, superintendence, interest, etc., during construction amounts to \$80,000, making a total cost of \$15,800,000 dependent on the maximum number of cars operated. This amount represents about 35 per cent of the total permanent investment of the company.

In the fiscal year 1915 the company's fixed charges were about \$1,350,000 for interest and rentals and \$650,000 for taxes. Professor Richey stated that about \$1,170,000 represents the additional yearly cost of rush-hour service, allowing \$470,000 for increased operating expense and taking 35 per cent of the total fixed charges of about \$2,000,000. The maximum number of cars ready for operation is 1774, composed of 196 semi-convertible cars, 1002 open cars and 576 closed cars equipped for summer service. On some summer days practically all of this equipment is on the streets.

As \$1,170,000 is the cost dependent upon the number

of cars operated, the cost per car is \$658 per year. The total operating costs and fixed charges independent of rush-hour service are \$7,386,000, and the total car-hours are about 3,615,000, thus giving an expense of \$2.04 per car-hour applicable to any and all cars whenever they are run. The expense of operation per car then totals \$2.04 plus \$658 divided by the number of car-hours the unit is annually in service.

On the assumption that a car could operate 365 days per year and eighteen hours daily, the cost of operation per car-hour would then be \$2.14. The closed winter car, which is replaced in summer and operates 220 days per year, would have a car-hour cost of \$2.21. The all-day summer car, which operates eighteen hours a day but runs only 120 days per year, would cost \$2.34 per car-hour. The summer rush-hour car operated three hours a day for 120 days would cost \$3.91 per car-hour. On the basis of the winter schedule, the closed winter car in service 240 days a year and run one hour daily would cost \$4.78 per car-hour. For two hours a day, it would cost \$3.41 per car-hour; for three hours, \$2.95 per car-hour, and for four hours, \$2.70 per car-hour.

During the time that the one-hour cars are on the street in the rush hour, the average number of revenue passengers per car-hour is 71.4. During the time the two-hour cars, including the power, are in rush-hour service, the number of revenue fares per car is 63.9, while for three hours in service the average number of revenue fares is 62.8. The number decreases gradually down to the four cars in service twenty-four hours daily, when the revenue fares per car-hour are about forty-three. The average number of passengers per car-hour for Oct. 18, 19 and 21, the three typical days, was fifty, and the figure is the same for the entire year. Cars on the street eighteen hours a day average 49.3 revenue fares per car-hour.

Professor Richey explained that the differences in the cost of operation per passenger between cars run varying hours per day are obtained by dividing the cost of operation by the revenue fares per car for the same length of time. Thus, \$4.78 per car-hour divided by 71.4, the average number of revenue fares, gives 6.7 cents as the average cost per revenue-fare passenger carried in cars on the street only one hour daily and 240 days a year. For cars on the street two hours daily and 240 days per year, the cost would be 5.34 cents, and for cars on the street three hours daily, 4.7 cents. The cost for an eighteen-hour car is 4.44 cents. The lower costs occur between ten and eighteen hours per day, the cost increasing with the twenty-four hour car to 4.91 cents.

The Bay State Street Railway has only nineteen or twenty cars producing revenue for only one hour, sixty-four in service two hours, seventy in use three hours, forty-five in use four hours, forty-one in use five hours, thirty-two in use six hours, and less than ten in use in all hours up to thirteen. Sixteen cars operate thirteen hours a day, eighty-four cars operate seventeen hours, 162 cars operate nineteen hours, and 108 cars run eighteen hours daily. Forty-two run twenty hours, four run twenty-two hours and one runs twenty-three hours.

Commissioner Eastman inquired whether a line having a flat fare without workingman's tickets would not be wise to make a fare reduction if it were sure of 20 per cent more business with a 20 per cent fare reduction. Professor Richey said that if there were room in the cars to take care of the additional business without additional equipment, it would be desirable to obtain it. He pointed out that it is good policy to increase business as long as it can be handled with existing equipment, but that as soon as additional investment is neces-

sary, one must watch closely to see that the fixed charges are not eating up all the profit and more.

Professor Richey said that the general purpose of his estimate was to show that the cost of service per passenger was at least as great during the rush hours as during the non-rush period. Because of this the workman's ticket should be abolished, but the estimate was not intended to urge the commission to increase the rush-hour fare above the normal-hour fare. The witness added that on account of overlapping peaks it is difficult to arrange economical power production in combined railway and lighting systems. It would be economy for a street railway to sell its surplus power during the off-peak period, but even here there is likely to be a considerable overlap on account of the withdrawal time required in taking the cars back to the carhouses, after the factory workers have been delivered at their places of employment. The peak overlaps the industrial load in both morning and afternoon.

Jitney Situation on the Pacific Coast

First Anniversary of the Movement Finds the Business Declining, with Still More Stringent Regulation in Sight

THE first anniversary of the advent of the jitney bus in Pacific Coast cities finds the innovation still alive, but in most cities the number of machines is now decreasing and the tendency is decidedly toward stricter regulation. During the first year of jitney operation the novelty of the new mode of traveling has been a factor in securing patronage and popular approval, and the latter has retarded progress toward the regulation which seems certain to be imposed ultimately. But as the novelty wears off and the service becomes less and less efficient there is a noticeably increasing demand for more stringent regulatory measures.

SOUTHERN CALIFORNIA

In Los Angeles the latest move has been the decision to turn over the supervision of jitneys to the Board of Public Utilities, which body, pursuant to the recently adopted policy of improving Los Angeles traffic conditions, promises to see that jitney buses are operated on a safer basis and according to rules that will tend to produce the minimum of traffic congestion. A recent development in this quarter was the decision of Police Judge Crawford of Los Angeles that drivers of interurban buses are subjected to the regulation of each city traversed while within the limits of that municipality. This means that those buses, for example, which now run to San Bernardino and pass through Pomona, Ontario and other outlying municipalities, will have to carry separate bonds in each of the cities that has a regulatory ordinance. Jitney bus operators insist that this amounts to confiscation of their rights. A complete review of the jitney situation in Los Angeles appeared in the Sept. 18 issue of the *ELECTRIC RAILWAY JOURNAL*. Since that time the changes have been slight, except for those above noted. On Jan. 1, 1916, there were operating within city limits about 350 jitneys, which is about one-third of the number that contested for business last year when the fad was at its height.

In San Diego the ordinance which, in effect, prevented further operations of jitneys on certain main streets has brought about a new phase in the situation. It is reported that practically all the operators who formerly ran jitneys have applied for auto-for-hire licenses. One company announces it will place in operation about twenty-five machines which will not follow any prescribed route and which will charge a 15-cent fare. If a passenger rides but a short distance there may be handed back to him, at the discretion of the

conductor, a coupon good for one or two more rides. In this way it will be possible to ride as many as three times for the 15-cent fare. The scheme is designed to evade the provisions of the jitney ordinance at the same time that popular prices are maintained.

SAN FRANCISCO BAY DISTRICT

In the San Francisco Bay district the jitneys fattened on the unusually heavy traffic during the exposition period. Recent agitation in Oakland drove a considerable number of machines from that city into the San Francisco field, so that since the close of the exposition the number of jitneys in San Francisco has actually increased. However, a careful count made by the United Railroads shows that they are now making shorter trips, are covering a greater mileage and are earning less per mile than when the count was made early in December. The count made on Jan. 11, covering the period from 6 a. m. until an hour past midnight, showed the total number of jitney buses passing along Market Street in both directions to be 17,705 with a total of 35,019 passengers, or an average of 1.97 passengers per car. The total number of machines that appeared in service during the day was 603, of which 358 were Fords. The mileage traveled was found to be 62,536, for which the total revenue was \$1,750.95, or 2.79 cents per car-mile. The earnings per car-mile were 3.32 cents in the December count, when 576 machines were in operation.

In Oakland jitney interests have made a strenuous fight against regulation, employing legal talent and attempting by every means possible to prevent adverse legislation. The final test came on Jan. 13, when an ordinance to exclude jitneys altogether from the business district of Oakland came up for final consideration. The ordinance was approved by a majority of four to one. The efforts of the jitneys to evade this law have been reported in the news columns of this paper. According to counts of the number of machines in operation in Oakland and Alameda made by the San Francisco-Oakland Terminal Railways, the daily average was 270 in May, 219 in August and 319 in November. On Dec. 31, 346 machines were in operation. There was a corresponding increase in the average number of passengers carried daily by the jitneys from 17,857 in August to 21,684 for November, while on Dec. 31 they carried a total of 26,900 passengers. The Key Route system has suffered a loss during the calendar year of \$350,000 which can be directly attributed to jitneys. During the month of December the loss on this account, company officials report, amounted to \$1,200 per day.

THE PACIFIC NORTHWEST

In Seattle the development of the various stages of the jitney movement have been very rapid so that it is possible to study an almost complete cycle of the rise and fall of the business since the first bus appeared in that city early in January, 1914. Early in the summer there were about 800 jitney buses in operation, and this has decreased until the number now operating is about 350. The organization of a Seattle jitney drivers' association ended in a split, and the subsequent war between the two factions resulted in the disbanding of both. The passage of a bill by the State Legislature, requiring bonds for the safety of passengers and other protective measures, caused several hundred operators to quit the ranks immediately. At the present time the jitney buses are no longer considered a menace to the traction company in Seattle, because they simply reduce the peak load of morning and evening traffic.

In Portland the situation is notable because of the amount of legislation that has attended the jitney bus

agitation. The first jitney appeared there on Jan. 5, and within two weeks the number had grown to fifty-five. In June the number of jitneys operating was about 300, and this number, it is estimated, is still doing business in Portland. The first regulatory ordinance was passed on April 2, was repealed on May 12, and on June 7 was succeeded by another ordinance. The latter was declared void by the Supreme Court on July 27 because it was not passed by the City Council before being voted upon by the people. Public sentiment was shown to be in its favor, however, when the Council passed a new measure on Sept. 3, practically the same as the earlier one, which was at once approved. A temporary restraining order was secured on Sept. 13, but in answer to this a decision handed down by the Oregon Supreme Court on Dec. 28 announced that the city had a right to enact such a measure. This latest decision was followed by the appointment of a jitney inspector, who was to begin within twenty days the enforcement of regulatory provisions. It is notable that the gross and net earnings of the Portland Railway, Light & Power Company for the last quarter of 1915 show a steady and substantial gain in each succeeding month.

On Jan. 10 the city of Bakersfield, Cal., adopted strict jitney bus regulations by a vote of two and one-half to one. In many other small cities of California, Oregon and Washington, jitney ordinances are being contemplated or have been passed very recently. These smaller municipalities have waited to follow the lead of the larger cities, and while the latter have been debating the matter the smaller centers postponed action.

Depreciating Overhead Charges

Bion J. Arnold Presents Supplementary Note to San Francisco Address of Last October—Has Also Compiled Glossary of Terms

WHEN Bion J. Arnold, chairman Board of Supervising Engineers, Chicago Traction, presented his address on "The Foundation Principles of Valuation" [ELECTRIC RAILWAY JOURNAL, Oct. 9 and 16, 1915.] before the American Electric Railway Association on Oct. 7, 1915, in San Francisco, a request was made by Philip J. Kealy that Mr. Arnold elaborate the paragraph in regard to overhead charges and the depreciation of such items. Consequently, Mr. Arnold has prepared for the Proceedings of the Association a supplemental note, which appears in the bound Proceedings just issued. The main points will here be noted.

According to Mr. Arnold, depreciable items in general cover all items of cost which were incurred in producing the physical property and which, after a certain period of use, must be reincurred. This principle should apply to the depreciation of overhead charges in whole or in part—*i.e.* to such items of overhead charges as have to be reincurred in connection with the renewal of the items of physical property, there should be applied an appropriate depreciation. If this is not done, the expense of operation will not include the total cost of furnishing the service.

When there has been included in the original cost certain items of expense that will not have to be reincurred and the renewal fund has been set up on the basis of the estimated expenditures that will have to be reincurred, there will exist in capital an amount exceeding the actual cost of the renewed property by the amount of the expenditures that will not have to be made. This may be considered as an intangible value since the property as existing after the first reconstruction has not entailed this expenditure. The amount may be retained in capital without injustice, since it is

assumed that if the property were reconstructed such expenditures would again have to be made. On the other hand, as a matter of policy, it may be desirable to amortize this amount. In such case it would better be done by a regular amortization charge and not by charging the amount to depreciation.

Amortization, says Mr. Arnold, may be used to retire capital representing two classes of debt: (a) Supercharges that wholly or for the most part automatically disappear with the physical property associated therewith and consequently have to be incurred again at each replacement (*e.g.*, a power station that becomes inadequate and is unlikely to be replaced in like kind or in the same location, so that the original overhead charges are likely to disappear and should therefore be amortized); (b) supercharges which may not wholly disappear with the physical property, but which may be properly retired out of capital on the score of general policy of keeping as much actual property as possible behind the capital at all times (*e.g.*, carrying charges, bond discount and brokerage, general contractors' profits, costs of promotion, etc.). These items thus naturally group themselves into two classes in which the special treatment of depreciation in the appraisal or the amortization thereafter may be regarded as resulting from actual shrinkage or conservative policy, or both.

Different treatment of overhead charges will probably depend upon whether renewals are made in a piecemeal or bulk fashion. In the former case overhead charges would presumably be absorbed out of income (except as to betterments), as part of the work of the regular operating organization. In the case of rehabilitation, however, much work would probably be done by general contractors and separate charges would be entered to cover the overhead. Such charges should be absorbed out of a renewal fund, as they are already in the capital account once. Unfortunately it is not unusual to find most of such rehabilitation costs added to capital as "extraordinary replacements" when only the betterment portions thereof should properly become a capital charge.

Mr. Arnold mentions the mandatory provision of the Chicago ordinances that a cumulative cash fund be maintained out of gross receipts to provide for renewals and depreciation, and that in renewing the "principal part" of an item of property after the original rehabilitation, only the betterment, if any, should be added to the capital, *i.e.* "the excess amount that the new property cost over the original cost of the property displaced." The logical meaning of "property displaced" is that property for the complete renewal of which expenditures must be made of the same character as originally. This would appear to cover all new overhead charges. If the new work were done for less overhead cost than the old, the difference would then remain in capital as intangible until amortized, but to offset this its equivalent should also be in the renewal fund. In the exact interpretation of "original cost" and "property displaced," it would appear that the intent of the Chicago ordinances was that the renewal fund should renew as rapidly as necessary all worn-out property with such overhead as would be attached thereto, giving the renewal fund the benefit of economies arising out of the renewal work.

Mr. Arnold believes that in general the principal criterion in classifying overhead into depreciable and non-depreciable items is an economic one—so that pyramiding of capital will not take place upon renewals from time to time. Whatever treatment results in continuously piling up intangible values in capital is economically unsound, and amortization eventually becomes

necessary. In some special valuation cases, Mr. Arnold states, all overhead charges or intangibles, construction and corporate, have been depreciated at the same rate as the underlying physical property. In other cases, certain items of overhead have been considered non-depreciable. An analysis of each case must be made.

In addition to the foregoing amplification of his convention remarks about depreciating overhead charges, Mr. Arnold has compiled a brief glossary of terms as used in connection with his address in San Francisco. Besides definitions of "utility," "appraisement" and "inventory," he presents the following:

Value: Tangible measure of monetary credit in the open market (assuming fair buyer and willing seller), for property or rights held, *i.e.*, potential ability to command legal tender in a sale or transfer free from coercive or misrepresentative influences.

Physical Elements: Actual existent items of physical property, represented by lands, buildings, plant, etc., in various stages of useful life, as distinguished from all items of value which are not susceptible of physical count or measurement.

Quasi-Physical Elements: Other items associated with the creation of a physical property for which legitimate expenditures have been made but which are not susceptible of physical count or measurement, such as organization, engineering and legal expenses, carrying charges, brokerage and contingent or incidental expenditures, all of which are classed as supercharges or overhead percentage.

Intangible Values: Other items of value of a non-physical nature which are not represented in the existent property but reasonably constitute a definite part of the assets of a corporate enterprise, such as contractual rights (franchise value), expenses legitimately incurred in development of plant or business, damages resulting from condemnation proceedings, etc.

Unit Prices: Cost or estimated value of commodities per unit of measure applied to an inventory to attain the value of all items entering into the construction of a property; such values based on average market quotations, frequently modified by experience or judgment of the appraiser for the particular conditions under which the property is to be appraised.

Appraised Value: The total sum or sums representing, in the aggregate, the amount of money for which a corporate property or business could be exchanged in the open market, assuming a fair buyer and a willing seller and current (or average) prices for commodities entering into the construction of such property.

Base or Contract Cost: Product of inventory quantities and unit prices, *i.e.*, total cost of material and labor, including manufacturing and sub-contractors' profit, exclusive of general overhead or supercharges.

Cost to Reproduce New or "Cost New" (as applied to the physical property): The sum of the contract costs (as defined above) and appropriate supercharges or overhead, *i.e.*, the amount for which the physical property could be reproduced (as of the date of the appraisement) including all supplemental expenditures incurred in the creation of the property.

Depreciation: Cumulative loss or shrinkage in value of all elements of physical property occurring with the passage of time due to wear, tear, action of elements, change in the art, etc., which shrinkage in value is counteracted in a continuing property by normal maintenance and periodic renewals. Depreciation as thus defined is a physical fact as distinguished from the particular method or methods that may be employed in providing funds to replace the shrinkage in value due to such depreciation.

Present Value (as applied to physical property): Cost to reproduce new less depreciation accrued upon all existing depreciable elements of physical property, from the installation of all such elements up to the time of appraisement.

Amortization: The process of progressively retiring a debt or evidence of liability through a given period by means of consecutive or periodic payments, which process may operate by direct cancellation of the principal in whole or in part through partial payments or by accumulation in a fund drawing interest. This process may be applied as a means of retiring from capital account, through a term of years, such elements of value as will not be represented by physical property and which will automatically disappear with time, or to such other portions of capital value as it may be thought best to retire as a matter of policy.

Short Strike in Washington

Companies Continue Service with Loyal Employees
—Conference Now Adjusting Differences

ON Wednesday, March 1, formal demands calling for changes in hours, working conditions and increase in pay were made upon the Washington Railway & Electric Company and the Capital Traction Company, of Washington, D. C., by committees composed of four men in each, three of whom in the Washington Railway & Electric committee and one in the Capital Traction committee being trainmen dismissed from the service of each company for cause prior to the presentation of the demands. The demands made were in the form of a contract desired by a certain division of the Amalgamated Association of Street & Electric Railway Employees of America.

Shortly after receiving a copy of the demand, President King of the Washington Railway & Electric Company, and President Hamilton of the Capital Traction Company issued statements to the press in which they said, in substance, that the communication was the first intimation which they had of any complaint or causes of complaint and that they were always ready to discuss with their employees any question relating to the terms of their employment.

On Friday, March 3, a letter directed to the committeeman who remained in the employ of the company and who was one of the four presenting the demands in contract form, was sent by the Washington Railway & Electric Company. In this communication the company expressed a willingness to discuss with its employees any grievances they might have but stated it could not discuss such matters with men not in the employ of the company. This letter further said that the company would gladly confer with a committee of employees if an appointment was made, but no acknowledgment of the receipt of the communication was received. On the same day President Hamilton of the Capital Traction Company arranged for two meetings of employees of his company to be held at the Georgetown carhouse on Monday, March 6, and posted in all carhouses a notice saying that the communication would be considered at the meetings and that the cards of admission, limited to employees, would be furnished by the department heads and division superintendents. All employees of the company were urged to attend. At meetings held at the carhouses of the Washington Railway & Electric Company on Friday evening, March 3, President King addressed several hundred conductors and motormen, reviewing the conditions under which the men work, the wages, hours and shifts. He commented on the company benefits and told the men that if a union existed and they belonged to it they would naturally surrender many of the benefits now enjoyed by them in the way of bonuses. Vice-President William F. Ham of the Washington Railway & Electric Company also visited several of the carhouses, addressing the men along the same lines in an endeavor to impress upon them the many benefits they received from the company.

On Saturday, March 4, those active in the newly organized association called a meeting of the members already enrolled and inviting all other platform men of both companies to attend, this meeting to be held at midnight to insure larger attendance than if held during the day. Despite the offers of both companies to meet employees, this meeting stampeded and voted to strike, their action to be effective immediately.

Both companies, however, were able to operate service on Sunday, and issued statements which were published in the one afternoon newspaper issued on Sunday. That

of the Washington Railway & Electric Company said in part as follows:

"Following our offer to discuss any grievances with our employees, suddenly and without warning a strike was called at 2.30 this morning. We are doing everything possible to maintain street car service and cars are running on all divisions. Our first thought is the safety of passengers. Therefore cars will be manned only by competent crews. While we anticipate some difficulty maintaining full schedules, it is expected that reasonably adequate service on all lines will be maintained until such time as we are able to again operate the regular schedules. Under the existing conditions caused by this unwarranted strike, called without giving any consideration to our offer to confer with our employees, we hope the public will be patient."

That of the Capital Traction Company explained that the strike had been called without warning that such action was to be expected at this time and then gave the principal facts of the negotiations. It concluded as follows:

"The company feels that the present situation, unnecessary and hurtful alike to the public, the company and its employees, is one for which it is in no way responsible and which it has taken every reasonable step to prevent."

Slight disorders began to manifest themselves during the late afternoon on Sunday, resulting in the officials of both companies deciding to discontinue all service after 7 p. m. Shortly after noon on Sunday, March 5, the Commissioners of the District of Columbia voluntarily offered to confer with the traction company officials, Department of Labor representatives and the organizers of the association which the companies declined to recognize. This offer was accepted, and at 3.30 o'clock the joint conferences started, continuing until 3.30 o'clock Monday morning.

On Monday, service was resumed by both companies over all divisions, approximately 60 per cent of the schedules of both companies being maintained with loyal employees and extra men volunteering from other departments of the companies.

As a result of the twelve-hour conference held on Sunday, there was drafted an agreement in which it was proposed that all employees of both companies meet for the purpose of considering the propositions covered in the memorandum of agreement submitted to the companies on Wednesday, March 1.

At 3.30 o'clock Monday afternoon, the agreement was read at a meeting of those employees who struck and was accepted by them. The first clause of this agreement provided that committees should be selected from the employees of each of the companies to meet with the officials of the companies and settle the question of hours of labor, rate of pay, seniority and other points mentioned in the original memorandum. It also provided for the creation of a permanent grievance committee to discuss matters with the officers, and also of an arbitration board to settle disputes where the employees and the officials could not agree. The other clauses of the agreement provide for meetings between the committees selected from the employees and the officials of the company to settle the points at issue at the present time, with arbitration if a satisfactory conclusion cannot be reached.

To permit all trainmen employed by both companies an opportunity to vote on the selection of committees, including those trainmen who did not go on strike, a meeting was called for 8 o'clock Monday evening, all street car service being discontinued so that all trainmen who were operating cars could attend. After this meeting adjourned, "owl" service was provided, and the

regular schedules of both companies again went into effect on Tuesday, March 7.

The conferences between the railway representation and the employees' committees appointed by the employees, as covered by the terms indicated in the accepted agreement to mediate, are now in progress, each company conferring with its own employees' representatives.

San Diego Operation Uninterrupted by Floods

OPERATION of the city lines of the San Diego (Cal.) Electric Railway was not interrupted by the recent floods that occurred in that district. The floods were the highest ever recorded in that part of the State, but except for the deposition of silt and gravel on the



WHEN THE SKIP STOP PROVES POPULAR.

tracks, which was easily removed, the system suffered no damage. The accompanying illustration, however, indicates that the skip-stop plan was in favor in those parts of town where the water reached depths up to 18 in.

Electric Railway Express Service and Internal Revenue Stamps

The necessity for affixing internal revenue stamps on express packages may cause the elimination of that business by interurban electric railroads that do not run special express cars for such business. The companies were able to maintain schedules fairly well, and make a profit on the express business, even though the conductors had to receive the packages, collect the charges, and care for the goods; but the extra minute or so required to announce the amount of the stamp tax, provide the stamp, and see to the cancellation of it, is taking too much time from the schedules, and interfering with the maintenance of the schedules expected of the passenger traffic. The interference with the running time is likely to prove serious, especially on lines where provision is made for a maximum of stops for passengers, and where express business is developing an additional number of stops. One of the roads that is confronted with this problem is the Southwest Missouri Railroad. This company has maintained an express service on its passenger cars as an accommodation to its patrons. Mine and mill owners of the Webb City district have been following the practice of ordering repair parts by telephone and having them delivered by the electric line, sometimes within an hour.

During the year 1915 thirty trespassers were killed on interurban roads in Ohio. This compares with thirty-seven in 1914. Employees on duty killed on interurban roads in 1915 numbered eight, as against ten the previous year. Five passengers were killed in 1915 as compared with four the year before. At highway crossings seventy-three persons were killed in 1915, while in 1914 thirty-one met death in the same way.

American Association News

President C. L. Henry Visited Connecticut Company Section on March 9—American and Manufacturers' Associations' Executive Committees Held Important Meetings in New York This Week—
Secretary Makes Early Distribution of San Francisco Proceedings

General Association Activities

AMERICAN ASSOCIATION

A meeting of the convention location committee of the American Association was held in New York on March 9. The advantages of various cities were considered, and it is hoped that a definite announcement can be made soon.

The proceedings of the San Francisco meeting have been distributed during the past week, beating last year's excellent record by one week.

As this issue goes to press the American Association executive committee is in session in New York.

MANUFACTURERS' ASSOCIATION

The executive committee of the Manufacturers' Association met in New York on March 8 with the following members in attendance: Thomas Finigan, San Francisco, Cal., president; C. C. Peirce, Boston, Mass.; Daniel W. Smith, Detroit, Mich.; L. E. Gould, Chicago, Ill., and E. F. Wickwire, Mansfield, Ohio, vice-presidents; H. G. McConnaughy, New York, secretary-treasurer; and E. H. Baker, New York; Bertram Berry, New York; W. F. Cutler, St. Louis, Mo.; Charles R. Ellicott, New York; F. A. Elmquist, New York; Henry C. Evans, New York; M. B. Lambert, Pittsburgh, Pa.; George

Stanton, Cleveland, Ohio, and A. H. Woodward, Chicago, Ill., members of executive committee other than officers. B. A. Hegeman, Jr., New York, and James H. McGraw, New York, also attended by invitation.

Chairman Finigan first called for reports of committees. Among these was the report of the mid-winter dinner committee, signed by Mr. Peirce. It showed that 179 dinner tickets were sold by the American Association and 408 by the Manufacturers' Association, a total of 587. This was an increase of ninety-four over the number in attendance at the Washington dinner. After the accounts are balanced there will be a deficit of about \$200 to be paid by each association.

Mr. Peirce also reported that he had represented the association at the meeting of the United States Chamber of Commerce.

The secretary read the resignation of E. H. Baker as a member of the executive committee and this was accepted with regret. L. J. Drake, Indianapolis (Ind.) vice-president of the Galena Signal Oil Company, was elected to succeed Mr. Baker.

Details of the coming annual convention were discussed, and the secretary was instructed to send to all members copies of a letter setting forth the results of this discussion and the other features of the meeting.

Activities of the Company Sections

DENVER TRAMWAY SECTION

The February meeting was held on the 17th, the thirty-third in the series, with an attendance of 100 persons. The session was opened with a number of moving pictures secured from the United Railways of St. Louis, which were particularly instructive along safety lines.

The topic of the paper was "Selling Transportation." T. W. Topping of the east division represented the conductor's side of the question, and H. N. Hilling of the central division gave his version of the motorman's duty in following the course in good salesmanship, which is being conducted among the men of this company. An interesting discussion participated in by large numbers was led by I. M. Wickham of the east division and J. W. Dawson of the south division.

PORTLAND SECTION NO. 9

At a recent meeting of the executive committee of the Cumberland County Power & Light Company section a number of committees were appointed as follows: Program committee, G. S. Brush, superintendent of railway department, chairman; hall and supper committee, C. H. Houghton, division superintendent, chairman; membership committee, J. H. Lombard, motorman, chairman. The following were elected to honorary membership in the section: E. B. Burritt, secretary of the association; Harlow C. Clark, editor *Aera*; H. H. Norris, associate editor *ELECTRIC RAILWAY JOURNAL*; C. C. Peirce, manager railway department Boston office, General Electric Company, and Martin Schreiber, engi-

neer maintenance of way of the Public Service Railway, Newark, N. J.

PRESIDENT AND SECRETARY OF PORTLAND SECTION

T. H. Knight, president of the Cumberland County Power & Light Company section, has been superintendent of track for the past five years. He began con-



F. H. KNIGHT



F. J. O'NEIL

President Company Section No. 9 Secretary Company Section No. 9

tinuous work with the Portland Railroad, now a part of the present property, nineteen years ago as a conductor. After five years on the rear platform he became timekeeper in the track department, and nine years later was given his present position. He was

born and raised in Portland, being trained in the public schools and with a local consulting civil engineering firm. The two years spent with the latter in transit and rod and office work interested Mr. Knight in civil engineering and he entered the class of 1900, University of Maine. He returned to college after working, during the summer vacation of 1897 for the Portland Railroad, but left after the fall term and has since been with his present employer.

F. J. O'Neil, secretary of the section, is also a Portland product. He has been with the company since 1912, first as secretary to W. J. Ivers, then superintendent of equipment. Later Mr. O'Neil served as clerk of the mechanical department. He graduated from a local business college in 1910 and for two years thereafter was a clerk in the cashier's department of the Maine Central Railroad.

CONNECTICUT COMPANY SECTION

A dinner meeting of the Connecticut Company section, No. 7, was held in New Haven on March 9, with an attendance of more than 130. President Charles L. Henry was the guest of honor, and he gave an inspiring address. Brief talks were also made by E. B. Burritt, H. C. Clark and H. H. Norris. The Connecticut Company orchestra played during the dinner and vocal selections were interspersed with the addresses.

Mr. Henry moved a vote of thanks to the man who first thought of the company section plan and complimented C. N. Duffy for the pioneer work in Milwaukee. He outlined the principles which make for company section success, illustrating his points by humorous anecdotes. His main point along this line was that the section gets only what it goes after. The greater part of the address was devoted to the subject of courtesy which he advocated as the remedy for many evils in the railway business and out of it. He said that the only justification for the public utility corporation is that it can serve the public better than the public can serve itself. From his experience in public life he was able to show that this is true, and he instanced the case of the municipal waterworks. In communities served by municipal plants it is much more difficult to have complaints heard and grievances redressed than it is when the complainant can get directly at the management of the utility. He pointed out that as soon as the employees of the Connecticut Company lose sight of their positions as public servants they become much less useful to their employer.

Several reports were read at the business session of the section held immediately after dinner. The membership committee reported that on Jan. 1 the membership was 107, on Feb. 1 151, and on March 1 172, with a number of applications still on file. The secretary stated that at the meeting held on Feb. 8 141 members were in attendance. At that meeting the discussion on snow removal begun in January was continued, a number of members presenting brief papers. H. A. Bullock, secretary New York Municipal Railway Corporation, was present and gave an illustrated talk on the organization of safety work. Other speakers discussed the accident problems and costs on the local property.

The employees of the Morris County Traction Company, Morristown, N. J., have formed a mutual benefit association, carrying a sick and accident benefit of \$1 a day not to exceed sixty days in one year and a death benefit of \$100. The dues are 50 cents a month. The company contributes to the fund. More than 80 per cent of the motormen and conductors have joined the association.

COMMUNICATION

Another Criticism of "Post" Editorial

GEORGIA RAILWAY & POWER COMPANY

ATLANTA, GA., March 1, 1916.

To the Editors:

Your reproduction in the JOURNAL of Feb. 19 of John A. Beeler's letter to the editor of the *Saturday Evening Post* about the *Post's* editorial on "City Travel" reminds me that I, too, called the *Post's* attention to another side of the matter. I am inclosing copy of my letter (which received no answer), with the suggestion that this incident gives point to effective practice which should be followed more generally by all corporations—i.e., the patient and persistent answering of all unjust criticisms that appear. I can imagine that with Mr. Beeler's letter and mine, and perhaps others on the same subject, before him the *Post's* editorial writer wondered whether perhaps he hadn't been too casual.

As you and all other editors know very well indeed, the topic that evokes answers invariably is the topic taboo—unless, of course, an issue is up and a fight in good earnest is on. Electric railway men well may take advantage of this. Time spent in answering careless statements, unfounded and unreasonable criticisms and vicious attacks, is invested well indeed if after a time editors are unwilling to publish such statements and criticisms and attacks. The surest thing under the heavens is that they will grow weary before we do, if we stick to that method.

W. T. WATERS, Advertising Manager.

[Letter of Mr. Waters]

To the Editor, *Saturday Evening Post*,
Philadelphia, Pa.

Dear Sir:

In the course of your editorial, "City Travel," Jan. 8, you surmise what might happen if street car seats were provided for all members of rush-hour crowds. Is the assumption permitted that in some instances, at least, sufficient seats are provided and are left unused?

In the light of your own observation, is it true that into the first car going his way the typical individual insists upon burrowing? Does its crowded condition deter him? Does his knowledge that other cars are following make the crowded car-on-the-spot less desired by him? Does he himself choose between slight discomfort and slight delay?

Would he concede that the crowded elevator that leaves him waiting, the crowded box office or stamp window or weighing table or ticket window or shipping desk before which he must await his turn, the crowded store or the crowded restaurant—would he concede that any of these exemplifies a condition essentially the same as that of the crowded street car?

Would he admit that the rush-hour street car crowd is a phenomenon not different from the rush-hour ticket window or elevator or restaurant crowd, not different from the Christmas rush-period shopping crowd?

Would he make no objection if entrance to a street car already crowded were refused him by company rule or community law?

Those are queries for the psychologist.

Now for a practical question in mathematics.

Human nature being what it is, how can all the cars bound to a given destination be fitted to its demand by being made to proceed with none following another? What method is there for thrusting beneath those riders who have preferred to stand in order to hurry, the seats unoccupied that have followed them?

I do not criticize the editorial. On the contrary, I think it is true to the poise and clear vision and dignity of your admirable page.

W. T. WATERS.

A safety-first phrase has been painted by the International Railway of Buffalo on all of its poles. Those between corners carry the words "Safety First," while those at the street corners have the words "Stop, Look and Listen" painted upon them.

EQUIPMENT AND ITS MAINTENANCE

Short Descriptions of Labor, Mechanical and Electrical Practices
in Every Department of Electric Railroading

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

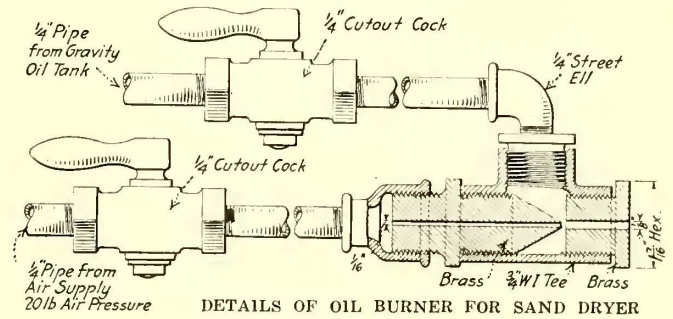
An Oil-Burning Sand Dryer

BY F. G. LISTER

Mechanical Engineer El Paso & Southwestern System,
El Paso, Tex.

A sand dryer, which is very inexpensive to build, which is giving excellent satisfaction, and which has outlived three ordinary cast-iron sand dryers, is being used by the Spokane, Portland & Seattle Railway at its shops in Vancouver, Wash. Oil is used for fuel and is a great improvement over coal or coke in that a steady heat can be maintained and regulated to suit the conditions.

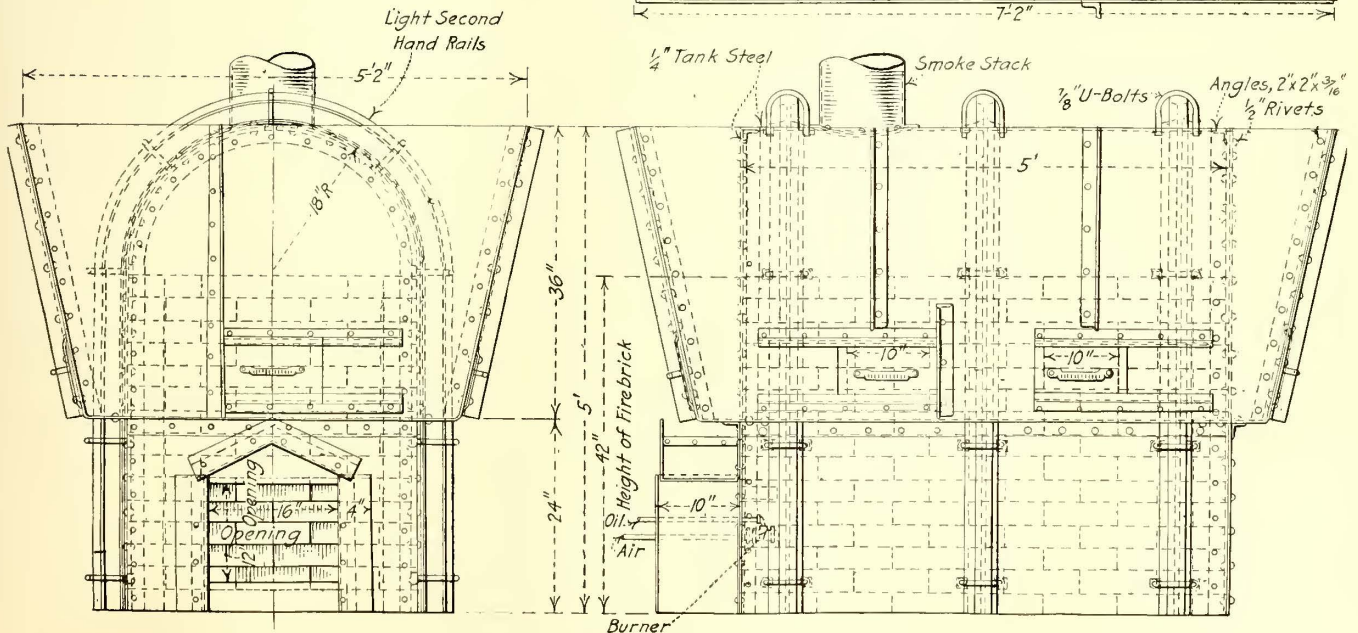
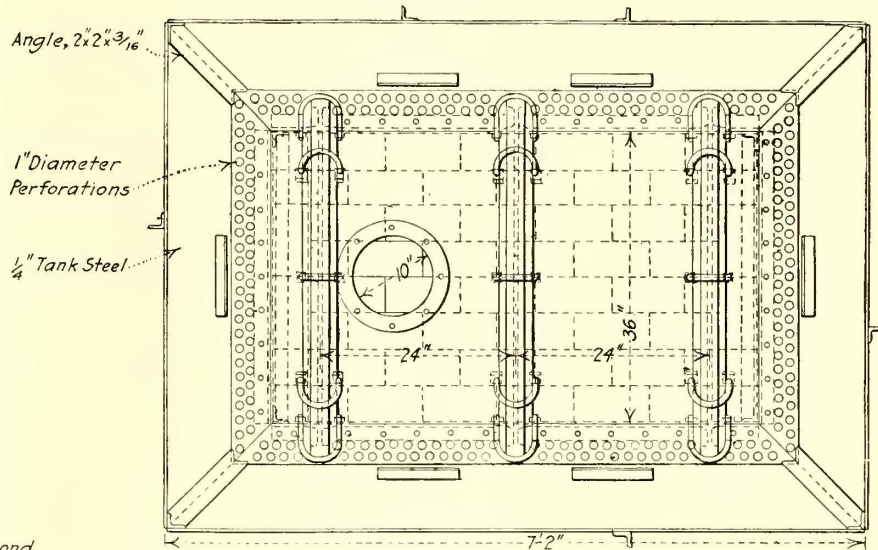
The dryer is built up with a framework of three light rails bent to suit, lined on the inside with 1/4-in. tank steel. The walls and bottom are lined with one layer of firebrick to 42 in. above the floor line. The hopper is made of 1/4-in. tank steel joined at the corners with 2-in. x 2-in. angle irons. The bottom of the hopper is perforated with 1-in. round holes to allow the dry sand to drain out. The sides and ends are provided with openings covered with sliding doors for the purpose of loosening the sand if packed or to let out stones which might be lodged therein. The chimney is located in the front of the arch, so that the flame blowing in at the front door strikes the back wall and causes the heat to return to the front of the



box and out the chimney, thus providing a complete heating surface in the firebox.

The burner is very simple, being made of standard pipe fittings, except the nozzle and two reducers which are made of brass rod.

NOTE { Sides, Ends and
Bottoms Lined
with Firebrick



PLAN AND ELEVATIONS OF OIL-BURNING SAND DRYER

The dryer is operated eight hours per day, three hoppers being dried in this length of time. Eight gallons of fuel oil are consumed for each hopper full of sand. Air is supplied at a pressure of 20 lb. per square inch.

About four hours per day are consumed by the operator in handling the dryer and sanding on an average of twelve engines. The remainder of his time is spent in helping the hostler turning engines, etc. The sand dryer was designed and built by C. A. Landberg, general foreman in the Vancouver shops.

Value of Ties Treated and Untreated

BY E. W. BRIGHT

Tie and Timber Agent Boston Elevated Railway

The number of cross-ties purchased each year by steam and electric roads runs into the millions, involving the cutting away of tracts of forest land at a rapid rate. Increasing care must be exercised by consumers in selecting the specie of wood for ties, if they expect to keep tie prices within bounds. In this article I shall deal wholly with ties used generally by electric roads, as steam roads have different conditions to contend with.

A few years ago oak and chestnut were the woods used most generally for tie purposes. They gave very good results, but to-day it is difficult to procure chestnut and oak ties with good faces, at a satisfactory price. The result is that, in the future, most electric roads will have to depend on Southern pine or Douglas fir to take the place of oak and chestnut.

The estimated life of untreated ties under normal conditions is as follows:

Specie of Wood	Estimated Life, Years	Specie of Wood	Estimated Life, Years
Black locust	15 to 20	White oak	7 to 9
Redwood	10 to 12	Chestnut	6 to 8
Cedar	9 to 11	Long-leaf pine	6 to 8
Cypress	8 to 10	All other woods	3 to 6

A question that is often asked is, "Why don't you use steel cross-ties if there is such a scarcity of good tie timber?" In answer to this I would reply that no doubt steel ties should be considered in some places, such as on bridge work, etc. But there are many objections to the use of steel ties in general. Some of these objections are as follows:

Rigidity of the track structure which eliminates that elasticity which facilitates train movement, and which must be hard on rolling stock by reason of the extreme wear and tear produced by the attendant jar and pounding while cars are in motion and are being started and stopped.

The greater noise produced by vibration in a solid steel track structure as compared with a flexible structure.

The corrosion of the tie, which can be overcome more or less by painting.

An early illustration of rigid structure is furnished by the Boston & Lowell Railroad, which was the second steam road to be built in this country. Granite sleepers were used when the road was first built, but they proved to be a failure.

The life of a tie depends upon the following conditions: (1) Kind of soil and foundation on which tie is to be placed; (2) size of tie and specie of wood from which it is made; (3) whether tie is treated with preservative or not; (4) whether tie plates are used or not; (5) kind of spikes used; (6) care taken of ties while in service, and (7) mechanical wear on ties due to traffic.

I have often been asked to state what kind of wood makes the best tie. This is rather a difficult question to answer except in a general way, as in one section of

the country a cypress tie might be better than an oak or chestnut tie; in other words, local conditions must be considered in selecting the specie of wood to be used. For general use, it is my opinion that the Southern long-leaf pine tie treated with some good preservative will give very satisfactory results, and should last from twelve to twenty years in service.

It is a recognized fact that the preservation of wood is a step in the right direction, and the managements of electric roads should give this subject due consideration properly to realize the economic importance of the treatment of ties, bridge timbers, etc. The service of these is double and treble that of untreated wood. I am convinced that it would not pay the small electric roads to build pressure treating plants for their own use, and it would be better for them to turn this work over to some commercial plant near by. But for roads using, say, 100,000 ties a year and 1,000,000 ft. of lumber, a pressure-treating plant will more than pay for itself provided that it is operated in an economical manner, and that the plant is so located that oil can be obtained at a reasonable price.

The Boston Elevated Railway, realizing the above facts, has decided, after thorough study and investigation by the writer, to build its own treating plant. This will be located at the general yard in South Boston. The plant will be modern in every respect and will be equipped either for the "full-cell" or the Rueping process.

Plans and specifications have been drawn up by Grant B. Shipley, consulting mechanical engineer, and it is expected that the plant will be completed about May 1 of this year.

The treating cylinder for this plant will be 7 ft. 6 in. in diameter and 51 ft. 2 3/8 in. long, so that standard-gage tramcars loaded with ties or lumber can be run into it. There will be two storage tanks for oil, and a working pressure tank mounted on scales to record the amount of oil used in each treatment, with all of the other equipment necessary for the successful operation of such a plant. In the operation of the plant the writer will have the assistance of his colleague, E. S. Lent.

Returning to the general subject of timber treating, I shall not go into the different processes used in the treating of timber, but will merely note that it is a waste of money to inject more oil into the wood than what is actually required before mechanical breakdown takes place. Of course, this limit cannot be determined until a careful study has been made of conditions where treated material is being used.

Small electric roads, which are not located conveniently near a commercial treating plant and where conditions do not warrant the building of a pressure plant can secure very good results by using the open-tank method of treating. No matter what method is used, however, it must be borne in mind that the best results are obtained only by using well-seasoned wood and by insuring the removal of all inner and outer bark before treatment.

The estimated life of ties treated by various processes under normal conditions is as follows:

Specie of Wood	Estimated Life with Various Treating Processes, Years	Specie of Wood	Estimated Life with Various Treating Processes, Years
Long-leaf pine	12 to 20	Hemlock	10 to 15
Chestnut	10 to 15	Red oak	12 to 20
Douglas fir	10 to 16	Beech	12 to 20
Spruce	9 to 14	Birch (yellow)	10 to 18
White pine	10 to 13	Maple	10 to 20
Tamarack	10 to 15	Gum	10 to 16

Electric roads that are located in territory where there is beech, birch, or maple, will find these species

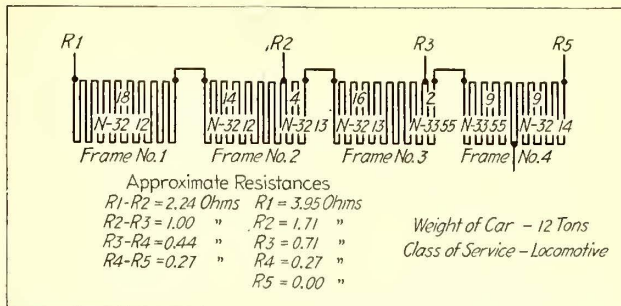
of wood very desirable for ties, if a preservative treatment is given.

Finally, I would state one of the most important things in obtaining good ties is to have specifications fully covering the class of tie to be used, with rigid inspection. Many failures of ties in service are due to lack of proper inspection.

Grid Resistor Tests and Standardization Found Important

BY AN EQUIPMENT ENGINEER

Tests made on the older types of equipment for certain service conditions led to the discovery of numerous discrepancies in the step resistances and capacities of grid resistors. Following these tests certain methods were adopted to standardize the design, construction and methods of testing grid resistors, primarily to reduce to a minimum the variety of component parts involved in the various assemblies for different motor equipments. The current tests indicated the capacities of the resistor steps, which when either insufficient or excessive for the service requirements, were corrected by calculation and checked by performance tests. After the correct capacity was established, drawings were prepared to cover each different type of motor equipment. A typical one of these drawings for two Westinghouse No.



RESISTOR STANDARDIZATION—CONNECTIONS OF 8-IN., THREE-POINT RESISTOR FOR TWO WESTINGHOUSE 93-A2 MOTORS AND K-11-A CONTROL

93-A2 motors with K-11-A control, is shown in the accompanying illustration.

Variations in the capacities of grid resistors in the older equipment were due to the different ohmic resistances of grids taken from different heats of iron. In order to correct any possible errors in the final assemblies following construction or repairs, a 10-amp. constant testing current is used and the corresponding voltage drop is checked by means of a table of correct drops. This current is low enough to make the temperature rise in the grids insufficient to alter radically their cold resistance. As indicated in Table I on grid

TABLE I—GRID RESISTOR MEASUREMENTS

Weight of Car	MOTORS			TYPE OF		Dwg. No.	CONNECTIONS		Approx. Volts	Weight of Car	MOTORS			TYPE OF		Dwg. No.	CONNECTIONS		Approx. Volts
	No.	Make	Type	Control	Grids		From	To			No.	Make	Type	Control	Grids		From	To	
11-Ton Pass.	2	Westg. GE.	349800 B	K-2-A or K-10-A	CG	746-A	R1	R5	65	20-Ton Loco.	4	GE.	800 B	K-6-A	CG	1306	R1	R7	40
							R1	R4	61½								R1	R6	38½
							R1	R3	52½								R1	R5	36½
							R1	R2	34								R1	R4	33½
20-Ton Pass.	2	Westg.	56	K-11-A	CG	747-A	R1	R5	37½	12-Ton Loco.	2	Westg.	93-A2	K-11-A	8 in.-3 Pt.	837	R1	R3	28
							R1	R4	34½								R1	R2	18½
							R1	R3	29								R1	R5	39½
							R1	R2	20								R1	R4	37
20-Ton Pass.	2	Westg.	93-A2	K-11-A	6½ in.-2 Pt.	735	R1	R5	37½	20-Ton Pass.	2	Westg.	323 V3	K-51-A	8 in.-3 Pt.	1754	R1	R3	32½
							R1	R4	34½								R1	R2	22½
							R1	R3	30½								R1	R4	50½
							R1	R2	24								R1	R3	40
20-Ton Pass.	2	Westg.	93-A2	K-11-A	8 in.-3 Pt.	748-A	R1	R5	38	30-Ton Loco.	4	GE. Westg.	57-H 56	K-14-A	CG	634	R1	R7	34½
							R1	R4	35								R1	R6	33
							R1	R3	31								R1	R5	31½
							R1	R2	24								R1	R4	29
20-Ton Pass.	2	Westg.	310 E2	K-51-A	8 in.-3 Pt.	1758	R1	R4	49	30-Ton Pass.	4	GE. Lorain	57-H 34	K-14-A	CG	640	R1	R3	24½
							R1	R3	35								R1	R2	15
							R1	R2	20								R1	R	34½
							R1	R5	13½								R1	R6	33½
37-Ton Pass.	4	Westg.	304 C	K-34-D	8 in.-3 Pt.	1766	R1	R4	12	30-Ton Pass.	4	GE. Westg.	73-C 121 A	L-4	CG	1761	R1	R5	32
							R1	R3	9								R1	R4	29½
							R1	R2	5								R1	R3	25
							R6	R9	8½								R1	R2	16½
							R6	R8	6½								S	S1	14½
							R6	R7	4								GB	R3	7
							R1	R5	39½								GR	R2	5½
							R1	R4	37								GR	R1	3
12-Ton Loco.	2	Westg.	56	K-11-A	CG	836	R1	R3	32½	40-Ton Pass.	4	Westg.	121 A	U.S.-A.B.	8 in.-3 Pt.	1760	YR	RR3	7
							R1	R2	22½								YR	RR2	5½
							R1	R3	32½								YR	RR2	5½
							R1	R2	22½								YR	RR1	3

TABLE II—CLASSIFICATION OF GRID RESISTORS

CARS			MOTORS			TYPE OF		Dwg. No.
Div.	Type	Class Nos.	No.	Make	Type	Control	Grids	
City	Sand Sweeper	32, 33 35, 36, 37, 38, 39 200-240, 250-288	2	Westg.	3	K-2-A	C G	746-A
	Pass.	501-565, 575-580 581-600, 701-765		G. E.	800-B	K-10-A		
City	Pass.	400-484, 601-635 890-834	2	Westg.	56	K-11-A	C G	747-A
City	Pass.	835-864	2	Westg.	93-A2	K-11-A	6½ in.- 2 Pt.	735
City	Pass.	636-645, 865-908 909-933	2	Westg.	93-A2	K-11-A	8 in.- 3 Pt.	748-A
City	Work Pass.	14, 15 934-958, 959-983	2	Westg.	310-E2	K-51-A	8 in.- 3 Pt.	1758
City	Work	6, 7, 9, 10, 11 and 12	2	Westg.	56	K-11-A	C G	836
	Sand Sweepers Snow plows	29, 30 and 31 40, 41, 42 and 43 120 and 121						
City	Relief Sand	26 28	2	Westg.	93-A2	K-11-A	8 in.- 3 Pt.	837
City	Crane	23	4	G. E.	800-B	K-6-A	C G	1306
City	Pass.	(Trial equipment)	2	Westg.	323-V3	K-51-A	8 in.- 3 Pt.	1754
City Intr.	Locom. Work	2 100	4	Westg. G. E.	56 57-H	K-14-A	C G	634
Intr.	Pass.	79-93	4	G. E. Lorain	57-H 34	K-14-A	C G	640
Intr.	Freight	131, 132 and 136	4	Westg.	121-A	U. S.- A B	8 in.- 3 Pt.	763
Intr.	Pass.	20-38, 40-58	4	G. E.	73-C	C 6	C G	1759
Intr.	Pass.	21-39, 41-49 63-74, 67-77	4	Westg.	121-A	U. S.- A B	8 in.- 3 Pt.	1760
Intr.	Freight	126, 127, 130 and 134	4	Westg. G. E.	121-A 73-C	L-4	C G	1761
Intr.	Locom.	106	4	Westg.	93-A2	U. S.- H L	8 in.- 3 Pt.	1762
Intr.	Pass.	51-65	4	Westg.	304-C	K-34-D	8 in.- 3 Pt.	1766
Intr.	Private	600	4	Westg.	303-A	U. S.- H L	8 in.- 3 Pt.	1767

resistor measurements, the resistance in ohms for various connections is obtained by measuring the drop in voltage between connections, and noting the variation from the approximate standards shown in the table.

The method of classifying the various assemblies of grid resistors for car equipment is indicated in Table II. This also gives the number of the drawing showing the resistor connections for any particular equipment. The classification of grid resistors also serves as an index to the drawings of the various resistor assemblies, and all are bound in a single book, which puts all the information in handy reference form. On the other hand, the tests and standardization of resistor assemblies have resulted in practically eliminating resistance trouble, as well as difficulties in other parts of the equipment which arise from this source. They also facilitate the making of changes that may be required to meet certain service conditions. In other words, it is possible to fit the grid resistor capacity to the road service under which the electrical equipment is required to operate. Testing current is taken from a central control board through special test cables which are fed from a 600-volt busbar. A 15-amp. ammeter and a 75-volt voltmeter are the only measuring instruments employed in making these tests.

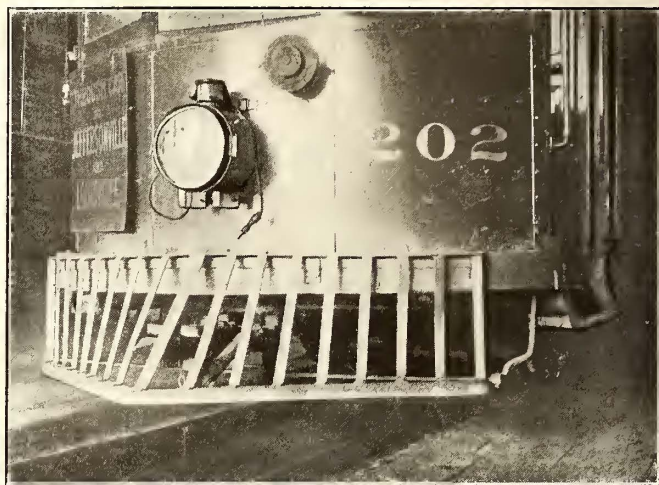
The decline of the jitney bus in Evansville, Ind., is evidenced by the fact that six months ago there were fifty such machines in operation, whereas on Feb. 1 there was only one in service.

Removable Pilot Used with Couplers

BY H. H. BUCHMANN

Master Mechanic Louisville & Southern Indiana Traction Company, New Albany, Ind.

Home-made, removable steel pilots that weigh 98 lb., conform to ordinance requirements and, at the same time, are readily removable for trailer operation, have been adopted as the standard by the Louisville & Southern Indiana Traction Company, New Albany, Ind. These pilots are so designed that they fit over the standard couplers used on the interurban cars of this company. Although the pilot is comparatively light, it has been found to meet service requirements as completely as those of much heavier construction. This is attributed to the spring action which absorbs the



REMOVABLE PILOT ATTACHED TO A CAR

shocks that frequently destroy the usefulness of more rigidly constructed pilots. The top and bottom members of the pilot are formed of ¼-in. x 2-in. x 2-in. angles, one bent to a 5-ft. 7-in. radius and resting against the buffer, and the other forms the bottom of the nose-type pilot. Fourteen bars ¼-in. x 1½-in. in size are riveted to these two members with 5/16-in. rivets. One-inch round iron, combined knee braces and hangers fasten to the bottom and hold the pilot rigidly in position, while a ½-in. thumb screw passing through a clip at the center of the upper member holds the pilot against the buffer. A view of one of these standard pilots attached to a car is shown above.

Reclaiming Worn Axles

BY DANIEL DURIE

Master Mechanic West Penn Railways, Connellsville, Pa.

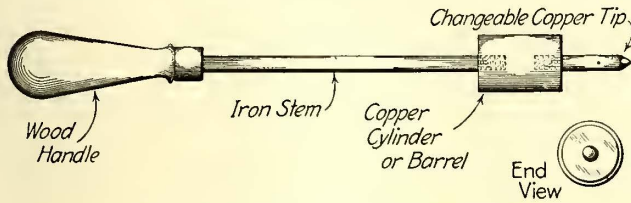
Successful results have attended the restoration of 5-in. axles to their original size by shrinking ¼-in. high-carbon, cold-rolled steel tubing on the old journals. This method of reclaiming axles is employed by the West Penn Railways Company when the 4-in. journals have worn to 3½ in. in diameter. The high-carbon, cold-rolled steel tubing used for this purpose shows a scleroscope hardness of 40 to 45, and it is applied to the worn journals with a 1/32-in. shrink. After the tube has been shrunk in place, one end is electrically welded to the wheel hub. Quite a number of the 5-in. axles used on this road had been in service for a number of years and they had become badly worn. Except for the decreased diameter of the journals these axles were in perfect condition. The application of the high-carbon sleeve restored the journal practically to its original condition, and it is contemplated that the life will be increased 100 per cent.

Small Heat-Retaining Soldering Iron

BY R. H. PARSONS
Electrical Foreman.

All who have had experience in the use of soldering irons will recollect that often, when the point in the operation was reached that it was inconvenient to stop, the iron got cold and it became necessary to change irons or wait for the one to become heated. It is impossible to accomplish small work with a large iron, and it is equally difficult to keep a small iron hot long enough to do a soldering job.

The accompanying sketch illustrates an iron which is designed for small work, such as lamp receptacles, wiring inside of small junction boxes, etc., and which



SMALL HEAT-RETAINING SOLDERING IRON

will retain its heat much longer than the ordinary iron. Attached to the stem is a copper barrel or cylinder approximately 1½ in. long and 1 in. in diameter. A removable copper soldering tip is screwed into this barrel. Tips of several sizes can be used according to the nature of the work.

To use the iron, the barrel is heated in the flame of a blow torch or gas lamp. This retains the heat for a long time and transmits it to the tip. The tool thus gives all the advantages of a small tip for soldering, and at the same time has all the heat-retaining properties of a larger iron.

Experimental operation of four electric freight trains on the Bardonecchia-Modane trunk line, between the French and Italian frontier, including the Frégus tunnel, has given most satisfactory results and in consequence regular electric freight train service will be established in and out of Italy.

Interurban Cars for Binghamton Railway

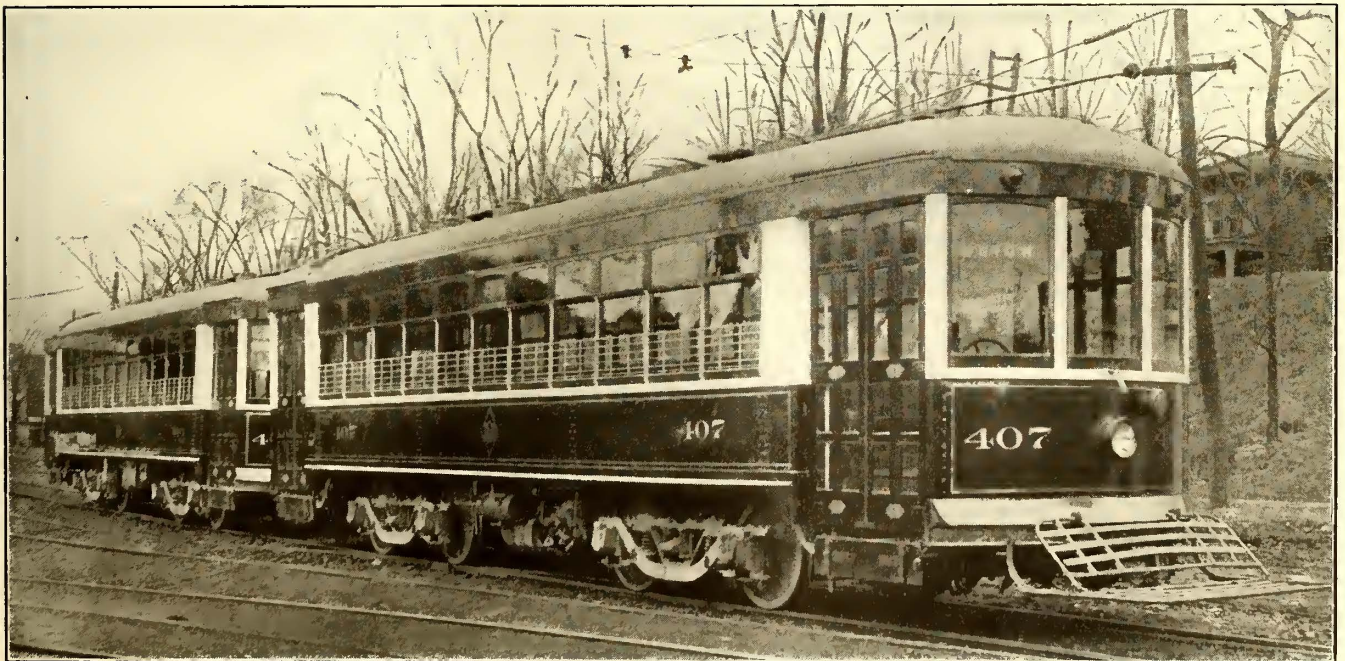
The Binghamton (N. Y.) Railway has recently placed in service a number of interurban cars which are being operated between the city of Binghamton and the towns of Endicott and Union, about 9 miles west of the center of the former city. Throughout much of its length the route passes residential districts, so that the service is more suburban in character than interurban, and for this reason the cars have general features which are commonly found in city cars, although the construction and equipment are designed to permit high-speed, multiple-unit operation.

The general dimensions of the cars are as shown in the following table:

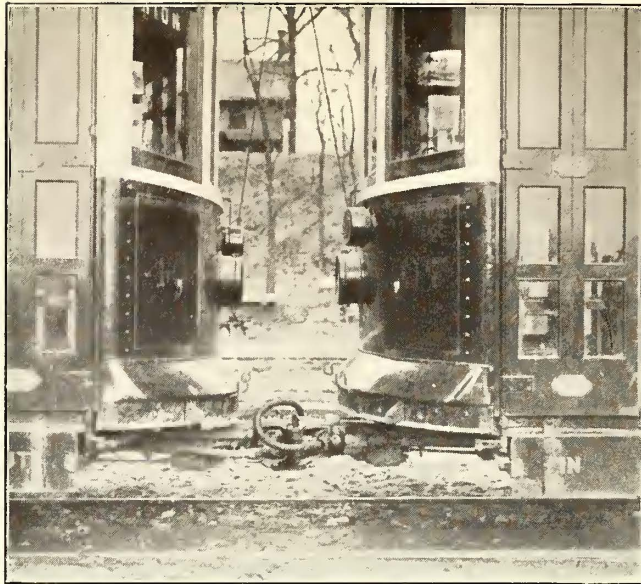
Length over all.....	42 ft. 0 in.
Length over vestibule.....	41 ft. 0 in.
Length over body.....	30 ft. 0 in.
Height from rail to roof.....	11 ft. 7 in.
Width over side sheathing.....	8 ft. 6 in.
Side post centers.....	30 in.
Truck centers.....	17 ft. 6 in.
Diameter of wheels.....	34 in.
Truck wheelbase.....	6 ft. 1 in.
Seating capacity.....	52

The entire bottom framing, body and roof are of steel construction, countersunk head rivets being used in assembling the framing so as to afford a smooth painting surface. Sheet-steel sheathing ⅛ in. in thickness is used for the sides and for the vestibules below the dash. The floor framing is covered with sheet steel and upon this is laid 13/16-in. yellow pine boards. The roof is of the plain arch type and is covered with No. 18 gage steel which is insulated on the outside with 1 in. of compressed cork, this being covered with No. 8 canvas. The wainscotings below windows are also formed of compressed cork 1 in. thick and this is covered with linoleum. The side-post cappings are made of special steel and are readily removable. The bumpers are formed of 5-in. steel channels and are protected by No. 16 steel shields to prevent anyone from riding on them.

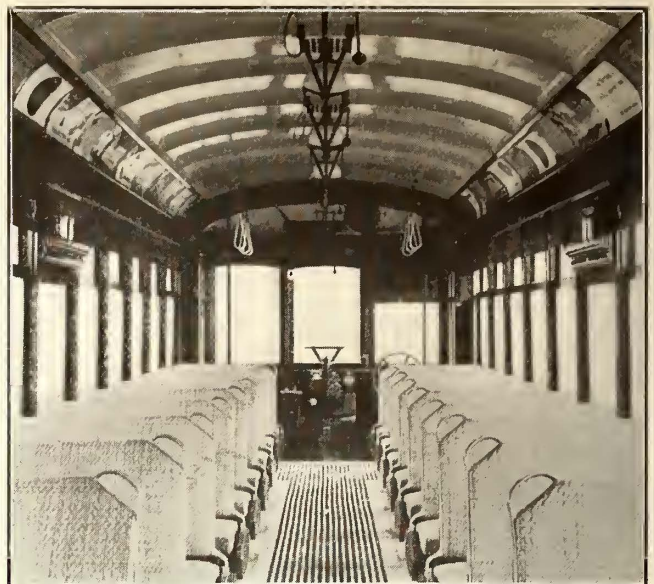
Special attention has been paid to the interior fittings so that the cars will be comfortable and at the same time will present an attractive appearance. The interior finish including sash, doors, mouldings, etc., are treated with Sherwin-Williams interior green and the



BINGHAMTON INTERURBAN CARS COUPLED TOGETHER FOR TRAIN OPERATION



COUPLER AND JUMPER CONNECTIONS BETWEEN THE CARS



INTERIOR VIEW OF BINGHAMTON CAR

ceilings are finished with Sherwin-Williams flat white enamel, the steel carlines being exposed.

There are eighteen 37-in. transverse seats with 19-in. backs, these being of the Heywood Brothers & Wakefield Company's make. All of them are provided with the double foot rests. The aisles are 24-in. wide. Longitudinal seats are provided in each corner of the car, these being upholstered in canvas-backed rattan like the transverse seats, and there are also folding slat seats in the vestibule at the entrance-door openings. As beforementioned, the main floor is made of yellow pine boards. These are finished with maple floor-mat strips $\frac{5}{8}$ in. wide at the top, reaching for the entire length of the car body except for a space of 2 in. at the ends to allow for sweeping. These floor strips are jointed 2 ft. from the ends of the car, and the side floors are raised flush with the aisle strips. The platform floors are made of maple.

Eleven windows are provided on each side of the car body, the lower sash of each being fitted with the Cincinnati Car Company's standard flush barrel sash lock, engaging with holes in the two sides of the T-bar posts to hold the window at various heights. The upper sash is stationary with an arched head. All side windows are provided with Pantasote curtains and Curtain Supply Company's No. 88 ring-type fixtures with Rex rollers. Five $\frac{1}{4}$ -in. hard-drawn steel window guards placed $2\frac{1}{2}$ in. on centers are installed outside of the side windows on each side of the car. These are of the removable type and they are hung on a vertical rod secured to the post so that they can be raised or lowered to permit washing the window.

The vestibules at the ends of the car are arranged for pay-within operation and they have double folding doors on both sides which are operated in conjunction with the folding steps by the motorman and conductor. The risers of the three steps between the street level and the car floor are respectively 15 in., 13 in. and 12 in. in height, and the first step is of the folding type, the edge of the tread being covered with a 3-in. anti-slip surface which is provided also over the edge of the platform floor above the step. In each vestibule there are three drop sashes, the center one having stops so that it can be lowered part way and held in that position when desired, and being fitted with a sleet cleaner made by the Standard Accessories Company, New York. Adjoining each vestibule at diagonal corners of the car are Binghamton Railway Company's standard flush-type motor-

men's steps and roof mats to permit the crew to get upon the car roof in safety whenever that is necessary.

Included in the car-body equipment are Consolidated Car Heating Company's electric heaters with deflectors and thermostatic control. There has been installed also an Ohio Brass Company's Style B electric signal system, and each car is equipped with two Golden Glow headlights in the dashes. The latter have 94-watt lamps and are supplied with a dimming resistance which can be used when the car is operating through thickly-populated districts. Over the longitudinal seats in each corner of the car there is a hand-strap pole fitted with three Rico sanitary straps 5 ft. 10 in. from the floor.

Ventilation is provided by five combination ventilator, register and lamp fixtures made by the Dayton Manufacturing Company. The lamp fixtures are provided with Alba shades and 94-watt lamps, the lighting circuit being supplied with one extra lamp fixture that is controlled by a Nicholls-Lintern selector equipment. The folding door and step mechanism is of the Cincinnati Supply Company's standard design, and the doors are connected to the main switch through a contactor line-switch relay so that the car cannot be started when the doors are open.

Among the other equipment that has been supplied are Peacock staffless brakes. Consolidated buzzers, Westinghouse air sanders, Johns-Manville sand hose, Ohio Brass air traps, Earll trolley catchers, Dayton Model DB fare boxes and Sterling-Meeker double registers. There are also Hunter route signs at the front and sides, Berg fenders, Utility honeycomb ventilators, Root track scrapers, and transfer boxes of the Binghamton Railway Company's standard design.

The propulsion equipment consists of four Westinghouse 323-V motors with Baldwin trucks. The control is of the light-weight Westinghouse HL type permitting multiple-unit train operation when desired. For this reason the brakes have been designed for combined automatic and straight air operation, being of the Westinghouse A. M. M. type. There is a D-1-F air compressor with a Lord screenless air strainer and an American automatic slack adjuster.

To facilitate the quick separation of the two cars making up a train at the junction of the branch lines leading to the towns of Endicott and Union respectively, and their prompt connection on the return trip to Binghamton, there has been adopted the Westinghouse auto-

matic car and air coupler with an electric jumper attachment. This coupler is of the tight-lock type with a pocket and pin on one side for making connections by means of a link to cars not having automatic couplers.

In the base of the coupler are two air connections for brake and control pipes, respectively, each of which is provided with a self-closing check valve having a tappet for opening it when two couplers come together. Fastened to one side of the head is a standard seven-point jumper receptacle. When two cars are brought together, the car and air couplings are automatically made and no valve has to be opened. There remains only the one electric jumper to be inserted in the two receptacles, and only twenty seconds are required for the completion of this operation. When cars are uncoupled the electric jumper is the only thing to be handled, as the unlocking of the two couplers and the closing of the four air-pipe outlets are accomplished automatically in twelve seconds by turning a valve in either cab and then separating the cars.

Special care has been given to the car wiring, all of which is run in conduit. The cables are run under the car bodies with junction boxes and condulets at motor and resistance leads. Where conduit enters the junction boxes it is fitted with T. & B. bushings and jam nuts, the boxes being fitted with rubber gaskets to make them waterproof. All conduit is electrically connected with the metal bolsters to provide a ground for connection. The electrical splices are well soldered and then insulated with a double layer of rubber tape, one layer of friction tape and painted with P. & B. paint. Lighting and air-brake compressor switches are placed on an enamel-plate base installed in a cabinet with a spring door.

The cars, which were built by the Cincinnati Car Company, were designed in accordance with specifications prepared by C. S. Banghart, vice-president Birmingham Railroad, and they are reported to have been received with very great favor by the patrons.

New Car Meter

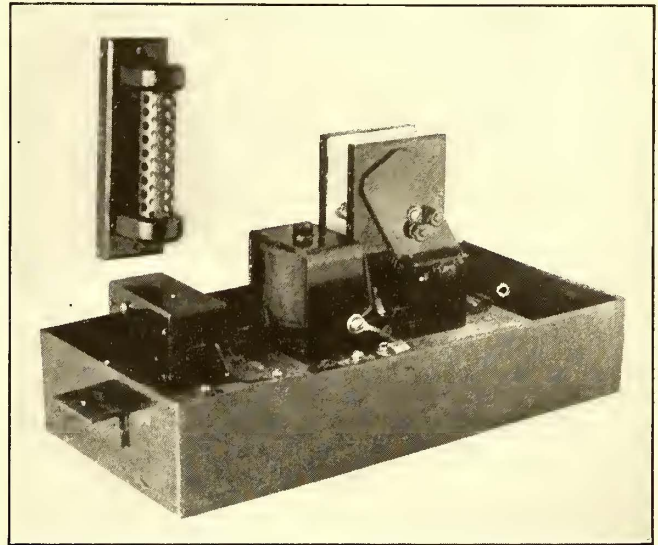
The Electric Railway Improvement Company, Cleveland, Ohio, will shortly place on the market a car meter illustrated in the accompanying engraving. Its principle of operation is the comparison of the travel under power with the total travel of the car.

The meter contains two counting heads, electrically actuated by a car wheel, one indicating power-miles and the other car-miles. A record is thus made not only of the coasting but also of the mileage of the equipment. The latter feature makes the computing of car-miles from the conductor's report unnecessary. The new meter is claimed to be the first to give on a mileage basis a record both of one part of the cycle—acceleration, coasting and braking—and the total cycle. In this way the number and length of stops do not affect the record and a comparison can easily be made between motormen.

The British Columbia Electric Railway's first-aid class of the St. John's Ambulance Association was examined by Major Paulin, president of the association, recently and first-aid certificates were granted to eleven employees of the company.

Underwriters Approve Thermostat Control

The Underwriters' Laboratories have rendered a report on the new system of thermostat control for electric heaters introduced during the past year by the Consolidated Car Heating Company. This control comprises a mercury thermometer which, through a rugged relay, operates a magnetic switch. The thermostat and the switch, with cover removed, are shown in the accompanying halftone.



MERCURY THERMOSTAT AND MAGNETIC SWITCH, WITH COVER REMOVED, FOR ELECTRIC HEATER CONTROL

The conclusions that were reached by the investigators who reported on the device for the Underwriters' Laboratories are as follows:

"1. *Construction.* The parts of this system are of rugged construction, and are judged to be so designed as to be properly safeguarded for use in automatically controlling the temperature in street cars. The design provides for the use of standard materials and the inclosure in metal of the controlling operating parts throughout.

"2. *Operation.* The circuit breaker is capable of carrying and breaking successfully and without undue hazard, current of the value for which it is rated. This conclusion is based upon the result of an operating test quoted in this report."

This new control is now operating successfully on more than 2000 cars, which is evidence of the indorsement by railroad officials of the manufacturer's claim that the use of the control results in economic use of energy and satisfaction to passengers through the uniformity of car temperature.

According to the annual report of the Victoria (Australia) Railway Commission, the electrification of the Melbourne Suburban Railways has been considerably retarded by the abnormal conditions created by the war. In some instances the workshops of contractors for supply of machinery and equipment have been requisitioned by the Imperial Government for the production of war munitions, and although every effort has been and will continue to be made to expedite the undertaking, the vital needs of the empire are paramount and everything must therefore be subordinated thereto. It is not possible at this time, because of the prevailing conditions as mentioned above to forecast the probable date of the introduction of electric traction.

NEWS OF ELECTRIC RAILWAYS

READING TRAFFIC REPORT PRESENTED

**John P. Fox Makes Suggestions for Improvements—
Company States Its Case**

The report on the transit conditions in Reading, Pa., made by John P. Fox, transportation expert of the City Club, New York, at the request of the Chamber of Commerce, has recently been made public. The report states that the track as a whole is in good condition, although the amount spent for maintenance last year, 5.72 per cent of the operating revenue, is low. He recommends the introduction of double tracks on several streets, and believes that the company should not be obliged to install such expensive paving as required by the city. A waiting room for suburban passengers should be erected on Penn Square, or else raised platforms in the street, as in Newark and San Francisco. A new carhouse should be erected promptly, not only because the present one is not modern or fireproof, but because it is dark and cars cannot properly be cleaned in it. The track outside the carhouse should be put in good condition. Twenty-five new cars are needed, as the present rush-hour schedule allows for only one car in the shops and many of the present cars are old. Near-side cars are recommended with possible consideration of trailers. Better lighting and larger destination signs are needed. When the cars are overhauled the ceilings should be painted white. A trolley freight service should be installed on some of the interurban lines. The company's traffic has been unfairly affected by jitneys, and some regulation of the jitneys should be adopted. The management has shown efficiency in operation, and the damage cost has been low. A telephone dispatching system for city service is worth consideration. Records of car loading show little overcrowding. According to the report, "where the number of passengers on a car is 125 per cent of the seats, the overcrowding is moderate; 150 per cent is all that a car really ought to carry, and is the maximum set by some companies; 175 per cent is uncomfortably overcrowded, and anything over 200 per cent is excessively overcrowded." An improvement in speed can be made by omitting the half square stops, and making stops 540 ft. apart. The city can well afford to be more liberal in granting permission for short extensions, in view of the fact that the main franchises are perpetual. On this point the report says:

"If the Reading Traction management to-day were corrupt or incompetent, if the service were poor and the cars badly overcrowded, there might be some reason for the city to hold up all applications for new privileges until the company was willing to change its policy, or methods or its service. But the company has been for the last two years well managed by an executive noted for a broad public policy, who has given the best possible service with old equipment and done more for the public than any previous official.

"Where a traction monopoly is a good one and asks for privileges which will be of real public benefit, and where no serious principle is involved, the city can do no harm in granting new rights on the same conditions as have prevailed in the past. The company, on the other hand, should realize that times have changed, that franchises cannot be given away freely and for nothing as in the past, and that city officials are more or less bound to stand up for the new principles of making grants. If both parties will then come together, with a willingness on the part of each to waive something, there should be no reason why an agreement could not be quickly reached."

From reports filed with the Public Service Commission for the year ending June 20, 1915, Mr. Fox finds the following figures, based on the operating revenues: operating expenses 59.8 per cent; net revenue, 40.2 per cent; taxes assignable to railway operations, 3.1 per cent; operating income, 37.1 per cent; non-operating income, 14.7 per cent; gross income, 51.8 per cent; deductions from gross income, 47.3 per cent; income balance 4.5 per cent. Of the deduc-

tions from gross income the rent for leased roads amounted to 42.7 per cent. The charges against maintenance of way and structures and of equipment, totaling 11.8 per cent, he considered low, and the power cost, 20.6 per cent, both of operating revenues, high. For the latter an improved return circuit and coaster clocks or some similar device are recommended. The report estimates the cost of the road and equipment up to Nov. 1, 1915, as \$5,203,200, which is \$3.59 for every \$1 of income. In conclusion, he recommends the gradual improvement and extension of the property by the owners, with co-operation and patience on the part of the public.

The Reading Transit & Light Company, which controls the lines in Reading, has issued a statement in regard to the report in part as follows:

"The report is so extensive and exceedingly comprehensive in most respects that it has been impossible to do anything but read it through hurriedly. In general it seems to be very fair, as most of the points of criticism are covered by an explanation of what the transit company has done or is doing to improve the conditions. A great many improvements have been carried out since Mr. Fox was here and the company has many plans in mind for future improvements which will benefit the service.

"The report calls attention to the improvement which is being made in the upkeep of the cars and new efforts that are being made to have the cars properly cleaned. Considerable has been accomplished since Mr. Fox's visit in the way of bettering the condition of the cars and service, and the company is anxious that the public should assist in every way possible to keep the cars clean.

"The report points out that fifteen additional cars are necessary and twenty-five will be desirable. Since Mr. Fox's visit twelve cars have been added to the system and three more are expected to be delivered during March. The company has plans for increasing the car equipment continuously to meet the requirements of the traffic.

"Additional lighting is being installed and an entirely new system of illuminated destination signs will be placed on the cars within a very short time.

"The company's shops have been rearranged recently and made more efficient in every way, the aim being to concentrate all the car work at one place where it can be better supervised. New trolley express service has been inaugurated.

"It is to be regretted that the financial matters could not have been given as much thought and consideration by Mr. Fox as the physical conditions of the property. Mr. Fox's study, as he stated in his letter of transmittal, was 'necessarily limited in its scope,' which did not enable him to become thoroughly familiar with the financial situation of the Reading properties and has led to many erroneous conclusions. This is evident from the contradictory points of view presented in the report, in which in one instance it is made to appear that the company is operating at a deficit and is not able financially to stand upon its own feet, as compared with the inference in another part of the report that the company is obtaining an abnormal return from operations on the value of its property. This is evidently due to his having taken the value of the railway property only on the one hand, and the revenue from the railway property and the electric property combined on the other hand. This has resulted in showing a return of twice as much as it actually is.

"The company appreciates the attitude taken by the Chamber of Commerce in presenting the traction situation to the public, as the general intention apparently has been to treat it fairly by following out a constructive rather than a destructive policy. With this same attitude on the part of the public in general, the public and the transit company will be of benefit to each other and their efforts united to produce the best results for the growth and prosperity of the community."

LEGISLATIVE INQUIRY SCENE SHIFTED TO ALBANY

On Saturday, March 4, on which day the Thompson legislative investigating committee adjourned its hearings until Thursday, March 9, the scene of activity was shifted to Albany. There on March 6 the Assembly passed the joint resolution extending the time for the investigation of the Public Service Commissions by the committee until July 1 and giving the committee until Jan. 10, 1917, to make its final report to the Legislature. The resolution was passed on Feb. 29 by the Senate. The vote was unanimous.

On March 7 the matter of confirmation of the nominations of Travis H. Whitney and Charles S. Hervey by Governor Whitman for appointment to the first district commission came up. Senator Thompson, chairman of the committee which has been investigating the Public Service Commission, told the Senate finance committee that there existed in the Public Service Commission for the First District an "inside machine, or system," of which Mr. Whitney was the head and front and through which the corporations had been enabled to dominate the commission. Senator Thompson named as other cogs in this machine Le Roy T. Harkness, assistant counsel, and D. L. Turner, one of the principal engineers in the service of the commission. The confirmation of Mr. Hervey was also opposed. The Senate finance committee was to have considered the nominations in executive committee on March 8, but the meeting was put over for a week. Senator Thompson said that he would urge the appointment of a subcommittee to call on Governor Whitman and ask him to withdraw the nominations. The Governor said that he believed as firmly as ever that Mr. Whitney was the right man for the place. Oscar S. Straus, present chairman of the Public Service Commission, on March 8 denied the charges of Senator Thompson that Travis H. Whitney, Leroy T. Harkness and D. L. Turner forced their opinions on the commissioners. Chairman Straus declared that if he were to be deprived of the services of the men named he should refuse to continue in office. He said:

"I would regard it as a calamity if the commission should lose the benefit of the ability and devotion to duty of these assistants. I accepted most reluctantly the appointment of the Governor to the chairmanship of the commission, but it came to me as an urgent call to render a public service and to aid in rehabilitating the commission in public confidence. I have given to it the best abilities that I possess, and if I am to be deprived of the services of the men named I should certainly refuse to continue in office."

John C. Wilson, characterized previously by H. M. Fisher, secretary of the Interborough Rapid Transit Company, as a chronic kicker, has announced that he proposes to sue for the restitution of certain sums which he thinks were paid out illegally.

VOTE ON \$6,000,000 OF BONDS IN CINCINNATI ON APRIL 25

On March 3 the Rapid Transit Commission of Cincinnati, Ohio, adopted a resolution requesting the Council to submit to the voters a bond issue of \$6,000,000 for the construction of the rapid transit belt line. Nothing was said regarding the date of the election, but it has already been decided to hold it in connection with the Presidential preferential primaries on April 25.

The Interurban Railway & Terminal Company has submitted two plans for the joint entrance of its line and that of the Cincinnati, Georgetown & Portsmouth Railway. It has also submitted a plan for the entrance of the "Rapid" division, which passes through Norwood.

The Cincinnati, Milford & Loveland Traction Company has reported that the only feasible route for its connection with the belt line is through Ault Park, and that if the park commission refuses to sanction this plan it will retain its present terminal at Madisonville.

The Cincinnati & Columbus Traction Company has informed the commission that no definite assurance can be given at present as to what will be done by the company.

Chief Engineer Krug has completed the details of the various stations for the belt line. The main station will be under the canal boulevard between Vine and Elm Streets. A freight terminal will be located on the site of the old city hospital.

APPEAL TO CALIFORNIA COMMISSION

Jitneys, Antique Franchises and Inequitable Taxation Cause Excessive Burdens—The Commission's Reply

Nineteen electric railways, comprising the principal city systems in California, have sent a communication to the Railroad Commission describing the deplorable financial condition of the properties and petitioning for relief. The three principal problems for which a solution is required are enumerated as follows:

First, and probably of most immediate importance to street railways generally, is the question of auto-bus competition, now either wholly unregulated or where regulated, by means which are unsound from an economic standpoint and most unsatisfactory to the public, to the railways and to the auto-bus operators.

Second, the advisability from all viewpoints of substituting for the present obsolete and burdensome form of franchise a modern form under which the companies may, with safety, finance extensions and make reasonable improvements in service where the public interest requires.

Third, the method of taxation applicable to street railways, which imposes burdens upon that class of utilities not borne by utilities generally, and which, by reason of considerations at present controlling the revenue of street railways, is more onerous on that class than would be similar methods applied to others.

While the railways realize that a suit is now pending in the Supreme Court to determine the commission's jurisdiction on the jitney-bus situation, it is admitted that more jurisdiction than now obtains can be conferred by the legislature, and the railways believe that a report from the commission, based on a careful investigation of the subject, will be received by the people and the legislature as authentic and would form a basis for the enactment of necessary laws. Under the present plan extensions of lines and improvements in service have practically ceased, and many companies are operating at an actual loss. It is believed that these losses aggregate \$2,500,000 and that the loss to the State alone from the gross earnings tax payable by the companies amounts to at least \$130,000. While some cities have "solved" the problem by a purported exercise of the police law, the means used are of such doubtful legality in some cases as to be the source of threatened and actual litigation, and they do not reach the fundamental principles involved.

In regard to franchises, the companies think the present form is archaic. It imposes unnecessary burdens upon the street railways and yields no substantial benefit to the public. One trouble is their limited term. Toward the end of a franchise there is no inducement to a company to extend its lines or make improvements in service. But if the franchises were indeterminate and contained adequate and equitable provision for the acquisition of the system by the city, bonds could be sold for extensions and betterments, and the system would be maintained at approximately 100 per cent efficiency.

Finally, there are gross inequalities as regards taxation between the steam railroads and the street railways, and while the problem of taxation is being studied by other departments of the State government, the commission should have the facts brought before it. Among the most burdensome requirements is that for paving at a cost far in excess of anything contemplated when the original franchises were accepted. It is believed that the cost solely for laying and maintaining the pavements represent from 4 per cent to 10 per cent of the gross receipts in the companies. In this connection the communication refers to the passage of an act by the Massachusetts legislature in 1898, relieving the railways of paving obligations imposed upon them by their franchises, an act which was subsequently upheld by the Supreme Judicial Court of Massachusetts.

In conclusion, the railways suggest a study of all of these subjects by a committee including in its membership, if possible, a commissioner and such of the commission's experts as are specially qualified for the undertaking. The communication is signed by G. H. Weeks, Charles N. Black, C. P. Cutten and W. A. Sutherland.

Replying to the committee, Max Thelen, president of the commission, said that the street railway question was a difficult one, complicated by the fact that the local authorities

as well as the utilities and the commission are all interested. The commission intends to continue its jitney-bus investigation, but in the matter of taxation, Mr. Thelen pointed out that the commission has no jurisdiction and suggested that the matter be taken up with the State tax commission. He added that the commission would probably enter upon a study of the franchise question for its own information and would be glad to have any data or views which the companies could supply.

PHILADELPHIA TRANSIT PLANS MODIFIED

W. S. Twining, director of transit of the city of Philadelphia, has made public the revised plans of rapid transit work decided upon by the new city administration. These modify the original plans made by A. Merritt Taylor, Mr. Twining's predecessor.

The plan now calls for a subway from Erie Avenue on the north to Spruce Street on the south, along Broad Street, and not from Olney Avenue to League Island, as originally laid out. There will be only a four-track system from Erie Avenue to Ridge Avenue, and only two tracks from Ridge Avenue to Spruce Street, south on Broad Street. Mr. Taylor had planned a four-track line from Olney Avenue to Arch Street and then the same number of tracks diagonally under the westerly foundations of City Hall and down to Spruce Street. Now only two tracks will run under City Hall and beneath only a small section of the southwest corners of the foundation walls.

The much-discussed delivery loop will really be no loop for the present. It will run in two tracks south on Ridge Avenue from Broad Street to Eighth and Market, thence south to Walnut and west to Sixteenth Street. At the latter point it will dead-end for the present and trains will be switched back from there, as they will do at both the northerly and southerly terminus of the Broad Street line. The loop and the Broad Street line will not be connecting save from Ridge Avenue north and by a different level at Broad and Walnut Streets. The ends of the lines, which are independent and not essentially co-operative under the new plan, are designated by Director Twining as stubs until the city is financially able to push the work further. This means that the connection for the Parkway extension and the Roxborough elevated is a matter for the future. The Frankford elevated will run only to Bridge Street in that section. League Island will have to wait as will the section north of Erie Avenue and the Darby and Woodland Avenue lines.

The Keystone State Construction Company, which was awarded the contract for the work around City Hall and had made considerable progress until work was ordered stopped a few days ago, will be retained, but with the department of city transit having supervision over its allowance. The company will have to do under the new plan only a small part of the work which was originally contracted for at \$1,700,000.

WILKES-BARRE STRIKERS ASK \$90,000 DAMAGES

Denying all averments of the Wilkes-Barre (Pa.) Railway as to acts of lawlessness, the employees of the company who are on strike have filed an answer to the injunction suit and demand \$90,000 for loss of wages, claiming the company refused to continue its agreement to arbitrate the wage question. The strikers contend that they did not violate the agreement concerning arbitration and say that they were prepared to negotiate a contract when the company refused to confer further with the committee representing the strikers.

The company has demanded damages of \$200,000 from the strikers, alleging violation of contract, but the strikers answer that the company has suffered no loss through any act of the men. The men also claim that it was understood at the time arbitrators were named that a flat rate wage and not a sliding scale was to be fixed. It is claimed that the men protested at once, and that they received their pay under the award of the arbitration board under protest. The strikers answer that the arbitration board has not completed its duties and that the award that was filed has been rescinded by an act of a majority of the board.

PENNSYLVANIA REPORT REFERS BRIEFLY TO ELECTRIFICATION

The pamphlet report of the Pennsylvania Railroad for the year ended Dec. 31, 1915, contains the following paragraphs dealing with electrification:

"The electrification of the main line suburban zone from Broad Street Station to Paoli, explained in previous reports, was completed, and the operation of multiple-unit electric trains was inaugurated on Sept. 4, 1915.

"The proposed electrification of the main line across the Allegheny Mountains, between Altoona on the eastern slope and Conemaugh on the western slope, referred to in previous reports, received further consideration. Electric traction would facilitate the heavy traffic movement on this difficult section of your main line and effect a saving in operating expenses, but the company prefers to obtain the benefit of the experience of other lines in the use of electric traction for heavy freight trains, and to see a further expansion of its own revenues before procuring the new capital required for this important project."

60 IN. OF SNOW IN VANCOUVER IN TWO MONTHS

Record Snowfall in Coast Cities—British Columbia Electric Railway Abandons Eight-for-a-Quarter Tickets

The severe weather conditions experienced recently at Vancouver, B. C., are believed to be without precedent in the annals of the coast cities of British Columbia. The records of the meteorological office date back to fifty-five years, but they do not disclose conditions similar to those which prevailed during January and February of this year. The recorded snowfall in the city of Victoria during the months mentioned was 76.6 in. and in the city of Vancouver about 60 in. During the first week in February about 33.6 in. of snow fell in Vancouver, while during the month of January 26.4 in. fell.

Notwithstanding these severe conditions the British Columbia Electric Railway, Ltd., maintained city and interurban service on the mainland practically without interruption. The company was not so fortunate, however, in Victoria, where the service was tied up for two days. This was due primarily to the breaking of one of the transmission lines under the heavy snowfall. It resulted in a service interruption of one hour. During this space of time the snowfall was exceedingly heavy and on the resumption of the power supply the cars were completely snowed in. The company has been congratulated by the civic and municipal authorities, boards of trade and other public bodies for its efforts to contend successfully with the unprecedented conditions.

A number of jitneys resumed operation immediately on the disappearance of the snow, but not to the same extent as in 1915. On Jan. 1, when the municipal and provincial licenses became due, 190 jitneys took out licenses and furnished the necessary bonds in the city of Vancouver. Since that date, however, sixty of these licenses have been cancelled because of the failure of the applicants to meet the payment due in respect of indemnity bonds. This number compares with 670 jitney bonds filed in 1915.

As stated in the *ELECTRIC RAILWAY JOURNAL* of May 15, 1915, page 959, the company introduced a system of cheap tickets on May 10 of last year, selling eight for 25 cents without transfer privilege. This was advertised by the company as an experiment until Dec. 31, 1915. This radical cheapening of fares increased largely the number of passengers carried on the cars in the cities of Vancouver and Victoria without, however, any compensating increase in revenue. The sale of this class of ticket was discontinued at the close of the year and six tickets for 25 cents with transfer privilege were substituted therefor. This change has been favorably received by the traveling public and up to Feb. 25 the number of passengers carried on the cars was considerably in excess of the number carried during the same period in 1915, notwithstanding the fact that there has been no increase in the population. This indicates that the company is now carrying many persons who previously patronized the jitneys.

The company operates 169 miles of city railway and 181 miles of interurban railway.

CONFERENCES ARRANGED ON DALLAS FRANCHISES

Conferences have been arranged between the City Commissioners of Dallas, Tex., and the representatives of Stone & Webster at which the differences with respect to the proposed franchises of the street railway and the lighting properties will be considered. Meanwhile the summary sheets of the report of E. W. Bemis, referred to in the *ELECTRIC RAILWAY JOURNAL* of Feb. 26, page 417, are being received in Dallas. The itemized report is expected to follow shortly. In order that the voters may acquaint themselves thoroughly with every proposition before voting on April 4 the book containing copies of all proposed charter amendments to be voted upon at the coming city election and of the franchise ordinances which the city proposes to pass for the regulation of street railway and lighting companies will be published at once by the city and a copy mailed to every voter.

SINGLE-PHASE FOR NEW YORK CONNECTING RAILWAY

It is understood that the committee of engineers to which was referred the question of the type of electrical equipment to be used on the New York Connecting Railway has reported in favor of the single-phase system for the entire line. The route extends from Port Morris, north of the Harlem River, over a bridge to Long Island, extending southward to Bay Ridge, a total distance of about 20 miles. However, from Fresh Pond Junction to Bay Ridge the tracks of the Long Island Railroad will be used, thus making only 8 miles of new route construction. The road will be double-tracked for its entire length and there will be about 10 miles of yard trackage at Bay Ridge, where there are located unloading piers for the car floats, which transfer freight from the Pennsylvania lines on the Jersey shore. Including this yard the track mileage to be electrified will amount to approximately 50 miles. The route will be used for both freight and passenger service, the passenger trains running over a connection to the Long Island tracks at Astoria and from there through the tunnel under the East River to the Pennsylvania Railroad station on Manhattan Island. The lines will be placed in operation some time between the months of January and April, 1917.

EMPLOYEES SCHOOL AT BRADFORD ATTENDED BY WOMEN

The latest addition to the municipal institutions of Bradford, England, is the tramway school. It has been established only a short time, and it was intended primarily to enable men to be taught the duties of trainmen of the city tramcars. Twenty young women have now entered the service of the tramway department as potential conductors, and they are learning the theoretical part of their work in the tramway school. The decision to employ women on the Bradford trams was arrived at reluctantly by the tramways committee, but war conditions made this the only course possible to enable the service to be maintained. Everything is being done to make as agreeable as possible for the women a type of work which the committee has so reluctantly engaged them to undertake. Though their hours of duty will be practically the same as those of the men, the women will have double the customary time for meals. Special arrangements have been made to provide them with separate accommodation for meals and rest, and they will be under the control of a woman superintendent. Their rate of pay will be the same as that of the men, and they will be provided with suitable uniforms. The schoolroom embodies a peculiar combination of the customary features of a classroom and those which tramway work demands. There is a blackboard, and several rows of desks are ranged down one side of the room, but the other side is occupied by a skeleton tramcar. The women students in the school are only partially concerned with matters relating to the operation of the car. Their teaching chiefly centers around the value of tickets, the rules and regulations of the service, their duties as to stopping places, and the numerous facts which it is possible to impart without actual service on the routes.

The tramways and electric lighting committee of the Liverpool Corporation has decided that, as far as possible, vacancies arising in the electrical department shall be filled by soldiers and sailors discharged through disablement, subject, of course, to suitable qualifications.

ADVISORY COMMISSION FOR TORONTO

Special legislation will have to be secured before a permanent transportation commission can be established in Toronto, Ont., to manage, control, operate and supervise transportation facilities within the city limits. This is the opinion expressed by City Solicitor Johnston in a report made to the Board of Control. It was possible such a commission might be created following a favorable vote of the people, but even then legislation would have to be obtained for the transfer of the statutory powers now vested in the city engineer to the new body. The City Council, however, had the power to appoint an advisory commission, but any action that might be necessary to give effect to recommendations made by such a body would have to be authorized by the Council.

DECISION IN TACOMA CASE

The United States Circuit Court of Appeals at San Francisco, Cal., has affirmed the decision of the District Court of Washington in the case of the Old Colony Trust Company against the city of Tacoma. The lower court decided the municipality had a constitutional right to nullify a franchise that had been given to the Tacoma Railway & Power Company. The Old Colony Trust Company was trustee for the bondholders of the power company. In 1905 a franchise for twenty-five years was granted to the power company to sell electricity for heating and power purposes. The privilege of selling power for lighting was not given. In 1913 the Tacoma Railway & Power Company, according to the municipality, entered into a contract with the Northern Pacific Railway to supply light. When the power company refused to rescind the contract, the Tacoma City Council ordered the franchise revoked on the ground that its provisions had not been observed. The Old Colony Trust Company appealed.

"AMERICA'S ELECTRICAL WEEK"

This name has been selected by the campaign executive committee of the Society for Electrical Development as the official name for the great electrical celebration, Dec. 2 to 9, 1916. A start has already been made on the nation-wide campaign which from every indication will surpass even the wonderful results accomplished by the 1915 "electrical prosperity week." The campaign executive committee has eleven members and there is also an advisory committee of twenty-six, representing the jobbers, central stations, manufacturers, contractors and the electrical industry at large. The campaign will again be conducted under the auspices of the Society for Electrical Development, which so competently handled the big affair last year.

City Rejects Company's Lighting Proposal.—The city of Fort Wayne, Ind., has rejected the proposal made by the Fort Wayne & Northern Indiana Traction Company to take over the lighting of the city under a contract which the company estimated would save the city more than \$300,000 in ten years.

Conference on Pittsburgh Subways.—The City Council of Pittsburgh, Pa., sitting as the committee on public service and surveys, has decided to take up the question of the construction of a subway and has adopted a motion asking Attorney A. O. Fording of the Pittsburgh Subway Company and Attorney A. E. Anderson of the Pittsburgh District Railways to confer with members.

Railway Man Reported Accused.—A press cable to the United States from Manila, dated March 4, stated that Percy Farrant, auditor of the Manila Electric Railroad & Light Company, had been arrested. It is said he is charged with embezzlement of funds amounting to \$50,000 extending over a period of seven years. Mr. Farrant has been connected with the company in Manila since it began operations in 1905.

\$345,000 Requested for Power Improvements in Cleveland.—Fielder Sanders, street railway commissioner, has been petitioned by the Cleveland (Ohio) Railway for permission to spend \$345,000 in the improvement of the Cedar Avenue power station, the equipment of which has become obsolete. The company states that \$95,000 will be taken from the maintenance fund and \$250,000 would be classified as cap-

ital. Commissioner Sanders is making an investigation to determine whether it will be cheaper to make the improvement or purchase power. He is said to favor the submission of bids for power in order to determine the question.

Widening of Broadway Devil Strip Suggested.—The Public Service Commission for the First District of New York on the recommendation of Clifton W. Wilder, its electrical engineer, has called the attention of Borough President Marks and the Board of Estimate to the necessity of widening the strip between the car tracks, especially in Broadway. At present there is a stretch of 13,120 ft. of track along Broadway in the section where the permanent roadway had not been restored since the new subways were constructed, and Mr. Wilder said that gave an excellent opportunity for the alteration of the present lines.

New Wage Scale on Cleveland Suburban Line.—The Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, has reached an agreement with its employees which provides that for the first three months of the first year new men work their compensation shall be fixed by the company, probably 22 cents an hour. For the remainder of the year the wages are to be 28 cents. The second year the men are to receive 30 cents and the third year and thereafter, 32 cents. The old scale began with 22 cents for the first year and increased 2 cents each year to 30 cents. The new scale will go into effect on April 1.

Newport Franchise Negotiations Apparently Fail.—Negotiations between the South Covington & Cincinnati Street Railway and the Commissioners of Newport, Ky., relative to the renewal of its franchise were broken off on March 2. Mayor Livingston and one of the commissioners favored a continuation of negotiations in the belief that an agreement could finally be reached, but the other commissioners overruled them. The commissioners demanded a rental of \$10,000 a year for the use of the streets. The company offered \$3,000. It is said that the city will now seek through the courts to collect \$1,000 a month rental for the use of the streets.

Interurban Roads Must Pay Excise Tax.—In the case of the State of Ohio against the Cincinnati, Milford & Loveland Traction Company, the Ohio Supreme Court handed down a decision on Feb. 28 to the effect that interurban companies must pay the excise tax on the portion of fares paid to street railways for the use of their tracks, the same as on other passenger income. Suit was brought against the company for the recovery of \$237 tax on money paid to the Cincinnati Traction Company for the use of its tracks. The interurban railway paid the city company 3 cents of each fare collected within the city, and contended that this should not be included in its gross receipts, because it did not receive the benefit from it. The lower courts had held for the State.

Doherty Men Discuss One-Man Cars and Package Freight.—A consultation of the traction heads of the Doherty organization was held recently in New York. In attendance were F. R. Coates, president of the Toledo Railways & Light Company; J. H. Van Brunt, vice-president of the St. Joseph Railway, Light, Heat & Power Company; A. B. Paterson, general manager of the Meridian Light & Railway Company; R. L. Lindsey, general manager of the Durham Traction Company; B. Waller Duncan, general manager of the Cumberland & Westernport Electric Railway Company; R. F. Carbutt, railway engineer, and W. W. Lowe. One-man operation, the development of package freight business, a central bureau for Doherty advertising and other matters were discussed.

Million Dollar Terminal for Coney Island.—The Public Service Commission for the First District of New York has authorized the New York Municipal Railway Corporation (Brooklyn Rapid Transit System) to award the contract for the construction of the Coney Island terminal to the Lord Construction Company, the lowest bidder, for \$1,279,274. The company is to furnish the materials and the contractor to do the work of erecting and installing, including track-laying, station finish, etc. The contract, which has already been approved by the commission, provides for the construction of the terminal, including concrete pile foundations and the erection of an elevated structure thereon, the construction of four elevated stations, including

trainmen's quarters in Stillwell Avenue and Brighton Beach stations, interlocking towers, etc., and the maintenance of existing operating facilities during construction.

Extension in New York Elevated Signal Order.—The Public Service Commission for the First District of New York has granted to the Interborough Rapid Transit Company an extension from March 1 to March 20 of the time within which to indicate its acceptance of an order to install an experimental system of signals on its elevated railroad lines. On April 27 of last year the commission adopted an order for an experimental system which was to be "capable of preventing collisions and so designed as to permit the operation of the maximum number of trains." The commission finally admitted that there was force in the company's contention that the execution of the order was really impossible since any system which would absolutely prevent collisions must retard service. The resolution has accordingly been modified so as to provide for the installation by Sept. 1 next of one or more experimental systems of signals which will afford protection against collisions and at the same time reduce the capacity of the lines as little as possible, and the company is to report thereon by March 1, 1917.

PROGRAMS OF ASSOCIATION MEETINGS

New York Railroad Club

The annual electrical night of the New York Railroad Club will be held at the Engineering Societies Building, 29 West Thirty-ninth Street, New York, on the evening of March 17. A paper will be read at the meeting by George Gibbs of Gibbs & Hill, New York, on the report of the committee on smoke abatement and railway terminal electrification, which was abstracted in the *ELECTRIC RAILWAY JOURNAL* for Dec. 4 and Dec. 11, 1915. A number of prominent engineers are expected to discuss the paper.

Wisconsin Electrical Association

The Wisconsin Electrical Association's annual convention will be held in the club room of the Hotel Pfister, Milwaukee, Wis., on March 16 and 17. On March 16 there will be a joint session with the Wisconsin Gas Association. The following is a list of subjects on which papers will be presented:

"Attitude of the Wisconsin Railroad Commission on Security Issues," by Harold L. Geisse, secretary of the Railroad Commission of Wisconsin.

"A Review of State Legislation During the Past Session," by John B. Sanborn of Sanborn & Blake, Madison, Wis.

"Methods of Taxation of Public Service Companies in Wisconsin and Why Taxes Have Been Increasing Annually," by T. E. Lyons of the Wisconsin Tax Commission.

"Outdoor Substations," by H. W. Young, president of the Delta Star Electric Company, Chicago.

"Rates for Residence Electric Service," by A. C. Babson, manager of the Wisconsin Gas & Electric Company, Watertown.

"Street Lighting Rates and Contracts," by G. W. Van Derzee, assistant to the vice-president of The Milwaukee Electric Railway & Light Company.

"Two Years' Experience With One-Man Car Operation," by R. M. Howard, general manager of the Wisconsin Railway, Light & Power Company, Winona, Minn.

"The Telephone Company and the Electric Utility," by S. O. Seymour, general manager of the Wisconsin Telephone Company, Milwaukee.

S. B. Way, vice-president and general manager of The Milwaukee Electric Railway & Light Company, in conjunction with the Wisconsin Electrical Association's committee on overhead distribution, will discuss the subject "The National Electrical Safety Code."

Another subject scheduled for discussion is "Automatic Current Limiting Circuit Breaking for the Protection of Railway Feeders and Rotary Convertors."

The entertainment feature will be a banquet in the fern room of the Hotel Pfister at 7 p. m., on March 16. Speakers of national reputation, among them Lou J. Beauchamp, famous Chautauqua lecturer, will be present.

Financial and Corporate

I. C. C. ISSUES ACCOUNTING ANSWERS

Another Series of Questions and Tentative Answers Under the Uniform System of Accounts Prescribed by Commission for Electric Railways

Another series of tentative answers to questions raised in connection with the uniform system of accounts prescribed by the Interstate Commerce Commission for electric railways has just been released by the commission. As these answers have not received the formal approval of the commission, however, it should be understood that the decisions do not represent its final conclusions and that they are subject to such revision as may be thought proper before final promulgation in the accounting bulletins of the commission. The questions raised and the answers made to them follow:

Q. To what account should be charged an attorney's fee in connection with a suit to annul an electric light franchise?

A. To operating expense account No. 86, "Law Expenses," unless the lighting business is accounted for as an auxiliary operation, in which case the expense should be charged to income account No. 214, "Auxiliary Operations—Expenses."

Q. A company was required under the terms of its franchise to do extensive grading in connection with the initial construction of tracks. No distinction was made as between the amount of grading which would have been necessary to construct an electric railway and the amount of grading done in excess thereof in order to comply with the city's requirements. Will it be proper to charge the entire cost of such grading to road and equipment account No. 504, "Grading"?

A. The entire cost of grading a street in connection with the initial construction of the track should be included in road and equipment account No. 504, "Grading."

Q. A company owning certain ocean front lots, the cost of which is included in road and equipment account No. 503, has found it necessary to construct a sea wall to prevent the land from being washed away. To what account should the cost of the wall be charged?

A. To account No. 503, "Other Land Used in Electric Railway Operations."

Q. To what account should be charged an assessment against a street railway for its share of the cost of elimination of a grade crossing, resulting in the elevation of a steam road crossing over that of the electric railway?

A. To road and equipment account No. 516, "Crossings, Fences and Signs."

Q. To what account should be charged an electric railway's proportion of the cost of building a city street over the electric railway's right-of-way?

A. To road and equipment account No. 516, "Crossings, Fences and Signs."

Q. Occasionally a company sells material from stores and a small percentage is added to cover the expense of handling, etc. To what account should the added percentage be credited?

A. As the added percentage represents principally cost of handling, it should be credited to operating expense account No. 95, "Store Expenses."

Q. Under the terms of a mortgage a company is required to keep the proceeds of certain bonds in a fund to be used only in payment for newly acquired property. Under what balance sheet account should the amount of this fund be entered?

A. If such funds are held by trustees or have been specially deposited, the amount thereof should be included in balance sheet account No. 408, "Special Deposits."

Q. A number of years ago a company sold bonds at par. These bonds are now due and refunding mortgage bonds, due twenty-five years hence, are being issued at 90. Is it

permissible to amortize the 10 per cent discount on the refunding mortgage bonds throughout the twenty-five years?

A. Either the 10 per cent discount on the refunding mortgage bonds should be amortized over the life of such bonds by uniform monthly charges to income account No. 222, "Amortization of Discount," or the option may be exercised of charging all or any portion of the discount remaining at any time unextinguished to profit and loss account No. 313, "Debt Discount Extinguished Through Surplus."

Q. In what balance sheet account should interest paid in advance on notes payable be included?

A. In account No. 420, "Other Unadjusted Debits."

Q. Under the sinking fund provisions of a mortgage a company is required to set aside annually from surplus, and pay to trustees, specified sums for the purpose of retiring the bonds issued under the mortgage. (a) What is the correct accounting for the amounts thus set aside? (b) How should bonds issued or assumed by the accounting company and purchased by the trustees of the sinking fund be accounted for?

A. (a) The specified sums set aside annually from surplus for sinking fund purposes should be charged to profit and loss account No. 309, "Appropriations of Surplus to Sinking Fund and Other Reserves," and credited to balance sheet account No. 449, "Sinking Fund Reserves." When the sums set aside are paid to the trustees of the sinking fund, balance sheet account No. 402, "Sinking Funds," should be charged and account No. 407, "Cash," credited. (b) If the trustees purchase bonds issued or assumed by the accounting company at a discount, the amount of discount realized should be charged to account No. 402, "Sinking Funds," and concurrently credited to account No. 306, "Miscellaneous Credits." If the bonds are purchased at a premium, the amount of the premium paid should be credited to account No. 402, "Sinking Funds," and concurrently charged to profit and loss account No. 317, "Miscellaneous Debits." When the reacquired bonds are canceled, account No. 402, "Sinking Funds," should be credited and account No. 427, "Funded Debt Unmatured," charged with the par value of the bonds. Concurrently, account No. 449, "Sinking Fund Reserves," should be charged and account No. 448, "Funded Debt Retired Through Surplus," credited with the amount of surplus expended in the discharge of the principal (less the discount, if any, suffered at the time of sale) of the bonds. (See case 312 and note B of account No. 448, "Funded Debt Retired Through Surplus.")

Q. (a) To what account should be charged the cost of labor for changing advertising cards in cars? (b) To what account should be credited the revenue received for the privilege of placing these cards in cars?

A. (a) To operating expense account No. 78, "Other Transportation Expenses," unless the employees performing such work are also engaged in other duties, and the amount involved in connection with changing or caring for the cards is small and not readily ascertainable, in which case there is no objection to including such expense in the account to which such employees' wages are ordinarily charged. (b) To operating revenue account No. 110, "Station and Car Privileges."

Q. (a) To what account should be charged the cost of labor for removing ballast, ties, rails, rail fastenings and joints, and special work in connection with the renewal of such items? (b) To what account should be charged the cost of labor for removing foundations for elevated structures, bridges, trestles and culverts, general office buildings, shops and carhouses in connection with their renewal?

A. (a) To operating expense account No. 8, "Track and Roadway Labor." (b) To the operating expense accounts to which is chargeable the cost of repairs of the structures.

Q. To what account should be charged commissions allowed trustees, acting under a sinking fund provision of a mortgage, for redeeming bonds?

A. These items should be charged to income account No. 225, "Miscellaneous Debits."

ANNUAL REPORTS

British Columbia Electric Railway, Ltd.

The statement of income, profit and loss of the British Columbia Electric Railway, Ltd., Vancouver, B. C., for the year ended June 30, 1915, follows:

Income	£369,656
Registration fees, etc.	236
Total	£369,892
Renewals maintenance	£167,888
Directors' fees	1,049
Special remuneration to chairman's assistant	1,253
Office rent, salaries, etc.	5,610
Income tax provision	10,000
Trustees fees	877
Capital amortization fund	2,554
Total	£189,231
Balance	£180,661
Balance brought forward from previous year	6,884
Transfers from reserve fund	60,000
Total	£247,545
Interest on debentures and debenture stock	132,879
Balance	£114,666

The number of passengers carried in 1915 was 46,330,096 as compared to 63,429,023 in 1914, a decrease of 17,098,927, or almost 27 per cent, while the income after charging renewals maintenance in the last fiscal year was £201,768 as compared to £410,229 in the preceding year, a decrease of £208,461, or 50.8 per cent. During the year the company paid the usual 5 per cent dividend of £72,000 on its cumulative perpetual preference stock, but on the preferred ordinary stock only 2.5 per cent was paid as compared to 6 per cent for the preceding seven years, while the 8 per cent dividend maintained for seven years on the deferred ordinary stock was in the last year cut to nothing. In order to make the dividend payments that were completed it was necessary to transfer £60,000 from the reserve fund.

Owing to the war, and especially to the resultant paralysis of the shipping trade, commercial depression of the most acute severity prevailed throughout British Columbia during the year, and this depression was responsible for an estimated decrease of 30 per cent in population in the districts served by the company. The spending power of the remaining population was reduced, and a general tendency to economize resulted.

Besides the business depression, the company was forced at the beginning of 1915 to meet the serious difficulty arising from jitney competition. To meet this the company made an experimental reduction of some of its fares, but as the result of this plan proved disappointing, it is now adopting other measures to cope with the situation. In the company's opinion it has been proved that cities of the size of those served by it cannot support a thoroughly efficient and convenient railway service and also an unrestricted jitney service. The present jitney situation in Vancouver and the results of higher fares are described on page 512 of this issue.

The business depression and the jitney competition combined made it impossible for the company, notwithstanding the most rigid economy, to operate its system at a profit. During the year the operating and all other expenses of the company were drastically reduced, but the full effect of this is not apparent in the year's account. On June 30, 1915, the arbitration board reduced the wages of employees by about 8.5 per cent, which will represent a saving of about £22,000 a year. It is estimated that the various economies put into force during the current year, together with the wage decrease, will amount to a reduction in expenditures of nearly £200,000 as compared to the returns for the year ended June 30, 1914, but against this economy there is already during the first four months of the current year a decrease in gross earnings of £124,147.

The expenditures on capital account during the last year by the company and its subsidiaries were £180,528 as compared to £847,422 for the preceding year. Practically the whole of these expenditures were for work authorized and entered into prior to June 30, 1914. The company holds as part of its liquid assets £100,000 of the last war loan. The employees and officers have been contributing 1 per cent of their salaries to a local patriotic fund, these contributions amounting to £2,631 up to Oct. 30, 1915.

London Street Railway

The gross earnings of the London (Ont.) Street Railway for the year ended Dec. 31, 1915, amounted to \$398,856, an increase of \$22,963 over the preceding year's returns. Of this total, passenger traffic accounted for \$393,299, an increase of \$22,383. The total operating expenses amounted to \$275,212, an increase of \$7,311, which arose from increases of \$3,886 in maintenance of way and structures, \$7,512 in transportation expense for car service and \$5,361 in general expenses, and from decreases of \$5,623 in maintenance of equipment and \$3,286 in transportation expenses for power. The net earnings for the last fiscal year amounted to \$123,645, an increase of \$15,651, while the total deductions rose only \$844, so that the net income amounted to \$90,852, an increase of \$14,807.

During the year \$42,189 was expended in construction and equipment. The passengers carried in 1915 totaled 10,801,531, as compared to 10,286,488 for the preceding year, and the car earnings per revenue passenger rose from 3.64 cents to 3.68 cents. Including transfers, the total passengers were 12,566,598, as compared to 11,984,411 in 1914, and the car earnings per passenger increased from 3.09 cents to 3.13 cents. The gross earnings per car-mile increased from 19.69 cents to 20.48 cents, the operating expenses per car-mile from 14.03 cents to 14.14 cents and the net earnings per car-mile from 5.66 cents to 6.35 cents. The gross earnings per mile of track showed an increase from \$10,682 to \$11,334.

RAILWAY MATERIALS SHOW HIGHER COST

Kansas City Railways Testifies to Increased Prices, Slowness of Deliveries and Scarcity of Some Products

That the increasing cost of electric railway supplies is felt by more electric railways than those consulted by the *ELECTRIC RAILWAY JOURNAL* in the preparation of the article on this subject appearing in the issue of March 4, page 471, is evidenced by the opinion of E. E. Stigall, purchasing agent Kansas City (Mo.) Railways, as expressed in the first issue of the Kansas City Railways *Bulletin*, just published. Aside from the high prices prevailing at the present time, says Mr. Stigall, there has been considerable delay in deliveries of material, and in some cases unsatisfactory substitutions owing to the difficulty of obtaining certain raw products.

Steel, copper, lead and tin products are usually understood to be the most important materials necessary for railway construction and maintenance. The present base price on steel bars and shapes is \$2.10 per hundredweight f.o.b. Pittsburgh, Pa., this being an increase of approximately 100 per cent over the price two years ago. Bare copper wire is sold at a base price of approximately 30 cents per pound f.o.b. New York, whereas during the last two years this price was as low as 15 cents per pound. Lead has increased from 4 cents per pound to 6.5 cents per pound. Tin has risen from less than 30 cents to 42 cents per pound, while zinc has gone up from less than 10 cents to 21 cents per pound. Similar increases are found in the cost of rubber, leather, cotton fabrics and lumber.

In regard to materials that are dependent on imports from foreign countries, Mr. Stigall states that it is found to be practically impossible to obtain rattan, high-grade bristle brushes and special grades of steel, which include alloy materials necessary to produce certain characteristics—manganese and tungsten being the principal metals for this purpose. High-speed tool steel, which was formerly purchased for less than \$1 per pound, costs to-day more than \$3 per pound on account of this special treatment.

It is difficult even to obtain materials at the high prices shown, for it is necessary to place orders for delivery from three to six months prior to the date when the material is needed for actual use. It is also difficult to obtain prompt service from the railroads because of weather conditions, unusually heavy shipments, and blockade at the Eastern yards, resulting in a scarcity of cars, on account of lack of sufficient vessels for export shipment. When, as Mr. Stigall says, his company burns daily approximately twenty-five cars of coal at its power plants, and receives each month probably fifty cars loaded with different materials at the store yards, it is evident that slight interruptions in the regular service of the railroads seriously affects the operations of the electric line.

Ardmore (Okla.) Electric Railway.—Payment was not made on Feb. 23 for the Ardmore Electric Railway, sold under foreclosure on Jan. 31. The road will be advertised and resold.

Biddeford & Saco Railroad, Biddeford, Me.—The annual report of the Biddeford & Saco Railroad shows that the railway operating revenues for 1915 were \$68,865 as compared to \$68,932 for the preceding year, a decrease of only \$66. The railway operating expenses, however, amounted to \$51,880 as compared to \$47,572, a decrease of \$4,308, so that the net revenue from railway operation at \$16,985 represented a decrease of \$4,374. The taxes on real and personal property totaled \$2,032, and interest on funded debt, \$6,000.

Chicago & Milwaukee Electric Railroad, Highwood, Ill.—The income statement of the Chicago & Milwaukee Electric Railroad for 1915 shows total operating revenue of \$911,669, as compared to \$958,111 in 1914. The total operating expenses were \$608,826, as compared to \$609,692 the previous year. The net operating revenue was \$302,842, as compared to \$348,419, and the gross income was \$342,507, as compared to \$370,379. Fixed charges, taxes, etc., were \$55,000 and interest on receivers' obligations was \$68,034, making a total of \$123,034, as compared to \$118,160 in 1914. The net income was \$219,473, as compared to \$252,219 for the previous year.

Choctaw Railway & Lighting Company, McAlester, Okla.—Judge Ralph E. Campbell, in the Federal Court at Muskogee, has authorized the sale of the properties of the Choctaw Railway & Lighting Company. The date of the sale is left with the master commissioner, Allen Wright. The sale will be within the next thirty days. The court has authorized receivers' certificates for \$130,000 for immediate improvements.

Des Moines (Iowa) City Railway.—Harris, Forbes & Company, New York, N. Y., and Boston, Mass., and the Harris Trust & Savings Bank, Chicago, Ill., are offering for subscription at 97½ and interest to net about 5.20 per cent \$2,280,000 of Des Moines City Railway general and refunding mortgage 5 per cent twenty-year gold bonds dated Jan. 1, 1916, and due Jan. 1, 1936. The bonds are redeemable on any interest payment date at 105 and interest. The bonds are in coupon form in the denomination of \$500 and \$1,000 with the privilege of registration as to principal only. The Harris Trust & Savings Bank is trustee under the mortgage securing the bonds. The terms of the refinancing of the Des Moines City Railway were referred to at length in the *ELECTRIC RAILWAY JOURNAL* of Feb. 12, page 332. Pursuant to the deed of trust dated Aug. 11, 1891, made by the Des Moines Suburban Railway to secure \$300,000 of 6 per cent first mortgage refunding and improvement bonds the Iowa Loan & Trust Company as trustee has announced that funds have been deposited with the trustee, and that the railway will redeem all the outstanding bonds of the above mentioned issue.

Empire United Railways, Inc., Syracuse, N. Y.—Receivers Hendrick S. Holden and C. Loomis Allen of the Empire United Railways, Inc., have applied to Justice William S. Andrews for permission to purchase the Monroe County Electric Belt Line, a link in the direct line connecting Syracuse with Rochester. Payment of the purchase price is to be made from funds in the hands of the Columbia Trust Company, New York, trustee of the mortgage of the Rochester, Syracuse & Eastern Road, according to present plans. The Monroe County Electric Belt Line owns several miles of track through the village of Fairport.

Hudson & Manhattan Railroad, New York, N. Y.—The directors of the Hudson & Manhattan Railroad on March 1 declared the interest earned on the adjustment income mortgage bonds for the six months ended Dec. 31, 1915, at the usual rate of 2 per cent per annum, or \$10 per \$1,000 bond for the period. The interest payment is made payable on April 1 at the office of the company's fiscal agents, Harvey Fisk & Sons, New York.

Interborough Consolidated Corporation, New York, N. Y.—The board of directors of the Interborough Consolidated Corporation, at a meeting held on March 7, declared a dividend of 1½ per cent on the preferred stock, payable on April 1.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—It is reported that the appointment of receivers has been asked for the Kansas City, Kaw Valley & Western Railway.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—The Lewiston, Augusta & Waterville Street Railway for 1915 showed railway operating revenues of \$696,448 as compared to \$664,939 for the preceding year, an increase of \$31,509. The railway operating expenses were \$441,539 as compared to \$439,650, an increase of \$1,887. The net revenue from railway operations was \$254,909, an increase of \$29,612. Other items in 1915 were revenues from auxiliary operations, \$6,856; expenses from auxiliary operations, \$4,538; net revenues from auxiliary operations, \$2,318; taxes on real and personal property, \$4,861; taxes on earnings, \$8,338; interest on funded debt, \$173,725; interest on unfunded debt, \$2,745, and amortization of discount on funded debt, \$10,811.

Mexico (Mex.) Tramways.—A protective committee for the bonds of the Mexico Tramways and its affiliated corporations, Mexican Light & Power Company, Mexican Electric Light Company and the Pachuca Light & Power Company, has been formed in London and is requesting deposits of the bonds of the companies.

Nova Scotia Tramways & Power Company, Halifax, N. S.—The Board of Public Utilities of Nova Scotia is reported to have authorized the Nova Scotia Tramway & Power Company to raise \$5,575,000 by the issue of \$3,000,000 of 5 per cent thirty-year bonds at 90, 25,000 shares of preferred stock at 75 and 25,000 shares of common stock at 40. The proceeds will be used in connection with the acquisition of the property of the Halifax Electric Tramway, Ltd., and to develop power on the Gaspereaux River. The company applied originally for permission to issue \$3,000,000 par value of bonds, 32,500 shares of preferred stock and 62,500 shares of common stock. Reference was made to the application in the *ELECTRIC RAILWAY JOURNAL* of Aug. 14, 1915, and Jan. 8, 1916.

Ottawa (Ont.) Traction Company, Ltd.—The depressing effects of the European war were felt by the Ottawa Traction Company, Ltd., during the year ended Dec. 31, 1915, but not to so great an extent as might have been anticipated. The month of August showed the greatest falling off in receipts, since which time business has been normal and generally showing a slight increase over 1914. The gross receipts of the company and of the Ottawa Electric Railway, its subsidiary, were \$1,041,100 for 1915, as compared to \$1,096,459 in 1914, a decrease of \$55,359 or 5.0 per cent. The total expenses, however, including mileage payments, taxes and interest, increased from \$736,809 in 1914 to \$742,124 in 1915, an amount of \$5,315 or 0.7 per cent. The net income in 1915 amounted to \$298,976 as compared to \$359,649 in 1914, a decrease of \$60,673 or 16.8 per cent. The passengers carried in 1915 totaled 24,361,867, a decrease of 959,680 or 3.8 per cent. The operating ratio rose from 60.6 in 1914 to 63.2 in 1915.

West Penn Traction Company, Pittsburgh, Pa.—The West Penn Traction Company has resumed preferred stock dividends after an intermission of more than a year. The distribution will be 1½ per cent for the quarter, payable on April 15 to stock owners of record of April 1. An extra one-half of 1 per cent was also voted on account of dividends in arrears.

Winnipeg (Man.) Electric Railway.—J. D. McArthur, has been elected to the board of the Winnipeg Electric Railway to succeed the late William Whyte, who was a member of the board and vice-president of the company.

York (Pa.) Railways.—In listing \$665,000 additional first mortgage thirty-year 5 per cent gold bonds on the Philadelphia Exchange the York (Pa.) Railways states that \$479,690 of the bonds were issued for extensions, improvements, betterments and double tracking on the parent company's lines of railway; \$135,000 for acquiring and constructing a power plant for supplying current for or to the York Railways and the Edison Light & Power Company, and \$50,310 for the purchase of a majority interest in the York & Windsor Electric Light Company and the Edison Light & Power Company. With the additional issue the total amount of outstanding bonds is \$4,938,000.

DIVIDENDS DECLARED

Arkansas Valley Railway, Light & Power Company, Pueblo, Col., quarterly, 1 3/4 per cent, preferred.
 Brazilian Traction, Light & Power Company, Ltd., Toronto, Ont., quarterly, 1 1/2 per cent, preferred.
 Brockton & Plymouth Street Railway, Plymouth, Mass., 3 per cent, preferred.
 Brooklyn (N. Y.) Rapid Transit Company, quarterly, 1 1/2 per cent.
 El Paso (Tex.) Electric Company, quarterly, 2 1/2 per cent, common.
 Frankford & Southwark Passenger Railway, Philadelphia, Pa., quarterly, \$4.50.
 Galveston-Houston Electric Company, Galveston, Tex., 3 per cent, preferred.
 Manhattan Bridge Three-Cent Line, New York, N. Y., quarterly, 1 1/2 per cent.
 Third Avenue Railway, New York, N. Y., quarterly, 1 per cent.
 United Light & Railways Company, Grand Rapids, Mich., 1 1/2 per cent, first preferred.
 United Traction & Electric Company, Providence, R. I., quarterly, 1 1/4 per cent.
 Wisconsin - Minnesota Light & Power Company, Eau Claire, Wis., quarterly, 1 3/4 per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

AURORA, ELGIN & CHICAGO RAILWAY, WHEATON, ILL.					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '16	\$148,860	\$97,092	\$51,768	\$40,724	\$11,044
1 " " '15	144,145	96,296	47,848	39,802	8,046
12 " " '16	1,173,181	747,043	426,138	282,824	143,314
12 " " '15	1,241,520	781,359	460,161	279,386	180,775
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.					
1m., Jan., '16	\$66,284	\$34,648	\$31,636	\$17,717	\$13,919
1 " " '15	65,330	30,842	34,488	17,515	16,973
12 " " '16	789,786	404,316	385,470	212,697	172,773
12 " " '15	779,395	374,728	404,667	209,278	195,389
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.					
1m., Jan., '16	\$101,420	\$63,311	\$38,109	\$28,855	\$9,254
1 " " '15	81,330	60,208	21,122	29,349	7,827
12 " " '16	1,107,434	730,834	376,600	357,268	19,332
12 " " '15	1,067,193	701,579	365,614	341,105	24,509
CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO					
1m., Dec., '15	\$33,711	\$17,196	\$16,515	\$12,314	\$4,201
1 " " '14	29,880	18,191	11,689	11,386	303
12 " " '15	407,030	218,510	188,520	133,252	55,268
12 " " '14	408,492	220,652	187,840	132,273	55,567
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m., Jan., '16	\$297,417	\$172,919	\$124,498	\$41,122	\$83,376
1 " " '15	274,752	164,178	110,574	38,719	71,855
12 " " '16	3,135,840	1,855,178	1,280,662	478,684	801,978
12 " " '15	3,069,024	1,878,975	1,190,049	477,823	712,226
FORT WAYNE & NORTHERN INDIANA TRACTION COMPANY, FORT WAYNE, IND.					
1m., Dec., '15	\$141,620	\$88,247	\$53,373	\$54,894	†\$156
1 " " '14	156,696	91,004	65,692	54,796	†12,991
12 " " '15	1,648,505	1,007,448	641,057	645,800	†1,357
12 " " '14	1,825,203	1,054,133	771,070	635,506	†142,042
GRAND RAPIDS (MICH.) RAILWAY					
1m., Jan., '16	\$105,817	\$64,663	\$41,154	\$14,534	\$26,620
1 " " '15	104,728	67,014	37,714	13,740	23,974
12 " " '16	1,177,539	830,449	347,090	165,980	181,110
12 " " '15	1,288,710	831,507	457,203	161,904	295,299
KENTUCKY TRACTION & TERMINAL COMPANY, LEXINGTON, KY.					
1m., Dec., '15	\$68,609	\$35,464	\$33,145	\$20,396	†\$15,386
1 " " '14	63,171	33,653	29,518	19,824	†12,913
6 " " '15	440,116	223,587	216,529	122,291	†102,832
6 " " '14	429,291	226,391	202,900	118,487	†95,575
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO					
1m., Dec., '15	\$123,811	\$76,891	\$46,920	\$36,095	\$10,825
1 " " '14	110,110	73,855	36,255	35,819	436
12 " " '15	1,387,143	898,136	489,007	433,203	55,804
12 " " '14	1,427,957	890,813	537,144	426,659	110,485
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO					
1m., Dec., '15	\$379,817	\$217,965	\$161,852	\$53,040	\$108,812
1 " " '14	316,381	197,415	118,966	50,534	68,432
12 " " '15	3,890,751	2,373,010	1,517,741	628,309	889,432
12 " " '14	3,636,085	2,237,429	1,398,656	606,898	791,758
REPUBLIC RAILWAY & LIGHT COMPANY, NEW YORK, N. Y.					
1m., Dec., '15	\$320,869	\$178,026	\$142,843	\$61,069	†\$81,873
1 " " '14	259,659	152,857	107,002	58,044	†45,585
12 " " '15	2,121,297	1,884,218	1,237,079	679,239	†559,730
12 " " '14	3,001,285	1,856,467	1,144,818	679,987	†465,007
VIRGINIA RAILWAY & POWER COMPANY, RICHMOND, VA.					
1m., Dec., '15	\$503,448	\$223,305	\$280,143	\$142,040	†\$145,669
1 " " '14	443,651	212,305	231,346	132,638	†105,007
6 " " '15	2,785,966	1,307,952	1,478,014	857,548	†670,957
6 " " '14	2,632,705	1,262,020	1,370,685	810,563	†600,877

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

Traffic and Transportation

HEARING BEGUN ON PORTLAND-WESTBROOK FARES

The Public Utilities Commission of Maine held a hearing at Westbrook on Feb. 24, on the petition sent to the commission on Dec. 9, 1915, by the city of Westbrook, containing the names of twenty-two citizens of that city, in which they claimed that the rate of fare charged by the Cumberland County Power & Light Company between Portland and Westbrook was excessive; that at certain hours of the day when the traffic was heavy the number of cars provided was inadequate, and that the company made use of its lines within the limits of Westbrook for the carriage of freight, a privilege which it exercised without license from the city, and without rendering any compensation to the municipality. The complainant further contended that the distance between Portland and Westbrook was 6.5 miles, while in reality the present 10-cent fare limit between the cities is 7.8 miles.

At the hearing Charles W. Wentworth acted as counsel for the city, and William M. Bradley, president of the Cumberland County Power & Light Company, as counsel for the company. The right of the company to carry freight and express matter over its tracks in the city of Westbrook is a point in law, and was left for the Public Utilities Commission to decide. Much of the time at the hearing was taken up by witnesses called by Mr. Wentworth, who testified as to the number of passengers on the cars at certain times during the day. In his argument for the reduction of fares between Westbrook and Portland he used figures of earnings about fourteen years ago. A number of witnesses were questioned by Mr. Wentworth in regard to their attitude toward the reduction of the fare and the effect it would have on business in the city. Most of the witnesses favored a reduction, but one or two of the local merchants thought that if the fare to Portland was reduced, people who now traded in Westbrook would go to Portland, where they would have a choice of larger and better stores.

In regard to the complaint of the overcrowded condition of cars during certain times of the day, the company was able to show from figures accurately obtained that on an average week day during the rush hours between 4 p. m. and 6.30 p. m. 785 seats were provided for 788 passengers leaving Portland for Westbrook, or approximately one seat per passenger. Throughout an average week day, the company provided 3887 seats for 2406 passengers carried, or an average of 162 seats for every 100 passengers.

In its reply to the complaint of excessive fare, the company stated that in order to arrive at the proper charge for transportation on its cars between Portland and Westbrook, it would be necessary to value the property used by that line before the rate of fare that would bring a proper return on the investment could be determined. The company explained that from the time the petition was received it had been working diligently to obtain this information, but that it would require additional time to complete the valuation. In view of this the commission decided to postpone the case until such time as the company had completed its figures. The engineer for the commission will then check the results and submit the data to the counsel for the city of Westbrook. A public hearing will then be called and the case continued.

COMMISSION DECISION AGAINST ONE-MAN CARS

The Newport & Providence Railway on Dec. 20, 1915, filed a complaint with the Public Utilities Commission of Rhode Island setting forth that the rules prescribed in the franchise ordinance governing operation in the town of Middletown were unreasonable, in some respects impossible of fulfillment, and would tend to the great injury and inconvenience of the railway and its patrons. The company requested that the commission determine the reasonableness of the rules in the exercise of the powers granted under Sec. 51 of the public utilities act. Upon the hearing the

issue was narrowed to the reasonableness of Rule III of the agreement between the company and the town. This rule reads:

"No car shall be operated within the highways of Midletown unless attended by two competent men, one of whom shall be a trained motorman duly instructed in the art of operating an electric car, and capable of running and controlling the same under any and all conditions. This rule shall apply to work cars as well as to passenger cars."

The rule was called into question because the company after correspondence with various street railways, on Nov. 7, 1915, commenced the operation of a one-man car on the "Training Station Line," and on Dec. 1, 1915, commenced a similar operation on the main line between Newport and Bristol Ferry. The company defended such operation upon the ground that the traffic was very light and the possibility of accident remote, and laid particular stress upon the experience of other roads where platform accidents had been greatly reduced under such operation. The company has \$300,000 of bonds and \$300,000 of stock outstanding, has never paid any dividends on its stock and made expenditures out of earnings in 1913, 1914 and 1915 totaling \$48,761. This practically eliminated its surplus.

The commission denied the plea of the company. In concluding its ruling that body said:

"We are convinced from the testimony introduced and from our investigation of the matter that the risks of operation of electric cars would be greatly increased under such a system of operation, especially in view of the dangers resulting from the very large increase of motor traffic upon the public highways. The attention of the motorman should be directed entirely to the operation of his car. No matter what rules may be adopted to govern one-man operation, the combination of duties would tend to develop careless habits on the part of motormen. It is therefore ordered that the petition be dismissed."

The decision of the commission was referred to briefly in the *ELECTRIC RAILWAY JOURNAL* of Feb. 26, page 424.

FIRST ISSUE OF NEW KANSAS CITY PUBLICATION

The first number of the *Kansas City Railways Bulletin*, dated March, has been issued and distributed. It contains much matter of personal interest to the men of the system, correspondence from the various carhouses and departments, news of the company, a page of jokes, and several short serious articles. A feature of the magazine is to be its promotion of safety-first efforts. On this account the paper will be sent to every school teacher in Kansas City. The *Bulletin* contains a biography and a portrait of Philip J. Kealy, president and general manager of the company. The title page carries the following paragraphs by Mr. Kealy on the object of the publication:

"This is the first issue of a paper that will appear monthly. It is for the employees of the Kansas City Railways; it is intended to be the medium for an interchange of ideas between the men who constitute the brains, the bone and the sinew of this company; it is to be their paper; it is intended that each employee shall receive a copy of each issue, and it is hoped he and his family will read it carefully.

"It is the desire to make each worker feel he is a part of one enterprise—not a motorman or conductor only, not a machinist only, not an electrician only, not a track layer only, not a clerk only, not a superintendent only, not a watchman, not a president only—but that each fills an essential part in a great organization devoted to public service.

"The paper will contain items of personal interest to the men, news from the various carhouses, shop news, articles of interest to railway men everywhere in the system; in fact, everything that may result in good to the employee. There will be no sermons, but there will be frank expositions of some of the shortcomings of all, and solid matter for the student of railway business. It is hoped much good will come from the publication, and that through it there will be built among all a spirit of fellowship, of zeal and of fidelity which will permeate this great institution, which by reorganization has really become a new institution with new blood."

ATLANTA JITNEY ORDINANCE SUSTAINED BY STATE SUPREME COURT

A decision adverse to the jitneys was rendered on Feb. 28 by the Supreme Court of Georgia in one of the jitney bus cases before it, carried up on appeal from the Fulton Superior Court. The Supreme Court upholds the position of the city of Atlanta in its ordinance taxing and bonding the jitneys. The decision controlled two other cases which originated in Savannah. The Atlanta court was upheld. The Savannah court, which sustained the jitneys, was reversed.

The court held that the ordinance of the city of Atlanta regulating the licensing and operation of the jitneys and requiring the giving, by the person operating such vehicle, of an indemnity bond in the sum of \$5,000 for each vehicle so operated, was not invalid on the ground that it violated Art. 7, Sec. 2, Par. 1, of the Constitution of Georgia, which provides that all taxation shall be uniform upon the same class of subjects; nor on the ground that it was discriminatory against persons engaged in the business of operating such vehicles, and in favor of other persons operating taxicabs and other like vehicles, which the plaintiffs contended were of the same class as jitney buses.

The court also held that the ordinance was not invalid on the ground that it imposed upon persons operating jitney buses a much larger license fee than that imposed upon persons operating taxicabs; nor on the ground that the graded license fee imposed by such ordinance was unreasonable. This graded license fee imposed a tax of \$75 for a motor bus having a seating capacity of four persons or less, including the driver, \$100 for motor bus having a seating capacity of more than four and less than eight persons, \$125 for each motor bus having a seating capacity of more than seven and less than ten persons, and \$150 for each motor bus seating more than ten persons.

Argument in April on St. Louis Mill Tax Case.—The appeal of the United Railways, St. Louis, Mo., to the United States Supreme Court in the matter of the mill tax, which was decided adversely to the company in the Missouri Supreme Court by a vote of four to three, has been set for argument in the United States Supreme Court in April.

Jersey Assembly Passes Bill Aimed at Auto Buses.—The Assembly of New Jersey passed on March 8 the substitute measure reported by the committee on municipal corporations for the original bill introduced by John B. Kates of Camden County, regulating the use of jitney buses. The measure provides that owners of the automobile buses must take out liability or indemnity insurance to the amount of \$5,000.

New Denver Publication Christened.—The new publication of the Denver (Col.) Tramway, referred to in the *ELECTRIC RAILWAY JOURNAL* of March 4, page 477, has been christened *Tram-o-Grams*. An award of \$15 was made by the judges for the best suggestion in the name contest, with other prizes of \$5, \$3 and \$2 for the names "Street Car Chats," "Bi-Monthly Denver Tramologues" and "Tramway Traveler."

Measures to Insure Better Sanitary Conditions in Kansas City.—The board of control of the Kansas City (Mo.) Railways has requested that the welfare department arrange for talks to superintendents and members of departments on sanitation and ventilation. Placards are to be placed in cars announcing: "Board of health officers are riding the cars and enforcing the anti-spitting ordinance; penalty, arrest." The action is a result of a conference between the board of control and the health department, arranged to bring about close co-operation.

Rochester Jitney Hearing to Continue on March 20.—The hearing before the Public Service Commission of the Second District of New York on the application of jitney operators to continue in service in that city, referred to in the *ELECTRIC RAILWAY JOURNAL* of March 4, page 476, was continued on March 2. Many witnesses testified in regard to the reliability of the service of the New York State Railways, Rochester Lines. The case will be continued on March 20. William Temple Emmett is presiding for the commission.

Forcing Portland Jitneys to Give Service.—A. L. Barbour, city auditor of Portland, Ore., reports that plans of the City Council to force jitneys to give reasonable service have brought results, and that up to March 1 forty drivers had notified Jitney Inspector Gill that they had increased their running schedules. According to a recent ruling of City Attorney La Roche and Commissioner Daly, jitneys will be required to give regular service from 6 a. m. to 8 a. m., and from 4.30 p. m. to 7 p. m., each day, in order to hold their licenses.

Hearing on Hoboken Fares Continued.—The Board of Public Utility Commissioners of New Jersey took further testimony on March 1, 2 and 3 on the application of representatives of the city of Hoboken to require the Public Service Railway to operate there for a 3-cent fare. Many figures were introduced in connection with traffic counts made in the interest of the city. Considerable difficulty was experienced in identifying some of the figures, which are more than a year old now. The hearing will be continued on April 5, 6 and 7.

Results With Near-side Stop in Akron.—The near-side car stop rule has been in effect in Akron, Ohio, since Feb. 1. The Northern Ohio Traction & Light Company says that the favorable expressions have outweighed and outnumbered by far the unfavorable views and that an impartial report is certain to be that the near-side stops have made an improvement in service and have reduced the chance of accident. A study of conditions will be made with a view to the use of the near-side stop plan in the smaller municipalities in which the company operates.

Injunction Against Memphis Jitneys.—An injunction has been issued against three jitney companies at Memphis, Tenn., by Chancellor Heiskell, of the local Circuit Court. The action of the court was on the grounds that the ordinances which provided franchises were invalid in that they were not signed by the then Mayor, although the commissioners passed them over his veto by a two-thirds majority. This point was one of several made by attorneys for the Memphis Street Railway, which brought the action. In another phase of the case the court expressed the opinion that the \$5,000 bond which was ordered applied to each vehicle and not to each company. The city has not determined whether to prosecute an appeal or repress the ordinances.

Separate Car for Women on Suburban Line.—The Ohio Valley Electric Railway has recently added a trailer to a special shopping car, which makes the trip from Catlettsburg, Ky., across the State line to Huntington, W. Va. This particular train is the convenient one for shoppers from Catlettsburg and points along the route to go into Huntington. Since West Virginia voted State-wide prohibition, there are many pilgrims to Catlettsburg, which is "wet." Huntington merchants complained that the car had developed into a "booze" car to the point that the women customers along the line were remaining away from Huntington. To meet the unusual condition the railway has added a trailer to the "booze" car and will reserve it exclusively for women customers of Huntington merchants.

One-Man Cars Announced for North Yakima.—N. C. Richards, president of the Yakima Valley Transportation Company, has announced the decision of the company to install one-man cars in North Yakima, Wash., beginning April 1. In a statement which he issued, Mr. Richards said: "The company has an investment in Yakima County of nearly \$2,000,000, on which it has never been able to earn interest, and the past year, owing to increased use of automobiles, its earnings many months have not been sufficient to meet expenses. The most unremunerative part of the system is the city lines where there is no freight to help out the passenger earnings. By adopting the one-man system of operation a considerable saving can be made in operating expenses and good service can be maintained."

Twenty More Cars in Service in Hartford.—The Connecticut Company has reported to the Public Utilities Commission regarding improved conditions in Hartford. The report tells of added cars during the rush hours, placing of pay-as-you-enter cars in service, and other steps taken to relieve congestion. The report is concluded as follows: "When all the changes that we contemplate have been made,

there will be in service during rush hours a total of twenty more double-truck cars than were operated previous to date of your order, and a few of that number in place of single-truck cars. The changes and additions have been made on lines where cars were most crowded. However, we will continue to check the riding on all of the different lines of a period of not less than two weeks, so that we may know whether or not any further changes, either one way or the other, should be made."

Near-side Stop Adopted in Minneapolis.—The Aldermen of Minneapolis, Minn., on Feb. 19 voted to adopt the near-side stop in certain localities in Minneapolis, effective on April 3. It is believed that local newspaper publicity instigated by the Safety First Federation of America, and advocating the near-side stop on the ground of safety, had considerable effect in bringing about the sixteen to seven vote in favor of the stop. The district set aside in the Council's resolution for near-side stopping extends from Second Avenue North to Fourth Avenue South, inclusive, and from the Mississippi River on the north to Twelfth Street and Grant Street, which is a continuation, on the south. This district, roughly, is a wedge twelve to sixteen blocks long, with a ten-block base, and includes the main business center. When the advisability of the near-side stop is demonstrated it will be extended over the entire city.

Safety Results in Akron.—The Northern Ohio Traction & Light Company, Akron, Ohio, in its pamphlet report for the year ended Dec. 31, 1915, says in regard to its safety work: "Organized effort toward accident prevention has been steadily continued. The total of all accidents was reduced, notwithstanding an increase in the number of passengers carried, the increase of car-miles operated, and the presence of greatly increased automobile and other traffic upon the streets and highways. On Dec. 31, 1914, there were pending in the courts eighty-eight cases in which the company was a defendant. At the close of 1915 the number was seventy-nine, a reduction of 10 per cent. In pensions and relief \$7,607 was distributed during the year. The pension department owns 150 shares of the company's preferred stock, and had on hand on Dec. 31, 1915, a cash balance of \$2,713, making a total reserve of \$17,713. Twenty-two retired employees are now receiving pensions."

New Express Agreement on Utah Lines.—A traffic agreement has been effected by the Salt Lake & Ogden Railway, Salt Lake City, Utah, and the Wells Fargo Express Company, whereby the residents of the Cache Valley district on the line of the Ogden, Logan & Idaho Railway will receive the advantage of the hourly express service between Salt Lake and Ogden over the Salt Lake & Ogden Railway. Under the arrangement the residents of the Cache Valley district will have express service to and from Salt Lake every two hours during the day, and as the electric lines enter a joint terminal station at Ogden, the disagreeable feature of wagon transfer will be eliminated. The agreement does not affect the local business of the Bamberger Express Company between Salt Lake and Ogden. Business from Cache Valley points shipped over the Ogden, Logan & Idaho Railway to Salt Lake will be handled and distributed in Salt Lake City from the offices and by the wagons of the Wells Fargo Express Company.

Hearing on May 8 on Complaint Against One-Man Cars.—The Public Service Commission of the State of Washington on May 8 will hear testimony in the complaint brought by the city of Spokane against both the Inland Empire Railroad and the Washington Water Power Company, which are operating one-man cars on several of their routes. The city of Spokane contends that the cars are unsafe and cause delay. The companies assert the competition of jitneys and other economic factors have forced them to the one-man car as a measure of relief. The hearing before the Public Service Commission was to have been held on March 6 and 7, but by an agreement entered into between Corporation Counsel H. M. Stevens of Spokane and F. T. Post, counsel for the Washington Water Power Company, the date of the hearing has been changed to May 8. A. A. Lewis and Frank R. Spinning, members of the Public Service Commission, utilized March 6 and 7, the days assigned originally for the hearing, to investigate the company's service.

Personal Mention

Mr. Leroy L. Newman, formerly superintendent of way and structures of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has been appointed assistant general manager of the company. Previous to Mr. Newman's connection with this company he was employed in various departments of the Pennsylvania Railroad.

Mr. R. J. Clark, comptroller of the Kansas City Railway & Light Company, Kansas City, Mo., since 1910, has been made secretary and treasurer of the Kansas City Light & Power Company, the office of comptroller having been abolished with the successor company in the reorganization. Mr. Clark went to Kansas City in 1910 from the Toronto (Ont.) Railway.

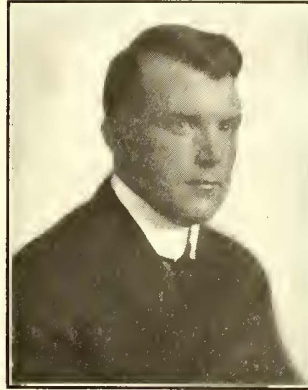
Mr. H. H. Evans, secretary of the local transportation committee of the Chicago City Council, has also been appointed secretary of the Chicago Traction & Subway Commission, the newly-appointed engineering body which is to investigate Chicago's local transportation conditions and recommend improvements. Mr. Evans was born in Mississippi in 1880 and was graduated from the Annapolis Naval Academy in 1899. Following his graduation he served as a midshipman in the United States Navy and was a commissioned officer in the Spanish-American war. He resigned from the service in 1904 and accepted a position with the Cananea Copper Company in Mexico. In 1906 Mr. Evans accepted a position in the erection department of the Allis-Chalmers Company, where he was later appointed assistant superintendent of construction. He resigned from that organization in 1908, to make some special reports for the city of Chicago on the electrification of the steam railroad terminals. After he completed these reports, Mr. Evans was appointed secretary of the transportation committee.

Mr. Edwin H. Baker, who has recently retired as second vice-president of the Galena Signal Oil Company, has been engaged in the manufacture and supply of lubricating oils for the past forty-three years and is one of the best-known and most highly esteemed men in the electric railway and steam railroad supply business. It was in 1873 that he entered the employ of S. T. Baker & Company, a firm which had been founded by his father in 1849 and was a large manufacturer of lubricating oils in New York. In 1894 he joined the Galena Signal Oil Company, but he continued to act as president and manager of S. T. Baker & Company, which was afterward a corporation, until 1912, when the Baker business, which up to that time had been a department of the Galena Company, was consolidated with the Galena Company. When this consolidation took place he was elected second vice-president of the Galena Company. Mr. Baker's activities have not been confined to the oil business. He early took an interest in the American Electric Railway Manufacturers' Association, his high standing in the trade and his personal popularity leading to his election to various offices. In 1904, a year after the organization of the association, he was chosen a member of its executive committee and chairman of its finance committee. He continued in these offices during 1905, and was elected treasurer of the association in 1906. In 1910 and again in 1913, he was re-elected a member of the executive committee of the association, and he served as vice-president from 1911 to 1914, and was president during the past year. It is safe to say that, although he is retiring from active work with the Galena Signal Oil Company, Mr. Baker will maintain his interest in electric railway affairs.



E. H. BAKER

Mr. Edward A. West, efficiency engineer of the Portland Railway, Light & Power Company, Portland, Ore., has resigned from that position, as announced briefly in the ELECTRIC RAILWAY JOURNAL of



E. A. WEST

March 4, to take up the duties of chief engineer of the Denver (Col.) Tramway under Mr. F. W. Hild, general manager. Mr. West has been efficiency engineer of the Portland Company since August, 1913. His duties in this capacity took him into all departments and activities of the company. He inaugurated many changes in departmental relations; introduced cost and planning methods, a reorganization of the methods of keeping track of and storing supplies, a perpetual inventory system for recording property valuation data, and made a detailed study of the integral parts of the company organization. Prior to his appointment as efficiency engineer, he had the title of assistant engineer during the construction period of 1909 to 1913 under Mr. O. B. Coldwell, general superintendent and electrical engineer. While in this position he had an active part in the construction work of the company's hydroelectric plants on the Clackamas and Bull Run rivers, the steam plant Station "L," the underground system, steel tower line, Hawthorne Building, etc. He attended Tufts College and the Massachusetts Institute of Technology after having served an enlistment in the engineering department of the United States Navy. After he left college Mr. West entered the employ of the Boston Elevated Railway under Mr. John Lindell, superintendent of motive power and rolling stock. He took a two years' apprenticeship course with the Boston Elevated and worked in many departments. He was with this company during 1906 and 1907 when all the larger steam plants were increased in capacity. His title when he left its employ was assistant to superintendent of power stations. He next worked on fuel efficiency under Mr. Schumaker of Schumaker & Santry, Boston, Mass. While with this firm he conducted investigations in the organization and methods employed in the boiler and engine rooms in several of the largest textile and industrial plants in the New England States. He held the post of chief engineer of the Oregon Naval Militia, and his gun crews made a total of nineteen hits out of twenty shots with a 6-in. gun on the practice cruise last summer. He has prepared a number of articles for technical magazines and engineering societies.

OBITUARY

Edward Harris Goodman, formerly vice-president and general manager of the Pullman Palace Car Company of Chicago, and of the Union Switch & Signal Company of Pittsburgh, Pa., died on March 4 at Palm Beach, Fla., where he had gone for a short visit.

Edward I. Leighton, one of the founders of the Van Dorn & Dutton Company, Cleveland, Ohio, died at St. Augustine, Fla., on Feb. 26. Mr. Leighton was born in Birmingham, England, in 1850. He moved to this country with his parents when about six years old, settling in Cleveland where he attended the public schools. In 1880 with Mr. Frederick W. Bruch he started the Cleveland Punch & Shear Works Company. About 1890 Mr. Leighton purchased his partner's interest. The business was later sold to Walter D. Sayle and others. Although Mr. Leighton retired from active business nearly fifteen years ago he has been a large factor since in such representative concerns as the Acme Machinery Company, the Forest City Live Stock & Fair Company, the Van Dorn & Dutton Company, the Van Dorn Electric Tool Company and the Reliable Machine Company. At the time of his death he was a director in all of the concerns mentioned, as well as others. Mr. Leighton is survived by a widow and one son, Mr. Thomas E. Leighton, purchasing agent of the Van Dorn & Dutton Company and the Van Dorn Electric Tool Company.

Construction News

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

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

RECENT INCORPORATIONS

Morganfield-Uniontown Electric Railroad, Morganfield, Ky.—Incorporated to construct a line between Morganfield and Uniontown, for which rights-of-way have been secured. Capital stock, \$125,000. Incorporators: S. B. Anderson and Walter B. McLean, Memphis; R. J. Nelson, Cincinnati, and O. G. Lucian Drury, Morganfield. [Feb. 19, '16.]

***Colon Electric Traction Company, Hackensack, N. J.**—Incorporated with a capital stock of \$200,000. Among the incorporators are Cornelius A. Cole, Hackensack; Robert A. Van Voorhis and Arthur R. Oakley, Jersey City, N. J.

***Nashville, Hartsville & Red Boiling Springs Railway, Nashville, Tenn.**—Incorporated in Tennessee to construct a line from Hartsville through Lafayette to the springs, the line connecting with the Louisville & Nashville Railroad at Hartsville. Capital stock, \$50,000. The charter provides that electricity or steam may be the motive power, although the plan of the promoters is to electrify the line. Incorporators: John C. Shofner, Howard Andrews, Perkins Baxter, J. C. Collins, W. M. Long and J. M. Wilson.

FRANCHISES

Arlington, Cal.—The Council of Arlington has denied the petition of the Pacific Electric Company to abandon a portion of its track on Brockton and Arlington Avenues and also on Victoria Avenue.

Los Angeles, Cal.—Col. Lewis Ginger, to whom the Council granted a franchise for a scenic incline railway at Griffith Park, has announced that the State Commissioner of Corporations has granted a permit for the company to sell stock to build and equip the road and erect pavilions and beautify the picnic grounds at the top of the incline. The road will be about ½ mile long and will be constructed on a uniform grade of 32 per cent. [May 15, '15.]

Oak Park, Ill.—The Chicago & West Towns Railway Company has applied to the trustees of the Village of Oak Park for a new twenty-year franchise.

Detroit, Mich.—By a vote of more than 80 per cent of those who went to the polls the electors of Mount Clemens on Feb. 29 expressed their approval of the ordinance granting the Detroit United Railway a twenty-year extension of its franchise. Under the franchise the company agrees to replace the Macomb Street bridge, to contribute \$15,000 toward the cost of a bridge connecting South Gratiot Avenue and the Gratiot road and to double-track South Gratiot Avenue.

Newburgh, N. Y.—The Orange County Traction Company has asked the Council for a franchise to construct an extension of its lines through Lake Street from Broadway to a point opposite the Newburgh Bleachery.

Columbus, Ohio.—The Council of Columbus has refused to grant a franchise to the East Linden Electric Railway to construct a line beginning at Champion Avenue and Long Street and extending on Champion Avenue to the corporation line of Columbus and a line beginning at Water and Spring Streets and extending on Randolph Street, Front Street, Naghten Street and Grant Avenue to Grove Street.

Radford, Va.—Oren Dodds has asked the Council for a railway franchise in Radford.

Stoughton, Wis.—The Wisconsin Interurban System has asked the Council for a franchise to construct a line through Stoughton. [Nov. 13, '15.]

TRACK AND ROADWAY

***Tolchaco, Ariz.**—It is reported that plans are being considered to construct an electric railway from Tolchaco into the Oatman district. E. L. Mayvew, Oatman, is interested.

Nelson Street Railway, Nelson, B. C.—The City Council has commissioned H. P. Thomas to prepare detailed estimates of the cost of extending the city car lines along Baker Street, from Josephine to Cedar Streets, and on Vernon Street from Cedar to Josephine Streets. The Council is in favor of this extension, and it is reported that if the cost is not too excessive the extension will be made.

Municipal Railways of San Francisco, San Francisco, Cal.—The public utilities committee of the Board of Supervisors on Feb. 23 voted to recommend the setting aside of \$275,000 for the construction of tracks and overhead trolley system from the Market Street entrance of the Twin Peaks tunnel to the junction of Sloat and Junipero Serra Boulevards.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—It is reported that this company will change from the storage-battery system to the overhead-contact system on its line from New Castle to Delaware City. Other extensive improvements are contemplated.

Boise (Idaho) Railroad.—It is reported that this company will expend \$90,000 for improvements and betterments.

Oregon Short Line Railroad, Caldwell, Idaho.—According to reports, the electrification of the Wilder branch of the Oregon Short Line will be started immediately and rushed to completion. Material and equipment have been ordered. The people of Caldwell, Wilder and Greenleaf, and along the line of the Wilder branch, have subscribed for bonds to the amount of \$25,000 to finance the electrification. Work will be started on the construction of transmission line, transformers, etc., at once, and electric cars will be in operation within 90 days.

Chicago & Milwaukee Electric Railroad, Highwood, Ill.—This company has indicated its intention of extending its North Avenue line in Waukegan east on Glen Flora Avenue to the new industrial site of Waukegan, as soon as 1000 men are employed there.

***Rochelle, Ill.**—Plans are being made to construct an interurban line between Rochelle and Moline. It is reported that the project is being backed by capitalists in various towns and cities along the route.

Boston, Mass.—The contract for the construction of Section F, Dorchester Tunnel, has been awarded by the Boston Transit Commission to T. A. Gillespie Company, Boston, at \$363,744. [Feb. 19, '16.]

Kansas City & Tiffany Springs Railway, Kansas City, Mo.—This company has filed with the Missouri Public Service Commission statements and estimates asked for, with reference to the request of the company to be allowed to buy about 10 miles of track of the Quincy, Omaha & Kansas City Railroad between Gower and Trimble. The Commission had suggested that a showing should be made as to the power of an electric railway to operate profitably on this line, in view of the discontinuance of service by the steam road. The statements filed include figures of the earnings of the road when operated as a steam railway, indicating the possible business when few stops were made; showings as to the population of the district, and the possibilities of traffic when an electric car is operated, stopping frequently; estimates of the cost of erecting overhead transmission line from Edgerton or other power sources, and operation as an electric railroad with one car at 2 cents a mile for passenger traffic. [Feb. 12, '16.]

Metropolitan Street Railway, Kansas City, Mo.—The first cars over the extension of the Thirty-first Street line from Indiana Avenue to Brighton Avenue, Kansas City, were operated on March 4. The Broadway extension from Fourteenth to Twenty-fifth Streets is completed, but schedules have not yet been provided. The Twenty-fourth Street Extension from Brighton Avenue to Hardesty Avenue, will be completed this summer. Surveys have been ordered on Fifteenth Street for the line that will connect with Fairland Heights on the Independence division, shortening the route to Independence, Mo., and this may be built this year.

Salem & Pennsgrove Traction Company, Salem, N. J.—Martin & Company of Philadelphia are offering first mortgage 6-per cent twenty-year bonds of the Salem & Pennsgrove Traction Company. The issue is followed by \$100,000 second mortgage 6s, which, with \$10,000 of stock, were sold to E. I. du Pont de Nemours & Company, whose plants will be reached by the new line. [Feb. 19, '16.]

International Railway, Buffalo, N. Y.—The Public Service Commission for the Second District of New York has approved the agreement between the New York Central Railroad and the International Railway providing for the two bridges over which the new Buffalo-Niagara Falls line of the International Railway will cross the New York Central tracks. The plans were first subjected to the scrutiny of the commission's grade-crossing engineer.

Hillsboro, Cynthia & Bainbridge Traction Company, Hillsboro, Ohio.—Representatives of this proposed company held a conference with the members of the Ohio Public Utilities Commission on March 3 in reference to financing the line on which they hope to begin construction in the spring. The tentative plans provide for a bond issue of \$1,700,000 and stock amounting to \$500,000. [Oct. 2, '15.]

Hamilton (Ont.) Street Railway.—This company will reconstruct its tracks on Herkimer Street between Queen and Locke Streets early in the spring.

Perkiomen Valley Traction Company, Collegeville, Pa.—The State Highway Department has accepted the plans of the Perkiomen Valley Traction Company for the construction of its proposed line from Collegeville to Schwenkville. James L. Wolcott, Dover, Del., president. [Jan. 15, '16.]

Pennsylvania Railroad, Philadelphia, Pa.—This company is making surveys for a second track from Pavonia to Mount Holly, N. J., with the ultimate plan of electrifying this branch of its system. It is proposed to use the same method of propulsion as on the main line out of Broad Street Station, Philadelphia.

Ogden-Logan & Idaho Railway, Ogden, Utah.—It is reported that this company will extend its line northward from Preston through Pocatello, Blackfoot and Idaho Falls to the border of Yellowstone Park. According to the report plans are being formulated and the extension will be made at an early date. It is stated that the Oregon Short Line Railroad is interested, as the proposed line would be a feeder to the Short Line. Branch lines are planned out of Pocatello to tap the Arbon and Rattlesnake Valleys.

Lewiston-Clarkston Transit Company, Clarkston, Wash.—G. W. Burrows, vice-president of this company, recently stated his company will begin the construction of the Clarkston extension of the line as soon as weather conditions will permit, and that construction work on the Lewiston extension of the line will begin late in March, if possible. At the present time the operating forces of the company are endeavoring to restore service in Lewiston and Clarkston, which was badly demoralized by the recent storms which swept over the Northwest.

***Bluefield, W. Va.**—A committee has been appointed by the Bluefield Chamber of Commerce to investigate the possibility of constructing an electric railway from Bluefield to the Pocahontas coal fields.

Pan-Handle Traction Company, Wheeling, W. Va.—It is reported that plans are being considered by this company for the construction of an extension from Short Creek to the Pennsylvania State line.

Wisconsin Interurban System, Madison, Wis.—At a recent meeting of the stockholders of this company resolutions were adopted authorizing an issue of \$600,000 of bonds and the entering into a contract for the construction of the company's line from Madison to Portage, Madison to Prairie du Sac, Madison to Janesville and across Madison. It is proposed to begin construction work as soon as the weather permits. The company has awarded the contract for building the entire system to James Stewart & Company of New York. Counselman & Company, Chicago, will finance the proposition. In all, bonds of \$4,000,000 are to be issued for financing the entire project. [Nov. 13, '15.]

SHOPS AND BUILDINGS

Southern Pacific Company, San Francisco, Cal.—It is reported that this company is contemplating the construction of a new office building to be erected on the south side of Market Street between Steuart and Spear Streets. The structure will probably be nine or ten stories high. The design, construction and type of materials have not been considered. The company's lease on the James Flood Building expires in October, 1917.

Tri-City Railway Company of Illinois, Rock Island, Ill.—Work will soon be begun by this company on the construction of new car shops at Rock Island. The structure will be two stories, and will be of brick, steel and concrete construction to conform with the carhouse adjoining. It is estimated that the cost will be about \$80,000. An inn to cost \$100,000 will also be constructed by the company at Rock Island. Reference to this proposed construction was published on page 470 of the ELECTRIC RAILWAY JOURNAL for March 4.

Massachusetts, Northeastern Street Railway, Haverhill, Mass.—This company will prepare plans and let the contract in the near future for a new car house to replace the one at Merrimac which was destroyed by fire on Feb. 29. The car house will probably be rebuilt of brick.

New York Municipal Railway Corporation, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has authorized the New York Municipal Railway Corporation to award the contract for the construction of the Coney Island terminal to the Lord Construction Company, the lowest bidder, for \$1,279,274, as referred to on page 514 of this issue.

Interborough Rapid Transit Company, New York City.—A new mezzanine passageway will be built at the Grand Central Station of the subway to relieve congested conditions on the platforms. The Public Service Commission for the First District of New York has authorized the Rapid Transit Subway Construction Company to begin the work as an "extra" under the original subway contract, the cost of the same not to exceed \$6,000. The plan of the improvement provides for a passageway crossing over the express tracks and connecting the existing mezzanine platform, immediately west of Vanderbilt Avenue on the northerly side of Forty-second Street, with the southbound platform by means of a new stairway landing on this platform about 64 ft. west of the present easterly stairway.

Charleston (W. Va.) Interurban Railroad.—This company reports that it is building a 45-ft. x 146-ft. extension to its carhouse. The building will be of brick construction with steel roof trusses. The steel has been purchased from L. Schreiber & Sons Company, Cincinnati. Contractors, H. Bagsten & Son, Charleston.

POWER HOUSES AND SUBSTATIONS

Aurora, Elgin & Chicago Railroad, Wheaton, Ill.—It is reported that this company will install a 60-cycle frequency set at its Batavia power plant.

Cumberland & Westernport Electric Railway, Cumberland, Md.—This company is contemplating enlarging its power plants at Eckhard and Reynolds.

Durham (N. C.) Traction Company.—It is reported that this company will probably install a 300-kw. rotary converter and additional switchboard equipment.

Northern Ohio Traction & Light Company, Akron, Ohio.—The following improvements are being planned by this company during the year: Installation of two 20,000-kw. turbo-generators in its main generating station, one 1500-kw. rotary converter and transforming equipment in its High Street substation, and equipping a new light, power and railway substation in East Akron. Some of the equipment for these installations has been purchased. The company is building 14 miles of new transmission line, and other sections of the transmission system will be rebuilt during the year.

Scioto Valley Traction Company, Columbus, Ohio.—This company has received permission from the Public Utilities Commission of Ohio to purchase the electrical distribution system of the Groveport Development Company. It is understood that the company will install a new distributing system in Groveport.

Philadelphia (Pa.) Rapid Transit Company.—A new power house on the Barren Hill and Wissahickon branch of this company's line will be constructed just north of the city line on the Ridge Pike.

Charleston (W. Va.) Interurban Railroad.—A report from this company states that it has purchased two 300-kw., 750-volt, d.c. Westinghouse rotary converters for installation at its Cabin Creek substation.

Manufactures and Supplies

Algiers Railway & Light Company, Algiers, La., is reported as expecting to purchase new rolling stock.

Harrisburg (Pa.) Railways are planning to order from The J. G. Brill Company five new double-truck passenger cars.

Cincinnati (Ohio) Traction Company is reported as having 100 motor cars for city service built by the Cincinnati Car Company.

Kansas City (Mo.) Railways have asked for bids on fifty to seventy-five cars of the same type as purchased last year. The contract is to be awarded on March 15.

Goldsboro (N. C.) Electric Railway is in the market for a motor-generator set and one open summer car. All communications should be addressed to R. Harold Smith, general manager.

Toronto & York Radial Railway, Toronto, Ont., is reported as contemplating the purchase of new rolling stock for the provision of more frequent service on the recently electrified Schomberg division.

Massachusetts Northeastern Street Railway, Haverhill, Mass., has ordered from the Laconia Car Company twelve semi-convertible, double-truck cars to replace those which were destroyed on Feb. 29 in the Merrimac carhouse fire. The new cars will be provided with Westinghouse Type 532-B, box-frame motors and Westinghouse air brakes.

Boston (Mass.) Elevated Railway has ordered ten elevated cars from The J. G. Brill Company. The railway company has also ordered from the Brill Company ten all-steel car bodies to replace equipment lost in the recent East Boston car-house fire. The car bodies resemble those used in the company's standard No. 4 type of semi-convertible car and have been approved as to design by the Massachusetts Public Service Commission.

TRADE NOTES

Walter E. Hinmon, Western sales manager of the Peter Smith Heater Company, Detroit, Mich., for the past six years, has resigned to become sales manager of the Cooper Heater Company, Carlisle, Pa.

W. S. Barstow & Company, New York, N. Y., have adopted a new emblem which is composed of a link, signifying strength and security, and a circle, which is the Egyptian hieroglyphic signifying energy.

Stone & Webster Construction Company, Boston, Mass., is being employed in the capacity of constructing engineers for a new 60,000-kw. steam power station which is being built in Buffalo for the Buffalo General Electric Company.

Philadelphia (Pa.) Holding Company has received an order to equip with radial trucks the three center-entrance cars recently ordered from the Laconia Car Company by the Bangor Railway & Electric Company, Bangor, Me. The company has also received orders for four radial trucks from the Newport News & Hampton Railway, Gas & Electric Company and one truck from the Hutchinson Interurban Railway.

Bethlehem (Pa.) Steel Corporation recently acquired the property and assets of the Pennsylvania Steel Company. The purchase price aggregates approximately \$31,900,000, this being at the rate of par for the preferred shares and about \$27 for the common shares. This amount is to be paid in 5 per cent twenty-year purchase money bonds, bonds being reserved to retire underlying issues and to provide for employment and additions.

Midvale Steel & Ordnance Company, Philadelphia, Pa., has acquired a controlling interest in the Cambria Steel Company, which has under a 999-year lease the property of the Cambria Iron Company. Control is thus also secured of all the stock of the Penn Mining Companies of Michigan and Wisconsin, and a one-half interest in the Mahoning Ore & Steel Company. The stockholders of the Midvale Steel & Ordnance Company have contributed more than \$25,000,000 in cash toward the acquisition of the Cambria Steel Company, and the balance has been provided by the issuance of

approximately \$50,000,000 of twenty-year 5 per cent convertible sinking fund gold bonds due on March 1, 1936, the purchase price being at the rate of \$81 per share (\$50 par value) for the 900,000 shares outstanding. When the books were closed on Feb. 21, sufficient shares had been turned in to make \$45,736,000 of the bonds available for allotment, and this amount was oversubscribed for the syndicate.

ADVERTISING LITERATURE

Laclede-Christy Clay Products Company, St. Louis, Mo., has issued a sheet describing its automatic stokers.

Spray Engineering Company, Boston, Mass., has issued a catalog describing the system of applying protective coatings to the interior of explosive shells by means of its spraying process.

Pyrene Manufacturing Company, New York, N. Y., has printed a special railroad number of *The Fire-Fly*, its monthly publication. The issue contains a number of illustrated articles showing how the destruction of cars and other railroad equipment and buildings might have been avoided through the installment of its fire extinguishers.

American Museum of Safety, New York, N. Y., has issued a bulletin which contains a reprint entitled, "Some Hazards and Safety Suggestions in Connection with Construction, Inspection and Maintenance of Public Utilities," by H. W. Mowery. This is an illustrated address which was delivered last December before invited guests from the staff of the Public Service Commission, First District, New York, and representatives of the public utilities corporations and insurance companies of New York City, under the auspices of the American Museum of Safety. The paper calls attention to the fact that although spectacular accidents are given wide publicity, common every-day hazards, such as slipping and tripping which produce far more casualties, are usually overlooked. Recommendations for safe construction are given, such as anti-slip treads for car steps, floor inserts and safety station treads, as adopted, for example, by the New York Municipal Railway and the Interborough Rapid Transit Company.

J. D. Este Company, Philadelphia, Pa., has issued a catalog describing the game of "skee-ball" which is being used as a drawing card by a number of amusement parks operated by electric railways, and which is also adapted for use by employees' welfare associations. "Skee-ball" is a variation of bowling in which the ball is put to an entirely new use. When the ball, which is about the size of a duck-pin ball, is rolled rapidly over a 20-ft. section to a hump, it leaps high in the air in the manner of a ski-jumper. If the shot is properly directed with just the right force it will enter the bull's-eye of a target, which is placed 16 ft. beyond the hump. The game has a fascination in that it requires not only the accuracy of direction needed in bowling, but the nicety of force acquired by a finished billiard player. The interest of the spectators is kept up by an automatic scoring machine which registers the score adequately. Another unique feature is the nickel-in-the-slot machine, which releases the ball for a new game when a coin is inserted. This makes the game self-operating and does away with the need of an attendant.

EXPEDITING FOREIGN SALES

An arrangement has recently been made by the Stow Manufacturing Company, Binghamton, N. Y., to expedite the sale and delivery of its flexible shaft grinders and other products abroad, which may be of interest to other manufacturers. According to the announcement of the company, customers in foreign countries desiring to place orders simply give them to the nearest office of the American Express Company, but made out directly to the manufacturing company, and not to the express company. Orders so written will be transmitted directly to the manufacturers by the express company, which will also open credits or accept payments for the account of the manufacturers and will take entire charge of details of shipping, customs, etc. In this business the express company charges no buying commission on such transactions, but makes only reasonable charges for handling credit or remittances, transporting the goods, etc. The Stow Manufacturing Company is said to be the first American manufacturer to make this arrangement with the American Express Company.