

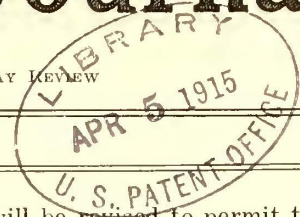
Electric Railway Journal

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DECLARING DIVIDENDS OUT OF SURPLUS

In reply to a recent criticism in regard to paying unearned common stock dividends in 1914, Alva Johnson, president Baldwin Locomotive Works, said that a spasmodic payment of dividends tends to make stock become speculative in character. That permanence of income is one of the prime essentials of an investment security is well known, but not until the last few years have corporation managers endeavored to insure this feature to any of their stock issues. It is impossible to prevent fluctuations in earnings, but by means of a dividend reserve it is possible to give dividends a real stability. Under this plan a stated dividend of 6 per cent or 7 per cent, for example, is paid each year, and if the earnings in any year warrant a larger disbursement, the excess is carried to the dividend reserve, instead of every last possible cent being paid out in the current year. The accumulated reserve merely averages the prosperous years with the poor years and constitutes a guarantee to stockholders against reduction because of temporary adverse conditions. The plan stabilizes prices as well as dividend rates, increases the investment demand for the stock and puts no additional burden on the public. Too little attention has heretofore been paid to the fact that one of the prime functions of surplus is to tide over a decrease in earnings. When the surplus is thus used judiciously, so as not to give a wrong impression of prosperity, the method is economically sound.

RECORDS AS EVIDENCE

The satisfactory publicity experience gained by the steam roads when they applied for increased freight rates before the Interstate Commerce Commission has begun to reflect itself in the Western roads' negotiations for increased intrastate passenger rates, as well as in the presentation of their case before the Railroad Board of Arbitration now investigating the demand for an increase in wages made by engineers and firemen of the Western district. Casting aside as passé the old method termed by President Wilson as "insidious lobbying," the steam roads are discussing their problems with the local commercial and industrial bodies in the districts or states where applications for increased rates are before the legislatures. In many instances the managers have resorted to what is styled by politicians as "stump" speaking, and it is believed that no more efficient method of piloting legislation is to be had than this of going to the source. As a result of this policy of taking their plea to the people, the real governing body, when problems are presented to them in comprehensive form, it appears quite probable that many of

the state 2-cent laws will be revised to permit the passenger fares to be increased to 2½ cents on intrastate trips. Pursuant to this same policy, and in response to claims made by the engineers and firemen before the Railroad Board of Arbitration, the Western railroads simply presented their payroll records to the board as an exhibit. It is said to be the first time in such arbitrations that steam roads have resorted to this method of refuting the claims of their employees, and it is quite certain that no more convincing or compelling argument can be presented than actual records. Such a policy is in accord with the spirit of the code of principles recently laid down by the American Electric Railway Association, and it may be that electric railways, by carefully studying the publicity work done by steam roads, may profit by their experience.

"A READY-MADE OPPORTUNITY"

Advertising for advertising is a wholly legitimate proceeding—unless it leads the advertiser to distort facts in order to prove his case. These observations are apropos of a page advertisement which appeared in the Philadelphia *Public Ledger* under the heading of "A Ready-Made Opportunity." It was signed by the publishers, and the opportunity described was nothing less (nor more) than the building of auto buses, the future of which as factors in city transportation was presented in alluring paragraphs. The so-called jitney has spread "by the strange telepathy of success"; the motor bus (possibly by the same occult means) is seen to be the favored vehicle of the future, therefore it behooves motor-bus builders to "make the jitney bus a great Philadelphia industry." This advertisement ignores some important considerations, among others the fact that there is no proved instance of jitney-bus success. The "ad" writer's enthusiasm would have waned if he had investigated the matter far enough to ascertain that the supply of jitneys is kept up largely by the fact that as fast as one man finds out that there is nothing in it and that he can't compete with the electric railway, another innocent steps into the game only to be swallowed up in bankruptcy as was his predecessor. Jitneys where they most flourish are now decreasing in number, as, for example, in Memphis, Tenn.; Columbus, Ohio, and Fort Worth, Tex., among many other places. The above applies to the nomadic second-hand touring car. As to the motor bus, properly speaking, outside of New York it has perhaps been operated most systematically, under the most favorable conditions and with the best type of vehicle, in Washington, D. C., and Birmingham, Ala. Ask the motor-bus pioneers in these cities what they

think of the "ready-made opportunity" in motor-bus operation and the reply will not be calculated to entice anyone into motor-bus building or motor-bus advertising. Those manufacturers who have looked into the jitney proposition are not seeking business from this quarter for the reason, as one put it, that he preferred solvent customers. We do not wish to be understood as believing that there is no field for the auto bus. But the field lies where a comparatively high fare can be charged and where there is no railway competition. As a competitor on at all equal terms it has no chance.

AUTO BUSES FOR RUSH-HOUR SERVICE

Several correspondents have written to us of late suggesting that railway companies might find it profitable to use auto buses to help out their service during the rush hours. They argue that under such circumstances the bus would be used for only a few hours a day and so would not be subject to the high rate of depreciation which exists in regular jitney service. It is proposed that these buses would be operated as part of the electric railway system with full transfer privileges but with one-man service, which would not be possible with the electric cars.

The basic thought underlying this suggestion is that cars which serve the peak traffic operate under an extremely low daily load factor and that buses, with their lower overhead charges, should prove less expensive in the long run. Of course, it is true that bus operation, taken in its entirety, involves less investment than is the case with street railway cars and that the overhead charges on the extra equipment required for rush-hour service is very high when calculated on a car-mile basis. But even under these circumstances we cannot see a gain in the plan proposed.

That portion of the railway company's overhead charges which is affected by rush-hour traffic is, in the main, limited to the power house and the cars themselves. The investment in track and overhead line is not increased except where a congested loop in the center of a town sets physical limits upon the number of cars that can be moved. Even under these circumstances the great bulk of track mileage is never worked at its full capacity, and the investment required for the introduction of additional service is confined to that necessitated by rerouting through the congested section.

On a broadly general basis the investment in facilities for power that is required for additional service is of the order of \$3,000 per car; and the car itself may be said to be worth \$5,000; so that an investment of roughly \$8,000 is involved for each new unit, neglecting incidentals like housing, repair facilities and the like. Such a unit will seat between fifty and sixty passengers and will provide standing room in addition. A motor bus of equal capacity appears to be impracticable, and according to present standards two twenty-six or twenty-eight passenger buses would have to be considered as the equivalent in seating capacity of a single surface car, although they would have practically no standing capacity. The cost of such buses appears to vary from

\$3,000 to \$5,000 each, or, for the two units assumed (by neglecting standees) to be equivalent to the \$8,000 electric railway car, the investment in buses would be between \$6,000 and \$10,000. Obviously the maximum saving in first cost effected by purchasing the cheapest kind of a bus would not warrant its use even for one trip per day in preference to the street car, in view of the fact that its direct operating cost is more than twice that of the larger unit. We would have, then, with two twenty-six or twenty-eight-passenger buses, no less investment and higher operating expenses. In this comparison it is assumed, of course, that the speeds of the bus and of the electric railway car are the same, and in general this will be the case, because the boarding and alighting facilities of a twenty-six-passenger bus are distinctly inferior to those of a fifty-passenger car.

THE BRASS BAND IN THE SAFETY MOVEMENT

Recently a pioneer in the safety-first movement remarked that he did not believe in the button, banner and painted sign method of promoting a safety campaign because it ought to be a practical every-day undertaking, comparable with any other efficiency work, and would produce satisfactory financial results if conducted in a scientific manner. It is also our belief, after observing the methods of conducting the safety movement on a number of properties, that some pay too much attention to the publicity features connected with the beginning of the movement rather than to the more prosaic work of following up the undertaking after it has been begun. The Durbar at Delhi may have been an awe-inspiring spectacle, but the cosmopolitan American demands tangible evidence before he is convinced. In other words, he wants a good show after the parade.

A public utility company that had experienced a marked increase in the amount of money paid out in claims for injury recently decided that something should be done to reduce the rate of increase or, if possible, show a decrease in following years. The accidents from which claims arose were due principally to carelessness on the part of the public, on the part of the employees, or on the part of the company in not providing protective devices. It was therefore decided that a comprehensive safety movement was necessary, but that it had to be along practical lines to produce the best results. The first step taken was to make a careful analysis of the causes of accidents and then to remove the causes where this could be done by providing protective devices. The human side of the question was then taken up, and children were instructed in safety precautions at the public schools, the public was taught by circulars, individuals by personal instruction and the employees through their organizations, the management devoting a great deal of attention not only to starting the safety idea but to keeping it uppermost in everyone's mind. Having begun the good work auspiciously the management is confronted with the task of conserving the aroused interest.

But how can this be done? What will prevent the interest from flagging after the novelty has worn off? What will keep the safety movement from fading

and dying after beginning with a burst of glory like the rocket? One way is by effecting a permanent organization to carry it on, acting either through one official who gives most of his time to this work, or through a committee system. The results of campaigns should have due publicity and the economic and humanitarian details should be used to sustain interest and spur to fresh endeavors. Above all, the company should not fail to practise its safety doctrines before the public.

The erroneous method of practising safety-first preaching is illustrated by a recent collision in which two careless automobile drivers figured conspicuously. The machine driven by the offender in this case bore a large safety-first banner. Similarly an electric railway safety movement with brass band accompaniment followed by little or no display of conviction and sincerity of purpose is quite certain to fail. "Eternal vigilance is the price of safety."

PROTECTING ELECTRICAL APPARATUS FROM SELF-DESTRUCTION

The subject of feeder-tap protection of d.c. apparatus, particularly rotary converters, discussed last week at the Illinois Electric Railways Association meeting by Charles H. Smith, deserves more than passing notice. This is true partly because it is important that the protection to the apparatus should be furnished and partly because an important fundamental principle is illustrated. In the high-frequency rotary it is necessary to place the brush studs fairly close together, and this necessity, with the accompanying flash-overs, long hindered progress in this type of equipment, although sixty-cycle machines were built in small sizes in the very early rotary converter days. An earlier appreciation of feeder-tap protection might have accelerated this progress. Mr. Smith states that since his original article was published in January an important 1500-volt d.c. system in the West acted upon his suggestion of limiting short-circuit current by means of feeder resistance and thereby eliminated flashing troubles. An article by Nicholas Stahl, also in last week's issue, refers to the same principle as applied on a Southern 1500-volt, sixty-cycle system. Mr. Smith recommends for 600-volt systems a minimum feeder length of 2500 ft. and for 1200-volt systems a minimum of 5000 ft. It is interesting to note that, in the distribution described by Mr. Stahl, the closest tap point is a mile from the substation. If converter flashing is giving trouble anywhere, the location of the close-by feeder taps will at least bear examination.

Direct-current apparatus, particularly the rotary converter, lacks the self protective quality which a.c. apparatus inherently possesses. Alternating-current reactance, a bugbear when generating units were small and voltage regulation was considered all-important, is now a real asset to alternators, transformers and a.c. motors. This reactance, which at normal loads does not produce serious voltage drop, is an ever-present and nearly instantaneously-acting protection under short-circuit, the effects of which would otherwise be destruc-

tive in modern high-power apparatus. With the d.c. machine there is no protection but the circuit breaker, reliable, to be sure, but not quick enough to prevent the starting of flash-overs if conditions are favorable to them. This is particularly true when the a.c. power supply behind a rotary is large compared with its rating because, while the overdraft of current extends through the rotary to the a.c. supply line, it is not a short-circuit there and does not bring out the protective qualities of the reactance. While energy-consuming resistance as furnished by feeders is not to be compared with a.c. reactance as a protective quality, it is the best available protection, and, as high d.c. voltage and frequency become more popular, its value in the distributing system will be increasingly appreciated.

TWO MORE FAVORABLE DECISIONS

We have made previous references to the increasing inclination in the United States to treat the transportation agencies of this country more fairly. Two of the most recent and conspicuous examples of this along judicial lines were the recent United States Supreme Court decisions in the West Virginia passenger rate case and the North Dakota lignite rate case.

In the first one, the State law fixing the passenger rate at 2 cents a mile was declared invalid, because thereunder the company was forced to carry passengers, if not at or below cost, for merely a nominal reward considering the volume of the traffic affected. In the North Dakota case, the point at issue was the right of the State to segregate lignite coal and enforce low rates on this commodity, provided the carrier was able to earn a fair profit upon its entire interstate business. The court held that each class of traffic must bear its direct costs and also its proportionate share of overhead expenses, and that when thereby the carrier is denied a reasonable reward for its services, the State has exceeded its regulating authority. The amounts involved in these cases were insignificant, but the principles established are vitally important. As the court says, the power of regulation is broad, but a state does not enjoy the freedom of an owner, and it has no arbitrary power over rates.

Of late the power of states over rate regulation has been becoming definitely limited by the Supreme Court decisions. In the Minnesota rate cases it was declared that a state had authority to fix intrastate rates as long as they were not confiscatory. Later the Shreveport decision established the fact that in a conflict between intrastate and interstate rates in the predominant sphere of interstate competition, the interstate rates must be used. Now, in these present cases it is decreed that a state cannot compel railroads to do a certain class of business at non-compensatory rates and that the absence of a reasonable reward and not the presence of a positive loss is the determining factor in establishing the validity of rates.

While this ruling now affects electric railways in the main only indirectly, it is hoped that it gives the clue to more equitable administrative and judicial decisions in all future rate cases affecting such carriers.

A Carhouse for a Residential District

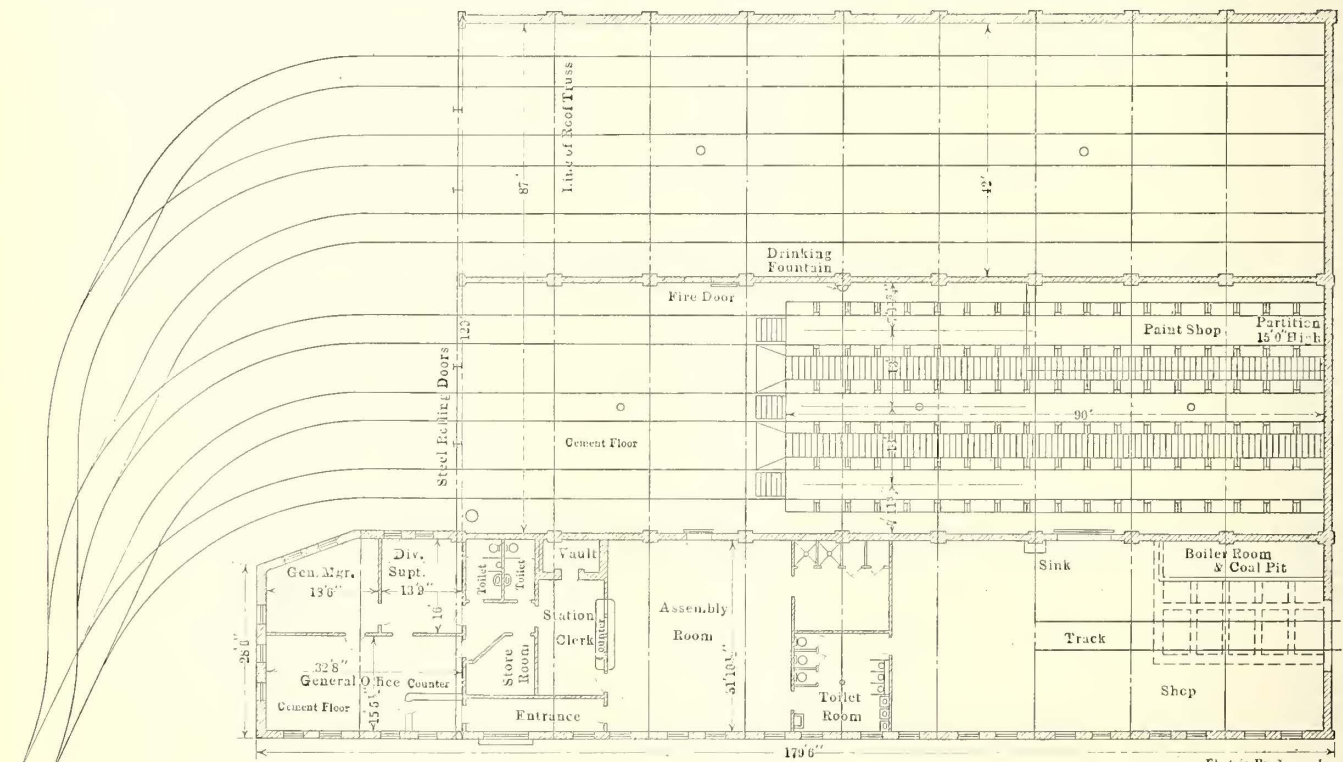
The New Carhouse and Repair Shops of the Evanston (Ill.) Railway Combine the Artistic with the Practical—Attention is Directed to the Pit Construction, the Heating Plant and the Sand Equipment

That carhouses and shops can be built at reasonable cost in residential districts to please the esthetic ideas of a most particular community and to the railway company's ultimate advantage has been clearly demonstrated in the case of the new carhouse and shops of the Evanston (Ill.) Railway. These are located in an attractive suburban residence town and occupy part of a golf club course without detracting in any way from its appearance.

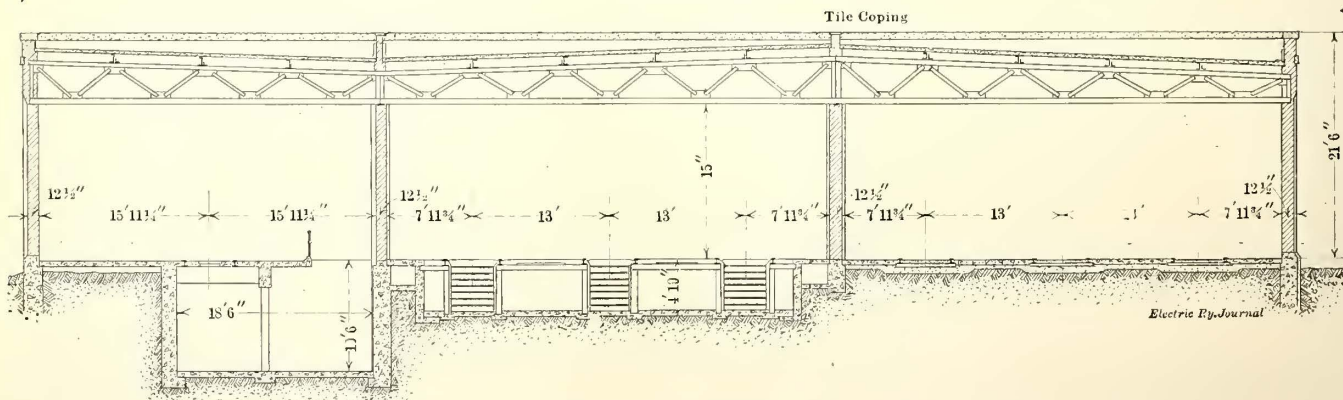
In August, 1913, the portion of the street railway lines in the city of Evanston owned by the County Traction Company was purchased by the Evanston Railway Company, a new organization. This purchase included only the old rails and the overhead lines. The cars were owned by the Chicago Railways Company, which maintained them, and the franchise had expired. The new owner obtained a twenty-year grant under the Mueller law and began immediately to rehabilitate the property,

so that it is in excellent physical condition, with its tracks in good repair, with new cars of the latest type in operation, and a new carhouse and shops just completed. While the railway system is quite small, at present comprising but about 10 miles of track and twelve cars, it is beginning with a "clean slate," so to speak, and bids fair to grow in importance, since the territory it serves is expanding. Extensions in the near future are planned, and should increase the traffic and aid in the future development of the community.

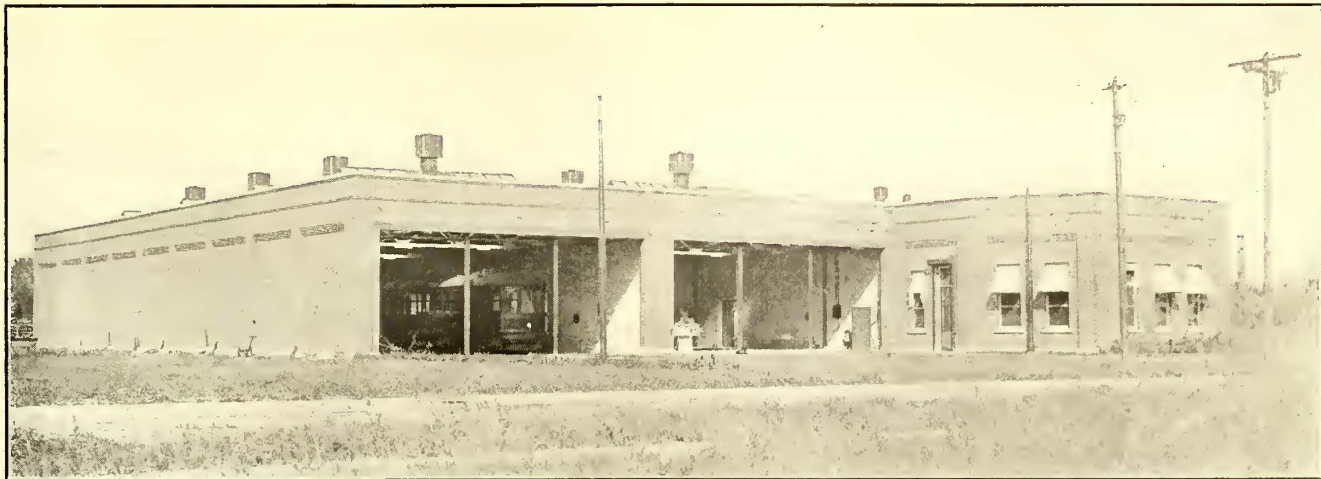
The new office building and carhouse is situated at about the center of the system. The site selected was the only available property of a size sufficient for present needs and future expansion. It is within a short distance of the north branch of the Chicago drainage canal and near the terminals of the Northwestern Elevated and the Chicago & Milwaukee Electric Railroads. The site adjoins a high-class residence district, and at



EVANSTON CARHOUSE—FLOOR PLAN



EVANSTON CARHOUSE—CROSS-SECTION OF BUILDING, SHOP AT LEFT, CARHOUSE AT RIGHT



EVANSTON CARHOUSE—GENERAL VIEW OF BUILDING

first the property owners strenuously opposed the location of the carhouse in their neighborhood. Their objections were overcome, however, when the plans for the layout were displayed, and since the completion of the improvement the neighbors have taken considerable pride in its appearance.

GENERAL LAYOUT

As is shown in the accompanying illustrations, the buildings comprise two car-storage bays, 42 ft. x 146 ft. in size, and a section 34 ft. over-all width by 179 ft. 6 in. long, which is occupied by the operating department, general offices and repair shop. This was deemed the most economical arrangement for a railway of small size.

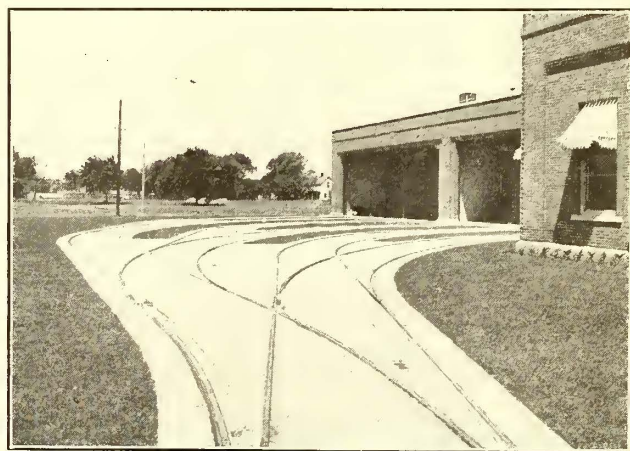
Six tracks enter the car-storage bays from a ladder on the property, an arrangement necessary to preserve unbroken the sidewalk along the front of the property. At the same time it permitted the use of 4½-in. 60-lb. T-rail with a steel-bound insert, frogs, switches and mates, thus minimizing the cost of special work. The tracks enter the carhouse at 13-ft. centers, leaving a 4-ft. aisle between the cars and a 3½-ft. walkway beside the inspection and repair pit. The tracks in one bay are used exclusively for car-storage purposes, while the other bay adjoins the repair shop and practically forms part of it. In this bay the three tracks pass over an inspection and repair pit 90 ft. in length, which occupies the rear end of the bay.

BUILDING CONSTRUCTION FEATURES

Architecturally this carhouse is quite plain, but the walls are faced on all sides with cherry-red vitrified brick neatly laid in white mortar. Corbeled panels and belt courses, with plain limestone coping and sills, fur-

nish the only decorative effect. The unadorned appearance of the structure, however, is entirely offset by the neatly-cut lawn and hedge and the well-placed and well-kept flower beds.

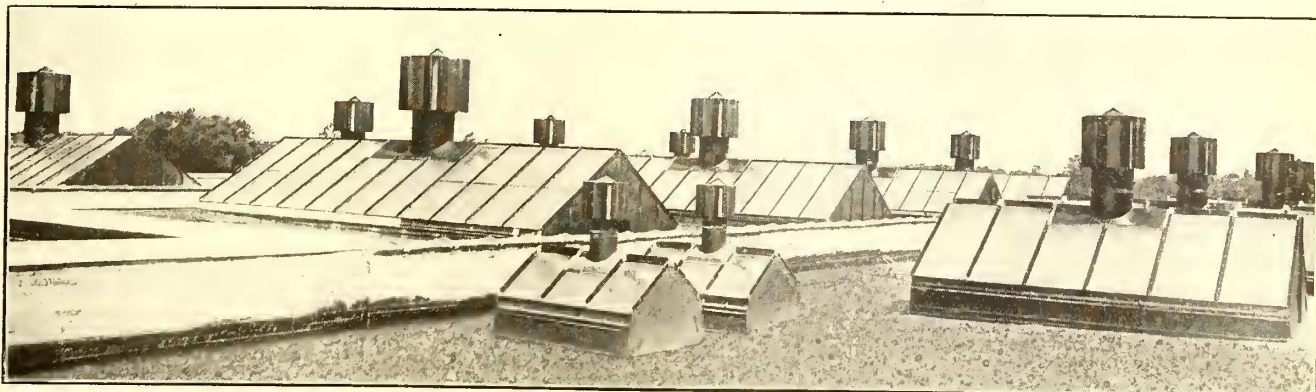
In order that track entrances to the building should be in keeping with the rest of the layout they were paved with concrete between the rails and 18 in. outside. This not only conduces to attractive appearance



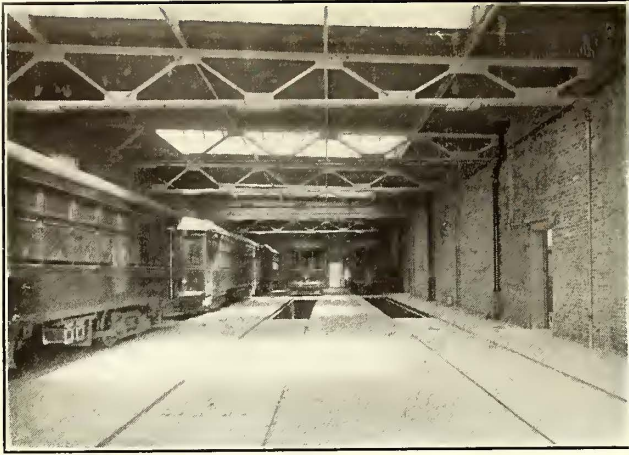
EVANSTON CARHOUSE—VIEW SHOWING METHOD OF PAVING TRACK

but also provides a driveway for teams delivering materials. Furthermore, derailed cars may be replaced to the track without difficulty. The locations of the tubular steel poles supporting the overhead were so chosen as to keep the track entrances entirely clear.

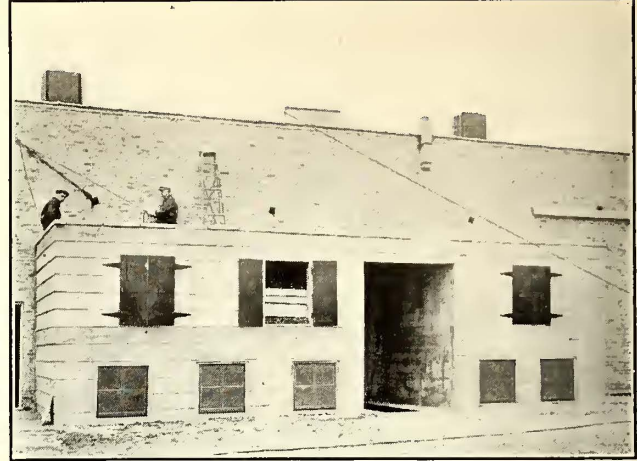
The building is of modern, fireproof construction,



EVANSTON CARHOUSE—VIEW OF ROOF AND SKYLIGHTS



EVANSTON CARHOUSE—INTERIOR VIEW CAR-STORAGE BAY



EVANSTON CARHOUSE—VIEW OF SAND AND COKE BINS

with concrete foundations, floors and roof, brick walls, and steel roof trusses. The three bays in the building are separated by 13-in. fire walls with openings fitted with automatically closing underwriter's fire doors. The roof is of reinforced-concrete flat-slab construction with a liberal supply of Drouvé skylights. Each skylight is fitted with a Peerless ventilator, manufactured by the Auto Utilities Manufacturing Company, Chicago. These ventilators vary in diameter from 10 in. to 30 in., with the size of the skylight opening. Hips and valleys for roof drainage were formed by depositing concrete on the slab, and all drain to down-spouts, inside the building beside the walls. The roof was waterproofed with a five-ply tar-and-gravel covering.

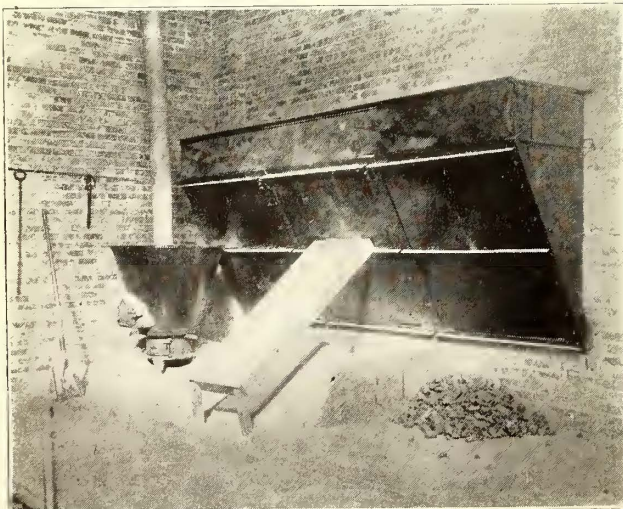
The repair and inspection pits occupy the rear 90 ft. under the three tracks in the bay adjoining the repair shop proper. They are built in the usual manner, with one large pit under the three tracks, structural-steel bents carrying the track rails and concrete slabs forming the aisles between tracks. The outer rails of the two outside tracks are not supported, as usual, on the concrete walls of the pit. Instead, these walls are placed 3 ft. 6 in. outside the rails, and the additional space thus provided, roofed over by the floor, is fitted with reinforced shelving for storing the various repair parts usually replaced from the pit.

To economize space and at the same time to facilitate the delivery of coal to the heating plant and the removal of cinders the heating plant boiler was installed in the basement beneath the repair-shop floor. A coal-

delivery track enters the repair shop from the rear of the building, and is carried over the basement on a concrete beam-and-column structure. From this track coal may be dumped into the basement through two 24-in. manholes between the rails. The boiler and indirect radiation equipment occupy one corner of the shop floor, the former in the basement and the latter above it on the shop floor.

The reinforced concrete sand-receiving bin and sand-drying and storage outfit are quite complete. The former serves to receive sand from wagon delivery and is located immediately back of the storage bay. The bin, of 15-yd. capacity, is of a rectangular section with the floor sloping to an opening in the rear wall of the car-storage bay. The lowest point of the receiving bin was so located that sand will flow by gravity to an opening in the wall just above the car-storage bay floor level. From this opening the sand is scooped into the sand drier or deposited on the floor in the space provided for that purpose. After the sand has been dried it is screened and stored in a 4-yd. steel bin mounted on the partition wall between the two bays. This bin supplies sand to valves on the opposite side of the wall, where it is convenient for the car crews and the inspection force.

As shown in one of the accompanying illustrations, the sand-receiving bin forms one wing of a reinforced-concrete structure, of which a 30-ton coke bin is the other. The two are separated by an enclosure which will serve to house a line repair wagon. The coke bin, like the one for sand, is built with a sloping floor, which



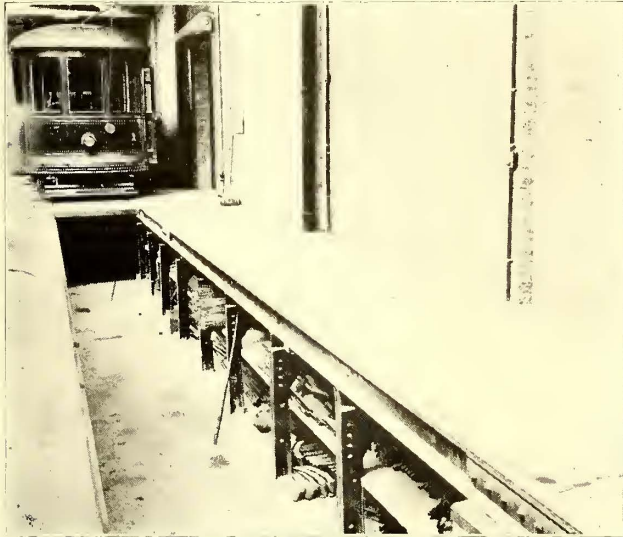
EVANSTON CARHOUSE—VIEW OF SAND-DRYING OUTFIT



EVANSTON CARHOUSE—VIEW IN TRAINMEN'S QUARTERS

allows the coke to flow by gravity to an opening in the rear wall of one of the car-storage bays. At this opening fuel for the forced hot-air heaters on the cars is readily available. The basement space beneath the bins serves as storage space for scrap materials and provides an oil-storage room.

The front portion of the repair-shop bay is divided into offices for the general manager, the superintendent and the station clerk, and an assembly room for the employees. The employees' quarters have been furnished with tables, chairs, a billiard table, shower baths and individual metal lockers. The station clerk's office adjoins the assembly room, being separated from it by a glass partition, built with a counter on each side. Across this the conductors receive supplies and make turn-ins.



EVANSTON CARHOUSE—VIEW SHOWING SHELVING IN PITS

The heating system for the offices and shops is of the indirect hot-air blower radiation type, furnished by the B. F. Sturtevant Company. This system was adopted because it could be installed in pits, shops or offices, and serve both as a heating and ventilating system for winter or summer. All outlets are overhead, except those in the pits, each being fitted with a regulating valve and diffusers. In the offices the diffusers are installed in the center of the ceilings and connect to the hot-air ducts provided between the ceiling and the roof. The heating plant was not selected until after the building was completed, but, in designing the structure, the ducts were so arranged that they could be used in either a direct or an indirect heating system.

Flow of Energy Discussion in Chicago

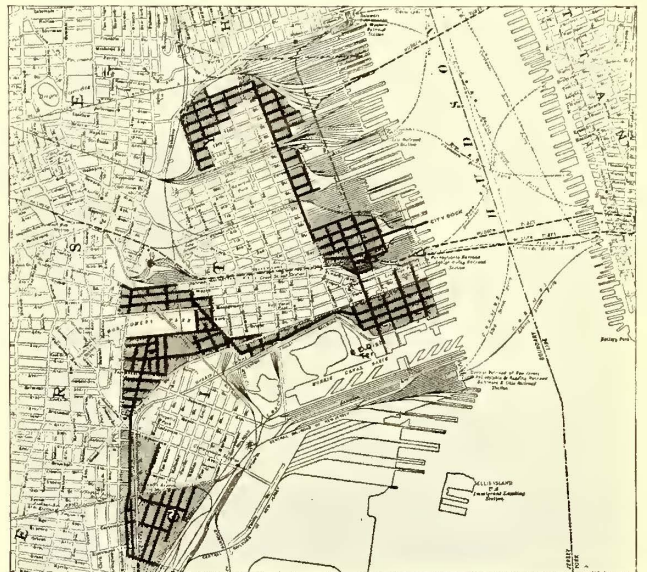
At a joint meeting of the Chicago section A. I. E. E. and the Western Society of Engineers, held in Chicago on March 22, Robert A. Philip, chief electrical engineer Stone & Webster Engineering Corporation, presented a paper designed to picture graphically the transformations of energy which occur in an electrical generating, transmitting and distributing system. He gave a series of diagrams of the "ribbon" variety showing by the widths of the ribbons the amounts of power passing different points in the system, all arranged in such a way as to associate the apparatus with the respective power losses. Energy flow and magnetizing power were considered separately and a simple method for obtaining a working grasp of the subject of power factor was developed. The full text of the paper, under the title "Flow of Energy," appears in the April *Proceedings* of the American Institute of Electrical Engineers.

Industrial Development Railway for Jersey City

Linking of Six Trunk Line Railroads Contemplated—
Extraordinary Facilities for Handling Freight
Shipments Will Be Provided

The Chamber of Commerce of Jersey City, N. J., is planning one of the most elaborate electric railways for industrial development that has yet been attempted. The scheme, which involves the linking together of the six trunk-line railroads that now terminate separately on the west bank of the Hudson River opposite New York City, has recently been outlined in detail in a report by F. Van Z. Lane, resident engineer. Its establishment is subject to action of the New Jersey State Legislature on a bill initiated by the Jersey City Chamber of Commerce to permit the building of the railroad by the city. The informal approval of the New Jersey Public Service Commission has already been obtained.

The plan comprehends the building of the network of lines shown in the accompanying illustration by funds raised from the sale of twenty-year city bonds. The cost of the 5 miles of main line and 16 miles of sidings



INDUSTRIAL DEVELOPMENT RAILWAY FOR JERSEY CITY—
PROPOSED MAIN ROUTE AND SIDINGS

which will be installed is estimated at \$1,500,000. In return for this expenditure there will be directly served an area of more than 15,000,000 sq. ft. of ground which will possess exceptional advantages for warehouse and manufacturing sites owing to the extraordinary facilities for handling freight shipments to or from any part of the country. This is expected to increase the taxable value of the real estate in this city by \$50,000,000. Operation will probably be conducted by individual capital, the plan being to lease the road, if necessary, at a rental which will equal the cost of the obligation of the city, including interest and sinking fund, as the indirect return to the community will be so great as to preclude any need for the investment to pay direct profit.

The record of passenger train performances on the steam railroads of the State of New York for January, 1915, shows that during the month the number of trains run was 60,807. Of the number of trains run 87 per cent were on time at the division terminal. The average delay for each late train was 22.6 minutes and the average delay for each train run was 2.8 minutes.

Report on Detroit Traffic

The Changes Recommended Embrace Re routing, Two-Car Units, Skip Stops, Street Collectors During Rush Hours, Street Improvements to Facilitate Traffic, and Other Suggestions

A comprehensive report on electric railway traffic conditions in Detroit has just been made to the street railway commissioners of that city by Barclay Parsons & Klapp, consulting engineers, of New York. It contains 291 pages, twenty-one large maps or diagrams, and is the result of an extensive study of the subject in that city by H. M. Brinckerhoff, a member of the firm. A short account of the report appeared in the issue of this paper for March 20, page 595. A longer abstract appears below.

The report first refers to the recent rapid increase of the population of the city. Prior to 1900 this increase followed closely that of the other large lake cities—Buffalo, Cleveland, Milwaukee and Chicago. During the last fourteen years, however, a rate of growth has occurred greatly in excess of other cities of about the same size, placing Detroit to-day in population ahead of all these cities except Cleveland and Chicago. In per cent this increase has amounted to 76½ for the fourteen years. In population density, the city averages 14,310 per square mile, which is about the same or possibly less than similar American cities. On the other hand, the population has a singularly even distribution, and the average number of persons per dwelling is five and one-half, which is much below that of other cities of the same general size.

Detroit is essentially a manufacturing city, and the factories are widely distributed throughout the city. This fact has an important bearing on the electric railway traffic of Detroit. A tabulation of the factory workers shows that of 45,600, 13,000 are within walking distance of their factories, 20,600 use street transportation outside of the congested districts, and 12,000 use lines which transfer near the heart of the city.

The street railway traffic in Detroit increased from 1904 to 1908 approximately at the same rate as the average of the transportation systems of the thirty-two largest cities of the United States. From 1908 to 1914 inclusive, however, the annual rate of increase has exceeded the average, the average rate being 7.8 per cent, whereas in Detroit the rate was 17.1 per cent. The report adds that American cities up to 700,000 to 800,000 population have an increasing and constant rate of traffic growth, but from this point on the rate of increase of traffic in proportion to the population is markedly less. In point of size Detroit has arrived at this apparently critical stage, so that caution must be exercised in making future predictions on the figures just mentioned.

CITY RAILWAY SYSTEM

The principal car routes in Detroit follow the main radiating thoroughfares, and fourteen of the twenty city lines pass directly through the hub or central district surrounding the City Hall. This has brought about a large congestion of traffic in the center of the city during the morning and evening rush hours, so severe as to cause interruption, slow and otherwise unsatisfactory service at these times. Factories now form a girdle surrounding practically 70 per cent of the population of Detroit. The travel of the workmen to these factories is an additional reason for the heavy passenger movement in the morning from various residential parts of the city toward the common center and outward again to the factories, with a reverse movement over the same routes in the evening. It is largely for

the purpose of finding a solution for this congestion problem that the report was made.

SUGGESTED CHANGES

The first suggested change is rerouting. The report points out that with the development of electric railway operating conditions, changes of some inconvenience to the individual passenger but of great convenience to the public as a whole have been necessary. In the early days it was not unusual for a car to stop midway between blocks. As the demand for more rapid service grew, the rule of stopping only at corners became necessary. Again, station stops came into use, and transfers were introduced. Rerouting may involve some inconvenience to part of the passengers, but if it will facilitate the situation as a whole it should be employed. In consequence, the report suggests the use of two-car trains and skip stops and recommends a number of changes in route by which the number of congested crossings is reduced, principally by looping lines near the center of the city instead of making them cross each other. The estimated cost of making these changes is \$400,000.

The report also considers the question of a subway on Woodward Avenue, the line of heaviest traffic. In 1914 this line carried 47,467,294 passengers, the average number of passengers per mile of single track being more than 3,000,000. Two plans were considered. The first was for a subway 6 miles in length or with a total length of single track of 12.34 miles and stations one-third of a mile apart. It was estimated, however, that with stations at this interval a person traveling less than 2 miles would not save enough time by use of the subway over the surface car to warrant the walk to the station of a block or two. For a trip of 1½ miles or less the time occupied in descending and ascending stairs and waiting for trains would offset the saving made by the higher speed in the subway. It is estimated that not more than 23,000,000 of the total number of passengers on Woodward Avenue during 1914 would have used the subway. This was not sufficient to warrant the construction of the line. On the other hand, a short subway loop to begin at Grand Circus might well be considered and would be necessary if traffic should increase greatly, as now seems probable, during the next six years. Such a system would be available as the terminal of a complete subway system later and would cost about \$2,500,000.

RECOMMENDATIONS

The recommendations were briefly as follows:

1. Entire rerouting of the various lines entering the heart of the city by a system of loops to eliminate as far as possible the present crossing interferences.
2. Two-car units on Woodward Avenue during rush hours, to be followed later as traffic may require on some of the other heavy lines.
3. Additional car service on certain lines. This will be possible after rerouting and the use of larger car units.
4. Extensions on certain crosstown and belt lines.
5. A larger bridge and through cars to Belle Isle.
6. Skip stops on Woodward Avenue, Michigan Avenue, Jefferson Avenue and Grand River Avenue, cars stopping at all alternate street corners in one direction and at the intermediate corners returning.

7. Street collectors to load passengers at the front doors of prepayment cars during the rush hours in the downtown districts. This plan has been in use since Dec. 14 on the Woodward Avenue line.

8. A change in the division rail on the rear platform of the pay-as-you-enter cars to allow this rail to be removed by the conductor at heavy loading points. By this means passengers can enter the car by both rear doors simultaneously, thereby cutting down the loading time materially.

9. The use of non-stop cars through the crowds of factory workers on some of the main car lines at certain hours of the day to take care of the general traffic travel to points beyond the factories.

10. Improvements in the way of paving, lighting and widening certain streets so that they can better care for vehicle traffic. Automobiles should be encouraged to use these streets.

11. An ordinance providing for stopping automobiles with the street cars on certain streets to facilitate the safe and rapid loading of the cars.

12. The enforcement of rigid parking regulations at the ends of the blocks near the safety zones to facilitate loading operations and prevent delays to the cars.

13. Certain rerouting for interurban cars and city cars pending the completion of the track changes.

Four additional recommendations were made in regard to the proposed short subway loop in line with the policy outlined above.

DISCUSSION OF RECOMMENDATIONS

In discussing the recommendation for street collectors the report says that a collector in the street receiving fares at the front or exit door of the car and at the same time assisting passengers, as well as acting as inspector, has been found to be of great assistance and secures the prompt movement of cars upon the blowing of the traffic officer's whistle. In congested traffic movement, the question of a few seconds in a single operation is vital. The time actually occupied by a car in passing over crossing tracks is very small compared to the time required to start and reach the crossing, and when to this time is added a delay of some seconds through passenger loading before the car starts an unnecessary loss of time occurs during which the crossing is idle. Where the loading is very heavy it is frequently advantageous to all concerned to shut off passengers crowding on the first few cars and to dispatch these cars rather than delay the whole line to allow a few additional passengers to board. This can be done by the street collector, who must co-operate with the traffic officer at the crossing.

The change recommended in the car platforms is to convert the rail dividing the entrance from the exit steps of the rear platform of the car into a removable one. This makes it possible to load passengers at three entrances, one in front and two at the rear. This would approximately cut the loading time to one-third.

In referring to skip stops and two-car units the report mentions the practice on the Superior Avenue line in Cleveland. On this street, where formerly conditions of bad crowding and congestion of cars obtained with the operation of single units, by the introduction of two-car units and the reduction of the number of stops from fifteen to nine per mile, the headway has been changed from one minute to one and one-half minutes, and the congestion of cars on the street has been eliminated. In 1913, 40 per cent more passengers were carried than in 1910, and the capacity of the line is still well under the limit.

The report also refers to trailer or two-car operation as being used with success in Buffalo, Milwaukee, Pitts-

burgh and other places. In Detroit, on the principal thoroughfares where recommendations are made for trailer operation with skip stops, especially on Woodward Avenue, it is estimated that by using a large light-weight trailer and reducing the number of possible stops per mile from about twelve as at present to eight, the schedule speed will be raised about 10 per cent and the capacity of the line 50 per cent.

DIAGRAMS, TABLES AND MAPS

The report is accompanied by a number of interesting diagrams, tables and maps. The tables show the result of traffic counts conducted by the engineers during the period from Aug. 1 to Dec. 15, 1914, and give for each line and important cross streets the passengers on and passengers off during the four periods of the day, namely, from 5:30 a. m. to 9 a. m., from 9 a. m. to 4 p. m., from 4 p. m. to 6 p. m., and from 6 p. m. to midnight. Among the maps is an interesting one showing the results of the investigation of the amount of riding by workers in the different factories. The factories were divided into eleven groups and the city into fifty-two sections, and the number of workers traveling from each section to each group of factories was determined. The map shows this information graphically by a set of eleven rectangles printed in each of the fifty-two sections.

The map also includes diagrams of maximum schedule cars per hour under the proposed rerouting, the track changes proposed and an isochronal map based on the present and proposed transportation facilities.

Philadelphia Rapid Transit Company Distributes Safety-First Poster Stamps

Utilizing the poster-stamp collecting fad to promote its safety campaign, the Philadelphia Rapid Transit Company is distributing 1,000,000 of an artistic and striking series of safety-first stamps. These poster stamps are designed especially to convey to school children a warning, in picture form, of the dangers existing



SIX POSTER STAMPS FOR PHILADELPHIA SCHOOL CHILDREN

in busy city streets. The series includes six stamps, each one printed in four colors, and five of them illustrate situations most often resulting in injury to reckless or thoughtless boys and girls. The picture in each case so vividly presents its story of danger as to make it plain even to very young children. Catchy and appro-

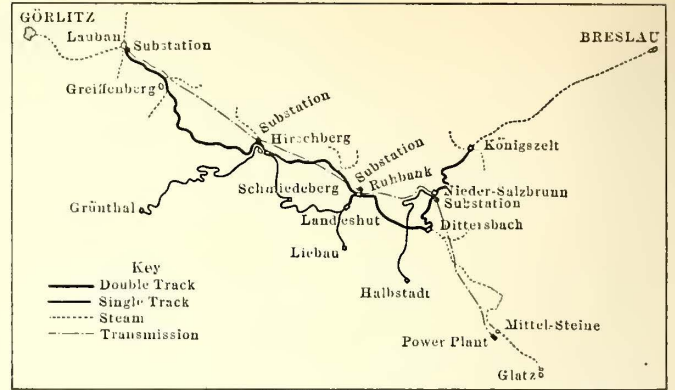
appropriate words of warning add emphasis to the posters. The sixth stamp handsomely exhibits the near-side car which, since its installation in the Philadelphia system, has eliminated many of the types of accidents formerly of frequent occurrence in street railroading.

Silesian Single-Phase Electrification

Details of a 310-Mile Electrification Which Was Undertaken to Improve Heavy Freight Service and to Increase Pleasure Travel on One Section

The Silesian electrification of the Prussian State Railways between Lauban and Königszelt had attained the point of trial runs just before the outbreak of the present war. As the installation was so advanced it is deemed advisable to describe its principal features, although complete electrical operation appears to be indefinitely postponed.

The network for which electric service is planned comprises the following: Double-track main line between Lauban and Königszelt, 80 miles; single-track main line, Niedersalzbrunn-Halbstadt, 21.7 miles; double-track main line, Ruhbank-Landeshut, and single-track line, Landeshut-Liebau, totaling 10.5 miles; single-track branch line, Hirschberg-Grünthal, 32.9 miles and



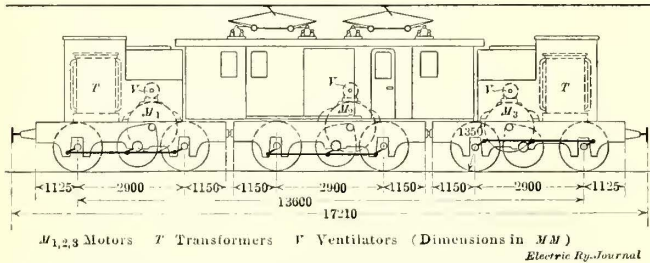
LAUBAN-KÖNIGSZELT ELECTRIFICATION—MAP

the transmission lines and substations for an annual sum which covers amortization, interest charges and extraordinary maintenance. The State Railways own the contact line, distribution system and rolling stock.

The power plant is located on the Steine river about 1.24 miles from Mittelsteine. Fuel is brought by cars from mines near by. The initial railway generating equipment comprises six 1000-kva, 1000-r.p.m. machines which deliver 3500 volts single phase at 16 2/3 cycles. Three three-phase, 2000-volt, fifty-cycle units are also installed for local industrial purposes. The railway energy as generated is raised to the transmission potential of 80,000 volts by means of six 5000-kva single-phase transformers.

The transmission line is built with suspension insulators. The curvature of the railway line and the possible interference with the reading of signals led to running the transmission across country wherever possible with the result that 76.8 miles of transmission correspond to 101 miles of railway. Further reduction in the number of suspension points was secured by making the transmission spans average 656 ft., whereas the railway spans are but 328 ft. on tangents and 230 ft. on curves.

The four substations are located in the following order: From the power plant to Niedersalzbrunn, 23.56 miles; from Niedersalzbrunn to Ruhbank, 11.78 miles; from Ruhbank to Hirschberg, 16.74 miles and from Hirschberg to Lauban, 24.8 miles. The individual feeders necessarily parallel the railway and exceed the length of the overland 80,000-volt line by 24.18 miles. The feeders are in duplicate which are normally connected in parallel but are capable alone of conveying enough energy to propel twenty-four trains in each section. For this purpose the pairs of feeders are divided into four sections as follows: No. 1, 90 sq. mm (approximately No. 000 B & S); Nos. 2 and 3, 65 sq. mm (approximately No. 00) No. 4, 30 sq. mm (approximately No. 2).



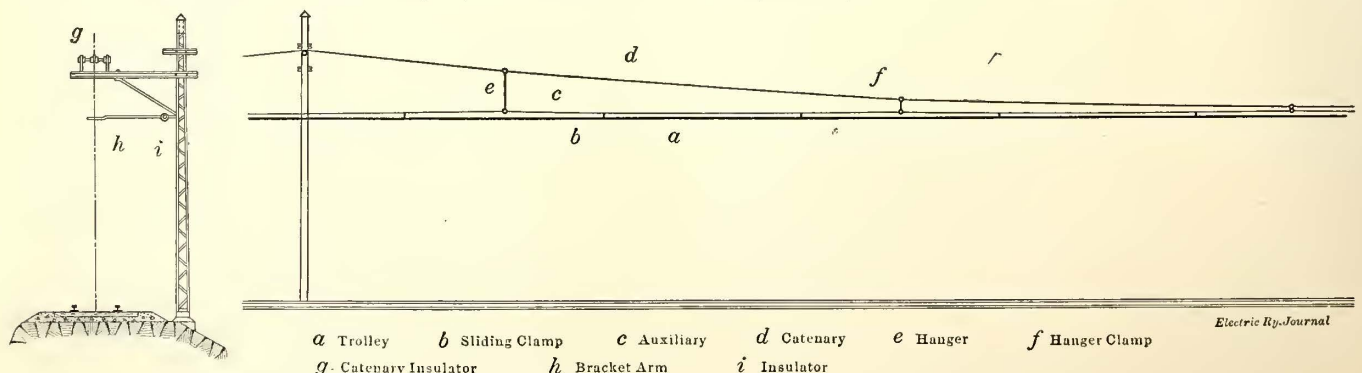
LAUBAN-KÖNIGSZELT ELECTRIFICATION—DISPOSITION OF APPARATUS ON LOCOMOTIVE

a single-track branch line, Hirschberg-Schmiedeberg-Landeshut, 24.8 miles. The total length measured as route is 170 miles and as single track, including sidings, yards, etc., 310 miles.

The lines are in a mountainous district where normally there is heavy coal, industrial and passenger business. The plan decided upon was to operate passenger express trains up to 500 metric tons and freight trains up to 1200 metric tons. The physical features are considered severe because of the large number of curves and grades, and the snowfall in this mountain region is also an important factor.

ENERGY SUPPLY

Energy is purchased by the Prussian State Railways from a private central station company at 2.75 pf (0.69 cents) per kilowatt hour, measured at the transmission voltage. The central station company also maintains



LAUBAN-KÖNIGSZELT ELECTRIFICATION—DETAILS OF CATENARY SUSPENSION

The substations are equipped with 1600-kva transformers to a process of manufacturing an alloy of iron formers to step down the 80,000-volt transmission current to 15,000 volts trolley potential. Niedersalzbrunn and Hirschberg have five units, Ruhbank has four, and Lauban has three.

CATENARY LINE.

In the autumn of 1911 a trial overhead line about 4920 ft. long was erected at Jacobsthal on the Hirschberg-Grünthal division. Two severe winters demonstrated the advisability of using the same construction for the complete electrification. The overhead line between Greiffenberg-Hirschberg-Mersdorf-Ruhbank and Ruhbank-Landeshut-Liebau is of the Siemens-Schuckert double catenary type as used on the Dessau-Bitterfeld electrification of the Prussian State Railways. The contact wire is of hard-drawn copper of 100 sq. mm (about No. 0000 B & S) section. It is attached to the auxiliary catenary by means of sliding clamps. The auxiliary wire is clamped to the main catenary by means of hangers which are located in the centers of every other of the spans formed by the clamps of the trolley and auxiliary wire. On single-track sections the supporting points are poles and brackets; on double-track sections, bridges are used. In both constructions the spacing on tangents is about 328 ft., and the insulator over which the catenary is carried is installed between a pair of uprights. At brackets, an insulator is also installed in the horizontal arm to limit the sideways of the trolley and auxiliary catenary.

The clearance between the head of the rails and the contact wire on the right-of-way is 17 ft. and at stations, 19.7 ft. The main catenary has a sag of 9.8 ft. in the span length of 328 ft. so that the insulator supports are carried at a height of about 29.5 ft. Chain-hung weights of the customary type are used at intervals of 0.93 mile to take care of expansion and contraction. The main catenary is usually sheardized steel, but bronze is used in smoke-laden territory. The towers are of exceptional height on those portions of the line where the ground is liable to sink on account of mines in order to permit readjustments of the contact line to the standard clearance. Practically all of the towers are of steel, but a number of reinforced concrete poles were installed for experiment.

LOCOMOTIVES AND MOTOR CARS

The principal requirement set for the electric locomotives was that they should be capable of hauling alone the maximum train weights which had formerly required the temporary assistance of a second steam locomotive. A higher rate of acceleration was also desired. In general the electric locomotives were expected to reduce the average running time from 10 to 20 per cent and in some instances even from 30 to 40 per cent. The present order calls for twenty locomotives for heavy express passenger service, thirty-five freight locomotives, seven locomotives for light passenger service and thirteen combination passenger and freight locomotives of lighter construction (15 tons per axle) for use on the branch lines. Six motor car trains (one motor car and two "control" trailers) are also called for.

When the war began there were under construction fourteen locomotives for high-speed passenger service, thirty for freight service, seven for light passenger service and five motor-car trains. Of this order the Siemens-Schuckert Company is to deliver nine type AAA+AAA (six non-coupled driving axles) locomotives equipped with six geared motors each; and twelve type B+B+B (three double trucks, all with coupled axles) freight locomotives carrying three motors each

with three sets of geared jack shafts and driving rods, as shown in an accompanying illustration.

The average running speed of the freight locomotives is to be 12.4 m.p.h. and the maximum speed 27.9 m.p.h. In both types gearing was used to employ smaller motors at reasonably high speeds. In general the constructions approach the standard form of motor-car transmission except that the locomotive motors are rated at 700 hp to 800 hp each. The motors are spring-supported through connections with the locomotive frame instead of resting rigidly on the driving axles.

Enlarging the Geary Street Municipal Carhouses at San Francisco

A Two-Story Addition to the Older Carhouses Has Recently Been Built at Reasonable Cost

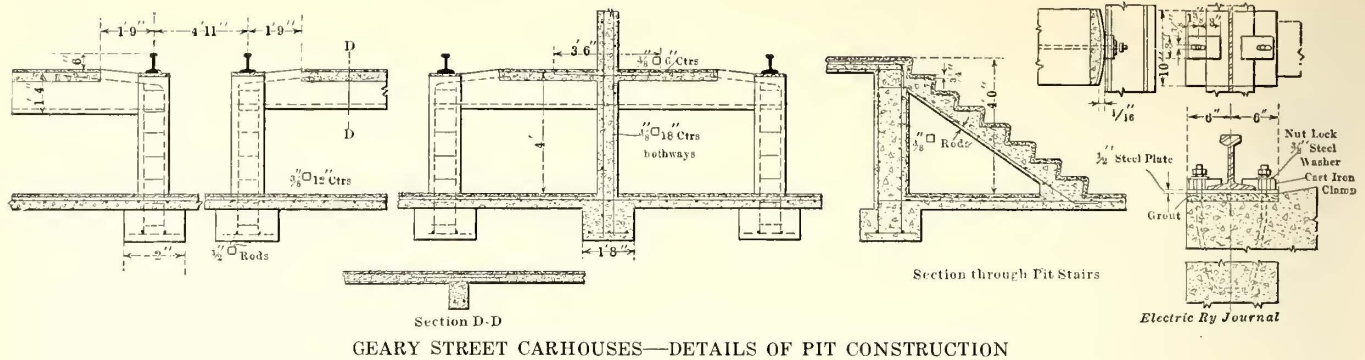
When the Municipal Railroad took over the old Geary Street Railroad properties, a concrete carhouse was built on Geary Street at Presidio Avenue with a capacity of sixty-four cars, or sufficient for more rolling stock than was at that time in use on the municipal line. After the decision to build the Van Ness Avenue and other lines was made and 125 cars were ordered, plans were at once made for the extension of the carhouse, and the adjoining property previously acquired by the city for this purpose was utilized. It was decided that the location of the carhouse first constructed was the best for this first extension, because it is convenient to the new municipal line on Van Ness Avenue running to the Exposition grounds and on which heavy traffic is expected this year.

As still more housing capacity becomes necessary carhouses will be erected in other parts of the city. The first of these is now under construction at Seventeenth and Hampshire Streets where a two-story structure with a capacity of 171 cars has been planned. Only the ground floor with a storage capacity of eighty-two cars will be constructed under the present contract. Plans are now being drawn for a further addition to the Geary Street car house for use as executive offices of the Municipal Railways, and which will cost \$30,000. This will be made on the Geary Street frontage, where the columns of the original structure were designed for this possible addition.

In making the extension to the Geary Street carhouse, which was recently completed, it was necessary to cut away the rear wall and add two floors, 114 ft. x 276 ft. in plan, thus covering the remainder of the property purchased for future extension. The car capacity of the original structure, which is also used for executive offices, etc., was sixty-four 47-ft. cars, and the new carhouses will provide space for seventy additional cars. It is to be noted that the plan adopted gives this additional storage on an area only 50 per cent of that occupied by the old building.

PREPARING FOR THE ADDITION

The grades of the streets intersecting at the carhouse are such that trackage will be available in the enlarged structure on two levels, as the level of the main entrance on Geary Street becomes the second story when extended over the area occupied by the addition which fronts on Presidio Avenue. This advantage, however, was not gained without expense, as it was necessary to excavate 24,000 cu. yd. of earth and rock from the site of the addition before it was brought down to the level of the Presidio Avenue grade, and then it was deemed wise, in the design of the wall against the uphill side, to allow for partial hydrostatic thrust from the bank which is nearly 40 ft. high.



Another feature of the work was the removal of the rear concrete wall of the old building. The wall had been founded at different levels, according to the slope of the hill, and in order to excavate to the desired level for the addition, it was necessary to take out the greater part of the old wall footings. Also the wall had to be broken through on the Geary Street level so as to give direct access to tracks on the second floor of the addition, and it was found cheaper to do this before the excavation was completed. In preparation for the removal, the wall panels were first cut through on three sides by compressed air drills, and where necessary hack saws were used to cut the reinforcing.

The slabs were then thrust out by means of a hydraulic jack which worked against an inclined 14-in. x 14-in. timber braced against the top of the slab to be broken out. A sufficient bearing for this thrust was found on the concrete floor beams of the structure. After the panels had been broken out in this manner they were further broken up into pieces sufficiently small for convenient handling by means of a drop hammer operated by a steam winch. When the first slabs were cut on three sides a line of holes was also drilled along the bottom of the panel to insure its breaking along the floor line, but this was found to be unnecessary as the break along the bottom was the same whether marked out by drills or not. Eight panels in all were taken out; of these six were 19 ft. high by 26 ft. wide, while two were 17 ft. high by 23 ft. wide. After the removal of the slabs, temporary timber footings were set at the lower floor level to carry the weight while the old concrete foundations were taken out and the new walls poured.

TRACK DESIGN

On the lower floor of the addition eight tracks are provided for, while sixteen are laid out in the upper story, at right angles to those below. On both floors four tracks is the maximum between fire-wall partitions. The rails on the upper floors were laid on concrete beams cast monolithic with the floor slab and carried on concrete girders reinforced with 1-in. deformed bars. These girders have clear spans of 28 ft., spaced about 27 ft. on centers. The central section is 3½ ft. deep and 1½ ft. thick. The floors are reinforced with ¾-in. rods, and are 4 in. thick.

In the lower floor the major portion of the trackage was placed over pits, and a form of construction was adopted, as shown in the illustration, in which there is nothing but the rails themselves to obstruct the pits between the rail supports. The rails used weigh 80 lb. per yard and are expected to carry the normal loading of the 27-ton cars between supporting posts, which are placed every 5½ ft. These posts are rounded at the point of support and are capped by an iron plate curved in the direction of the rails, so that any cross bending could not spall off the concrete. The plates are set to grade by grouting them in after the rough

work on the posts has been finished. Although the bolts for drawing the rail down to the post are cast in the rough concrete, the clamps that secure the rail have slotted bolt holes which permit of any slight adjustment required in lining them up.

Drainage on the lower floor could be easily provided by a system of sub-tiles, but on the upper floors special provision was required, as it was desired to avoid laying the tracks on a grade because of the danger of moving cars. The deep floor beams and limited head-room beneath prevented the use of longitudinal mains. Lines of 4-in. drain pipes were therefore run alongside the four lines of floor girders, and low points were provided in the flange grooves where these cross above the drains. These grooves were given a slope of 2 in. in the 13-ft. length between high and low points, and the floor slabs were sloped at ¼ in. to the foot. To prevent leakage into the concrete on the side of the rail opposite the flange groove, an asphalt filler was poured into a ½-in. space, the depth of the rail head which was left between rail and concrete.

Excavation at the site was commenced on March 20, and the construction was to be completed in October. The cost of the addition, including excavation, was estimated to be close to \$160,000, and the value of the property which the addition occupies is placed at \$55,000. Exclusive of real estate, the cost of the addition figures out at about 12 cents per cubic foot of content. The entire work was done by James L. McLaughlin, general contractor, according to designs prepared by R. J. Wood under the supervision of M. M. O'Shaughnessy, city engineer.

New Jersey Supreme Court Ruling on Free Electric Service

The Supreme Court of New Jersey has set aside an order of the Board of Public Utility Commissioners directing the Public Service Electric Company to furnish free electric service to public buildings in Plainfield. Provision for such service was contained in the franchise granted the Plainfield Gas & Electric Company, of which the Public Service Company is the successor. The electric company claimed that under the "seven sisters" corporation laws it was debarred from furnishing gratuitous service to any person or corporation, whether municipal or otherwise, on the ground that to do so constituted a discrimination. The commission tried to differentiate between a gratuitous service furnished in accordance with a contractual obligation, made as part consideration for the granting of a franchise, and a gratuity or concession otherwise granted by a corporation.

The American Museum of Safety has leased new offices at 14 to 18 West Twenty-fourth Street, New York, N. Y. The museum was formerly located at 29 West Thirty-ninth Street.

Way Records on Cost per Section Basis

The Writer Shows How Detailed Statement of Conditions and Equipment on Each Section May Be Maintained with Little Work After the Initial Comprehensive Survey and Inventory

BY FRANK W. HULETT, ENGINEER LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, MAINE

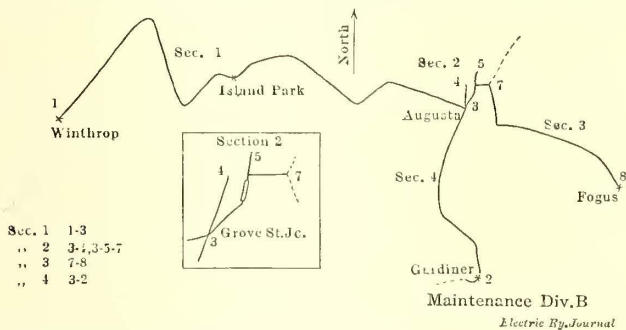
The proper regulation of maintenance of way accounts forms one of the great problems of electric railway operation. There are many instances when the proper regulation of this expense has shown a saving of thousands of dollars in a year. It is this problem that we took hold of last summer, and while the way we worked it out may seem crude, it seems to show great possibilities.

We started with the idea of sectionalizing the expense, which has been done on many roads, and that idea worked itself out in the following form.

Our system was divided into several divisions and each division subdivided into sections. We found the

track is buried and paved the ties have a longer life. Proper discrimination has to be shown in these cases. In the same way with the overhead and poles, the attempt is made to maintain year by year and not to have a large renewal in any one year.

As can be seen from Form No. 1 (reproduced in part), these estimates are made on a regular printed form, which gives in a concise manner the information upon which the estimate is based. The first two columns show the number and kind of material used, and the next three are for the estimated value thereof. Of the latter, the first includes the entire expense that the engineer feels is necessary to maintain this section



SECTIONALIZING WAY COSTS—DIVISION OF SYSTEM INTO SECTIONS

logical number of divisions to be five, and lettered them A, B, C, D and E, and then subdivided each so that altogether we had nineteen sections. All maintenance work done in these sections is charged directly to them, including supplies, labor, etc.

Before the beginning of the year an estimate is made for each section. This estimate is made by the engineer from his knowledge of conditions and with the aid of the various section foremen. No attempt is made

	1	2	3	4	5	6	8	9	24	TOTAL	From Exp.
1											
2											
3											
4											
5											
6											
7											
8											
9											
TOTAL											

SECTIONALIZING WAY COSTS—FORM 2—EXPENSES FOR EACH SECTION OF EACH DIVISION FOR EACH ACCOUNT

properly. The second is a résumé of the cost of such estimates for appropriations that he may have asked for in this section. These values are included in the first column, but in the third, which is the net maintenance estimate requested, they are not included. The point is that if appropriations are approved, the last column of the maintenance estimated is in effect, and on the other hand, if the estimated appropriations are not approved, the first column is considered.

Act.	Description	No.	Kind	Amount	Covered by Est.	Net Man. Est.	Remarks
1	Supt						
2	Ballast						
3	Ties						
4	Rails						

SECTIONALIZING WAY COSTS—FORM 1—ESTIMATE FOR A GIVEN DIVISION AND SECTION

to distribute the accounts for superintendence, cleaning and sanding track, snow expense and the building and structures. These we estimate from past experience for the whole year, since it is impracticable to try any segregation of these accounts.

The attempt is made to estimate the amount necessary to maintain the track and overhead in perpetually good condition. For instance, we assumed that ties could be depended upon to last about twelve years. Therefore we reckoned upon renewing 8 per cent of the ties each year. Of course, in those sections where the

It is then the plan to redivide the estimates after approval so that the greatest force and greatest expense can be taken care of during the months that the most work is necessary at the expense of the slacker months, but still maintain an equitable maintenance figure for the entire year.

Before the introduction of this practice a great deal of doubt was felt as to the problem of proper and correct distribution of the accounts. In operation, however, this seems to meet with less trouble than anticipated. We use the Interstate Commerce Commission

OVERHEAD														
	LOC.	SIZE	KIND	LENGTH IN FEET		CON'DN	DATE INST.	REMARKS						
TROLLEY	1-10	2/0	Grooved H.D. Copper	218592		Good	1907							
FEEDER		SIZE	NO.	LENGTH IN FEET										
			None											
TYPE CONSTRUCTION	1-10	Bracket construction through Augusta 1755' span const. Double trolley - Single trolley 349' on Stone St. 219' in Waterville.					"	"						
GUY AND SPAN WIRE		KIND	SIZE	SPAN	SIZE GUY									
		7 strand G. 1.	3/4"	and 1/2"	5/16"	and 3/8"								
LIGHTNING ARRESTER	1-10	KIND	SPACING	NO.										
		G.E.	2530	Approx. 34										
BLOCK SIGNALS	1-10	KIND	NO. BLOCKS		WIRE IN SECTION	NO. SIGNALS								
			None											
TELEPHONE	1-10	KIND	NO.	KIND WIRE	WIRE IN SEC.									
		Western Elec.	6	#10 G. 1.	221000 (?)									
POLES		KIND	LENGTH	DIAM. TOP	SPACE	OEP. GR.								
		555 Cedar	35'	7"	85 ON CURVES	5' 1/2'								
		471 "	30'	6"	106 ON STR.									
YEARS POLE	BEFORE	1900-1901	1902-1903	1904-1905	1906-1907	1908-1909	1910-1911	1912-1913	1914-1915	1916-1917	1918-1919	1920-1921	1922-1923	TOTAL
INSTALLED	1126	0	0											1126
DATE OF INFORMATION Aug. 5-8, 1914														
CORRECTED TO														
DIVISION 2 SEC. 3														

Electric Ry Journal

SECTIONALIZING WAY COSTS—FORM 3—DETAIL REPORT OF OVERHEAD CONSTRUCTION OF A GIVEN SECTION

accounting system, and all labor is charged by the foremen and checked by the engineer to its proper account, affixing its proper division letter and section number, as 8 A-3, 15 B-1, etc. The stock is taken care of by the same method. Then at the end of the month the stock amounts are drawn off by the stock clerk, and the total for each account is written in Form 2. Each payroll also is drawn off by the timekeeper. These are then combined and give a total maintenance of way expense for the month, distributed as to the exact location in which the work was done.

SURVEY DATA

In connection with this plan a mileage survey was made of the entire road. As we had no accurate information either in regard to mileage or track and overhead construction to build upon, this survey for its kind was made very extensive. Everything that could be of any possible help or information was located, such as location and kind of lightning arresters, locations and size of culverts, bridges, ends of various sections of rail, kinds of joints and bonds, beginning and ends of feeders. This information was drawn off on a form similar to Forms 3 and 4.

The description is divided into several heads. For instance, "Rail" is one heading, and under that is given the location of each and every section of rail, weight and section number, drilling, rail length, total length of rail, date installed and condition. A sketch at the top of the sheet shows in a general way the location of the several sections under advisement. At the foot of the sheet the yards of ballast and the ties installed are noted each year. I think this latter feature is one that will appeal to nearly every engineer and

roadmaster at the very beginning.

On account of the variety of information necessary in some sections, a second sheet was found necessary. That is similar to the first sheet except that the sketch and the form for noting the yards of ballast and ties were omitted.

A somewhat similar sheet was devised for the overhead along the same lines. We also made a sketch on the same-sized paper of each division to show thereon a subdivided section. At the bottom were tabulated the mileage statements, showing the mileage in each division for each section, both in feet and miles, and a total for the division. All of these sheets and sketches are on 8-in. x 11 1/2-in. forms and are bound together in loose-leaf forms as records that will be of incalculable value, and which by careful revision each year can be kept up to date with very little work.

One of the greatest advantages of this system is that it permits the engineer to watch the expenses carefully, particularly on a large road where he cannot often keep in proper touch with each section. With this system, if the monthly statement shows that a section has an undue increase in the expenditures or, by the same token, undue decrease, it is quickly noticeable and the reason thereof can be ascertained. Of course, the reason may be entirely proper, or it may show that unnecessary work is being done at this point. On the other hand, if a section shows that little or no expense has been incurred, it can be carefully examined as to proper maintenance.

I do not think that we have the perfect forms for maintenance records by any means, but I do believe that these forms will find favor with a great many engineers. By their careful revision an engineer can have at his hand at all times a very extensive record of all his track

TRACK														
	LOC.	WGT.	PS	DRILL	R. LGT.	TOTAL R. LGT.	CON'DN	DATE INST.	REMARKS					
RAIL	1:10	70#	PS 257	Drill. 4"-5"	30'	223782'	Cor.	1907	In Davis Dam Pit					
	10-11	95#	PS 222		60'	600'								
		40#				4612'								
JOINTS	1-10	Welber	24"	bolts	5 1/2" x 1/2"		Good	"						
		Channel plates	24"		4 x 1"		"	"						
BONDS		Capacity	Length	Type			"	"						
		4/0	9'	Twin terminal										
SPECIAL WORK		8 split switch. 15' points, spring frogs - 70# ASCE					"	"						
		1 " " 10' " Davis Dam Pit - 40# rail					"	"						
BRIGES AND CULVERTS		Concrete arch, Winslow to Waterville - 563' long					"	"						
		Shoddy Hollow Bridge, Wood trestle - 13 bents - 222'					"	"						
		Overhead steel bridge over M.C. tracks, Winslow 248					"	"						
		Sebastook Bridge, Winslow 49'					"	"						
		19-24 1/2 x 30" 9-18" 22-12" Tile: 10 Corrugated: 10 "1"					"	"	Many tiles broken					
PAVING		Kind	Foundation			Good	1913							
		1739' Macadam	paving from Cony Street switch											
BALLAST														
TIES		Kind	Size	Number										
		Hewn Cedar	0" x 8" x 8'	60261										
YEARS	BEFORE	1900-1901	1902-1903	1904-1905	1906-1907	1908-1909	1910-1911	1912-1913	1914-1915	1916-1917	1918-1919	1920-1921	1922-1923	TOTAL
TIES INSTALLED	60201	0	0											
YARDS BALLAST	BEFORE	1900-1901	1902-1903	1904-1905	1906-1907	1908-1909	1910-1911	1912-1913	1914-1915	1916-1917	1918-1919	1920-1921	1922-1923	TOTAL
DATE OF INFORMATION Aug. 5-8, 1914														
CORRECTED TO														
DIVISION A SEC. 3														

Electric Ry Journal

SECTIONALIZING WAY COSTS—FORM 4—DETAIL REPORT OF TRACK CONSTRUCTION ON A GIVEN SECTION

and overhead. I have found it useful in answering little questions that have frequently come up in the short time since we have completed it. I anticipate that the man to follow me will find it of still greater value to him, as he will not have been obliged to compile it from the beginning as I did, and therefore will be familiar with many of the things from memory.

Semaphore with Automatic Whistle to Direct Street Traffic in San Francisco

A semaphore for directing street traffic at busy crossings has been tried out in San Francisco and has been found so successful that three have been ordered for installation on Market Street. The accompanying illustration shows one of the semaphores at Market and Third Streets, San Francisco, arranged for electrical control from the traffic officer's stand at the left of the picture. The arrow shown in this view is three-fifths the size specified after the preliminary trials were completed.

The device consists of a double-pointed arrow bearing the word "stop" on either face, and which can be turned through 90 deg. by a small 110-volt motor mounted in a metal box just above. The motor also operates a police whistle which sounds two blasts as the arrow is turned one way and a single blast when it is returned to the opposite position. When the crossing is to be cleared for the fire department, the arrow is made to revolve continuously and the whistle blows until shut off.

At night the arrow is lighted by two 40-watt tungsten lamps, and a third lamp, located in the red globe below the arrow, is automatically put on the circuit when the alarm signal is given.

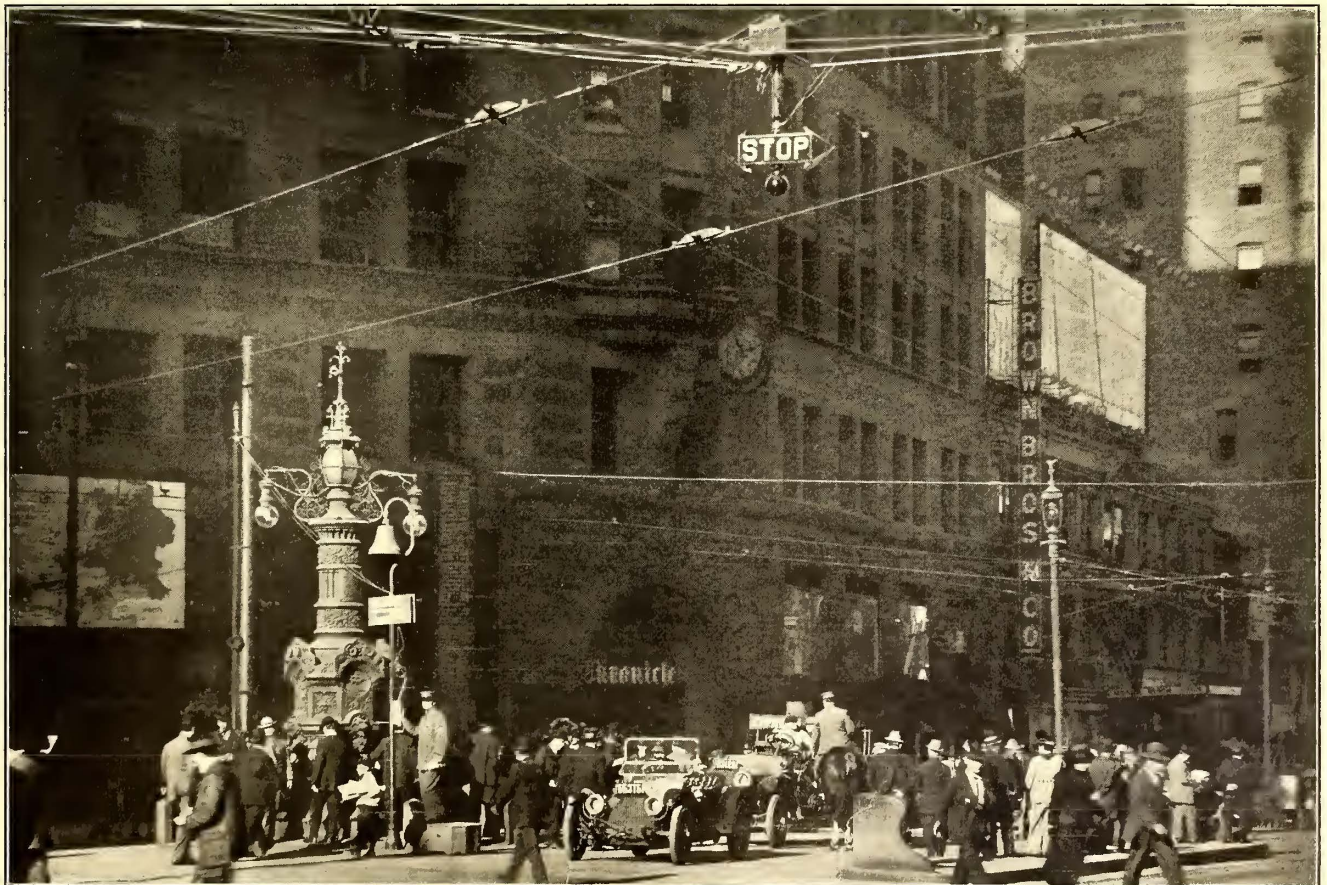
The switch box operated by the traffic officer has five controls; two govern the position of the arrow, a third

operates the lights, a fourth controls the alarm signal and a fifth raises or lowers shutters to conceal the lettering on the arrow during the night hours when the semaphore is not in use. The arrow is hung so as to be about 2 ft. below the trolley wires, and is supported on small steel cables strung from buildings or poles. The weight of the semaphore complete is about 45 lb. Except for the glass, all exposed parts are made of galvanized iron, and the motor is set on a steel plate which forms the bottom of the box. The arrow in the new semaphores will be 51 in. from tip to tip.

Experience with the device is reported to be very satisfactory. In a very short time drivers of vehicles became accustomed to watching the semaphore, and as its meaning is unmistakable, much confusing is saved. It is claimed that it reduces the number of traffic officers required at wide crossings and lends dispatch and safety to traffic movements. The device was invented by B. M. Harris, of San Francisco.

Railroads, Political Demagogues and the Press

The Philistine contained the following in a recent issue: "Railroading is a most exacting business. Sixty-one per cent of the railroads in America, during the past twenty years, have gone bankrupt and have been turned over to the gentle ministrations of the receiver. To succeed, a railroad, even under favorable conditions, must have the hearty good-will and co-operation of the people living along its line. Beyond this its officers must have the confidence and respect of the financial world. Killing the credit of a railroad is like destroying the good name of a woman—it benefits no one. In degree all of the railroads of America are suffering from assaults by the political demagogue and the coyote press."



STREET TRAFFIC SEMAPHORE WITH AUTOMATIC WHISTLE AT SAN FRANCISCO

COMMUNICATIONS

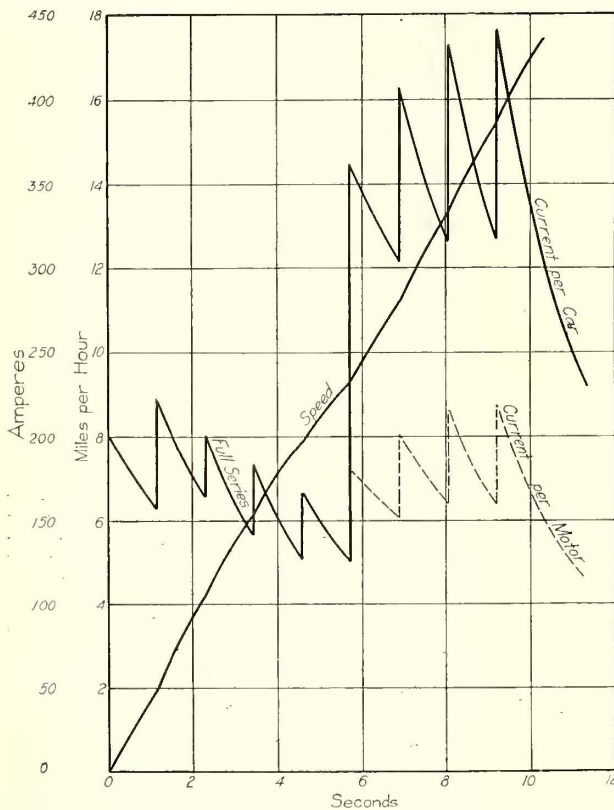
Time Element in Controller Notching

UNIVERSITY OF ILLINOIS

URBANA, ILL., March 26, 1915.

To the Editors:

The writer has been very much interested in the discussion on methods of determining starting resistances for railway motors, which has been carried on in your columns for the past few weeks. The opinion of all the correspondents is that the correct calculation of resistances is very desirable, the differences being mainly in the methods used for arriving at the desired results. That suggested in my article in the issue of Feb. 13, 1915, was brought out principally to present a graphical solution available to anyone who has at his disposal only the manufacturer's characteristic curves for the motor in question. It was not intended to supplant the method given in Mr. Castiglioni's article in the issue of Dec.



TIME ELEMENT IN CONTROLLER NOTCHING—IMPROPER OPERATION OF CONTROLLER

26, 1914, where a large number of calculations have to be made, although I believe it can be so used with a comparatively small amount of additional labor.

The principal difference in the two methods is that by the use of Mr. Castiglioni's charts the proper value of resistance is found as a proportion of the motor resistance, while I find them by determining the $I R$ drop. Certainly it is no more difficult to divide by the current the value of $I R$ drop thus found than to multiply the motor resistance by the proper factor. My method has the further advantage of giving on a single diagram the construction for any value of line potential, so that correction may be made for any line drop which may be met in actual operation. This can be cared for in Mr. Castiglioni's method only by the preparation of separate charts for each value of line voltage by a rather tedious calculation.

When it is desired to adjust the resistances so that the same taps can be used for series and parallel connections of the motors, a certain amount of "juggling"

must be done with either method. I cannot see that there is any great difference in making such an adjustment with either diagram. The way of doing this is indicated in the penultimate paragraph of my article.

One point which has not been brought out in the discussion is the determination of the time spent on each point of the controller, to keep the current within the desired limits. If this is done, the lengths of time required for successive steps will be found different. For instance, in the example which I gave, the number of seconds on each step should be as follows:

Notch No.	1	2	3	4	5	6	7	8	9
Seconds	1.32	1.16	0.91	0.72	0.60	1.83	1.49	1.16	Continu- ous.

If the controller is operated in this manner, the current will vary within the given limits, and the acceleration will be smooth. This method is actually used when a current limit relay is in the circuit to allow the progression of the controller at the proper time, as in some forms of multiple-unit control. When a hand-operated controller is used, it is customary for the motorman to turn his controller handle at a uniform rate, stopping the same length of time on each point. When this is done it is impossible to keep the current exactly within the desired limits. For instance, in the example cited, if the controller handle is turned at a uniform rate, the time on each point will be 1.15 seconds, if the total time of turning the handle is the same as in the automatic operation.

The result is shown in the accompanying diagram. To prevent the occurrence of the current peaks, it is necessary to readjust the resistance taps. Even when this is done, the current cannot be kept to the same value at all points, so that some variation from the predetermined limits must be allowed for. In case the motorman turns his controller handle at some other rate, a different result will be obtained.

I thoroughly agree with Mr. Castiglioni that the proper design of starting resistors is a problem for the engineer, rather than for the superintendent. To state that theory and practice do not agree when applied to the present problem, as is done by one of your correspondents, is but evading the main question. There has been too much of this "near engineering," and, with the introduction of modern methods, it is bound to pass out, as have similar kinds of refined guessing.

A. M. BUCK, Assistant Professor
of Railway Electrical Engineering.

[NOTE. In the discussion of this subject one fact seems to us to have been overlooked, namely, that the curves plotted by Mr. Castiglioni do not require replotting by other users, as they are in terms which apply to any motor under any operating conditions. They were intended to save calculators much tedious slide-rule work just as do logarithmic tables and tables of trigonometric functions.—EDS.]

Locomotive Maintenance Costs

NEW YORK, March 31, 1915.

To the Editors:

I note in last week's issue your comparison of maintenance costs between steam locomotives and certain electric locomotives. How did you arrive at the figure of 13½ cents per mile for the steam locomotive? Please state also what you mean by "electric unit." Does this term include only the cost of the locomotive itself, or does it cover the cost of the entire electrical equipment per locomotive, that is to say, the power-house and distribution system? ELECTRICAL ENGINEER.

[NOTE. The charge for steam-locomotive maintenance to which our correspondent refers was general in

character and was based on the costs per locomotive-mile obtaining on a number of the Eastern roads. The figures published in the last report of the Interstate Commerce Commission were used, these being reduced to an equivalent drawbar-pull basis with the 76-ton average adhesion of the New York Central electric locomotives. Thus, in the Interstate Commerce Commission report, the cost of the New York Central steam locomotives, which average 75 tons on the drivers, is given as 12 cents per engine-mile; the New Haven 51-ton locomotives, 10.2 cents; the Pennsylvania Railroad 75-ton locomotives, 13.2 cents, and the Erie 74-ton locomotives, 11.9 cents. The equivalent figures, allowing 10 per cent for the intermittent torque and 2 per cent for the resistance of the tender, are respectively: New York Central, 13.7 cents; New Haven, 17.3 cents; Pennsylvania, 15.1 cents; Erie, 13.9 cents. The saving, at an annual mileage of 36,000 and 10 cents per mile, was calculated to be 8 per cent on \$45,000, the cost of a locomotive alone. This figure does not include any investment in the power-generating or distributing systems. If the latter had been considered it would have been necessary also to include the saving in coal, which in one case of electric operation has been reported to be half the entire coal bill.—EDS.]

ASSOCIATION NEWS

COMMITTEE ON COMPANY SECTIONS AND INDIVIDUAL MEMBERSHIP

The committee has just issued a very attractive booklet designed to interest member companies in the formation of sections. The booklet is novel in make-up and brings together all of the latest information which bears upon the subject of company membership. Some of the successful plans of present company sections are outlined and the benefits to be derived are concisely stated. The booklet is illustrated with thumb-nail portraits and a view of a large company section gathering. Copies can be secured from Secretary Burritt.

MILWAUKEE SECTION

The regular monthly meeting of the Milwaukee Electric Railway & Light Company Section was held on March 26 with a large attendance, the local N. E. L. A. members being guests of the section. Harry G. Abendroth presented a paper on the development of the street railway system of Milwaukee. He traced the history from the day when a street car was as much of a novelty as the jitney bus is in Milwaukee to-day. The paper contained a review of the careers of the several companies operating in the city from 1856 to date, including their corporate organizations, the types of track construction used, etc. The story was given a vital interest by means of illustrations, which included pictures of men who had been prominent in the development of the present system, some of whom are still with the company. Many interesting stories relating to events dating back to the horse car days were related. The information for the paper was collected from persons familiar with the local developments and from the company records.

MANILA SECTION MEETING

The second meeting of joint company section No. 5 was held in Manila on Feb. 9. The novel announcement was made that two papers, for which the topics and speakers were to be selected by the executive council, would be read at each meeting. A resolution of thanks to C. N. Duffy for his efforts in establishing the section was passed, as was also one to C. Loomis Allen, presi-

dent of the American Electric Railway Association, for a letter of encouragement which was read.

The topic of a paper by E. A. Barretto was "Benefits of Savings Banks to Employees." As the title implies, the paper and the discussion which followed it had to do with the encouragement of saving by company employees, and as a result the speaker agreed to work out the details of a savings system to be reported at the next meeting. Mr. Farrant read a paper recounting the experiences of a recently completed tour around the world.

NATIONAL ELECTRICAL SAFETY CODE

In the current issue of *Electrical World* Dr. E. B. Rosa, chief physicist of the bureau of standards, outlines the present status of the work of the new safety code and the plans for its completion and maintenance. The bureau of standards undertook this work because it is a scientific institution which deals not only with scientific questions but also with engineering and industrial problems and represents the public in the most general sense. Inasmuch as no other national agency seemed likely to take up the work and it appeared to be directly in line with other work which the bureau was doing, a special appropriation was secured from Congress, becoming available on July 1, 1913.

In the preparation of these rules the bureau had the co-operation of interested associations, and many conferences with representatives of these and of operating companies were held. The bureau employs a number of specialists who are devoting themselves to this work.

On Aug. 1, 1914, a circular, No. 49, entitled "Safety Rules to Be Observed in the Operation and Maintenance of Electrical Equipment and Lines," was published in preliminary form and several thousand copies were distributed. Many valuable criticisms have been received and will be considered in the final revision. There will shortly be issued another circular covering construction safety rules and this will be distributed on a large scale also.

A conference on the operating rules was held on March 26 preliminary to the publication of the regular edition, and a general conference will be held in Washington on July 1 and 2 at which the revised rules will be submitted for consideration, modification and ratification. This conference will be asked to approve the appointment of a permanent joint committee to co-operate with and advise the bureau, and to discuss and approve amendments of the code. The bureau will suggest a committee of forty-eight members, possibly made up somewhat as follows: Twelve representatives of state, industrial and public service commissions; six representatives of inspection departments of cities, and three representatives each from the National Association of Municipal Electricians, the International Brotherhood of Electrical Workers, the American Institute of Electrical Engineers, the National Electric Light Association, the American Electric Railway Association, the telephone interests, the National Fire Protection Association, the Workmen's Compensation Service Bureau and the casualty insurance interests, the National Safety Council and the National Bureau of Standards. The organizations mentioned will be asked to appoint delegates to the July conference.

The Commissioner of Bridges has notified the Public Service Commission for the First District of New York that the Manhattan Bridge will be in readiness for the operation of trains from the Fourth Avenue subway by next June. The commissioner will see that the surface railways which now operate over the bridge tracks, intended to be used by the subway, are removed to other tracks.

Equipment and Its Maintenance

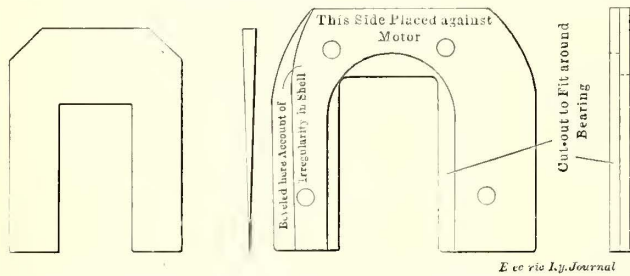
Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

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

Points on the Installation and Removal of Pinions—II

BY R. H. PARSONS, ELECTRICAL FOREMAN

Removing Pinions.—The removal of pinions is attended by as little labor and damage as their installation if our friend, heat, is employed. It always has been the practice to use a wedge and sledge for pinion removal. The reasons against using wedges are many, unless these reasons are offset by improvements in the wedges which will protect the other parts of the motor



FIGS. 1 AND 2—WEDGE WITH DOUBLE SIDES, AND PROTECTION FOR MOTORS WITH BRASS BEARINGS

from injury by them. I would recommend the use of the wedge only with the aid of heat, as illustrated in the accompanying sketches.

The original trouble experienced with the wedge was that single wedges were used, one on each side of the pinion. First one side would be driven and then the other until the pinion came off. If the pinion came off easily no harm was done, but if it showed an inclination

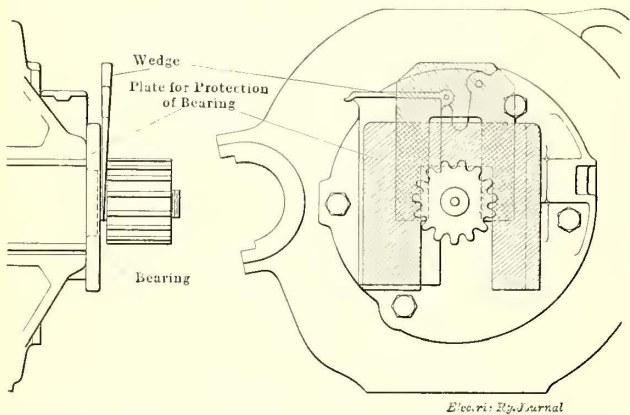


FIG. 3—APPLICATION OF PLATE AND WEDGE FOR REMOVING PINION

to cling, something had to give under the heavy hammer blows. A sprung shaft would follow because greater force had been exerted on one side of the pinion than on the other.

The first improved wedge was one made like that shown in Fig. 1. This wedge is double and has a long rather than a short taper. It will give some satisfaction on the older motors where iron bearings are used because the wedge can be placed between the bearing

and the pinion. If this wedge is used on a heated pinion a few taps with a light hammer will remove the pinion without damage to adjacent parts.

The newer types of motors on which the better grades of pinions are used have but a slight space between the pinion and frame, and since the bearing is of brass it cannot stand the backing of a wedge. These are the motors, also, which are in service for long periods before overhauling and which have tight pinions. On these motors, therefore, care and judgment are more necessary than ever.

Fig. 2 illustrates a plate which has been designed to rest against the end of the motor frame and to slide down around the bearing. This plate is thick enough to extend slightly nearer the pinion than the bearing, so that the wedge may be used between the plate and the pinion without touching the bearing. Fig. 3 shows how this plate is used. The idea is to make a solid backing for the wedge so that it will not be forced into the bearing or into the oil chamber of the oil well in the housing.

After the plate has been put on over the shaft the wedge is placed into position between the plate and pinion and driven down until all the lost motion has been taken up. The wedge then receives a couple of light blows to create just enough strain on the pinion to aid its removal.

Fig. 4 represents a gas heater and stand with the usual supply of gas and compressed air in one pipe. That part of the pipe which acts as the burner is bent in a circle, with an inside diameter which leaves about 1-in. space around the pinion. The inner circle of the burner is drilled for 1/8-in. holes 1 in. apart through which the air and gas mixture escape, making a solid flame to envelop the pinion completely. This flame is applied to the pinion for about one minute, after which a few sharp blows on the wedge will loosen the pinion

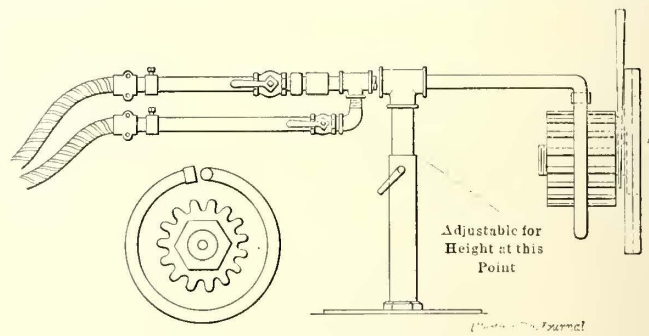


FIG. 4—GAS TORCH FOR HEATING PINIONS ALL AROUND AT ONCE

enough to permit its removal by hand after the flame has been shut off.

The whole operation of setting the plate and wedge, getting the gas outfit to the motor, lighting the burner and removing the pinion takes about three minutes, and never more than five minutes. The pinion actually is not heated enough to melt the gear grease thereon, and no damage has been done.

If space allows, after the plate has been placed behind

the wedge, a plate of light metal could be inserted between the pinion and the wedge to prevent the teeth of the pinion from cutting the wedge.

It is not necessary to give dimensions for plates and wedges since they must be adapted to the type of motor used, but the same design is applicable to all motors. Where gas is not available oil or gasoline torches can be utilized. The chief care to be exercised is to see that the pinion is not heated at any one spot or to so high a temperature that the heat treatment of the pinion itself is destroyed. To avoid these dangers, a metal sleeve shaped like a pipe should be made to fit over the pinion. The flame should be played on this barrier rather than directly on the pinion. The heat will be conducted around the sleeve and the pinion will soon expand enough to come off easily. If heated too much the shaft begins to heat and expand with the pinion so that all the good of the heating has been destroyed. As for the use of the hammer, a man who removes pinions can tell after the experience of two or three trials just when the pinion has reached that temperature which will permit it to be removed from a shaft that practically is still cold.

The Selection of City Motor Equipment

BY G. W. REMINGTON

A great deal has been written pertaining to the selection of the electrical equipment for city street cars. At the risk of some repetition the writer has prepared these notes in the hope that the subject may, from a somewhat different viewpoint, endow prospective customers with a still greater appreciation of its importance.

It is not possible to place in the order of their relative significance the factors which go to make up the economic selection of the equipment, for the reason that what is of prime importance in one case may be of no great consequence in the next. Thus in frequent-stop service, where the energy per car-mile usually represents a larger proportion of the total operating expense than when the stops are infrequent, the factors which govern this are of relatively greater import. Inasmuch as this is so, factors such as car weights, motor efficiency, type of control, distribution efficiency, etc., have no great significance as comparisons and are of most interest when considered for specific cases.

Such futile phrases as "5 cents per pound per annum," quoted largely a few years ago as the cost of carrying additional weight, and practically all other generalities which may cling in the mind of the prospective purchaser should be forgotten. The selection of the electrical equipment for his cars should be made without attaching much importance to the results obtained on some other road which may, without a critical inspection, appear to be operating under the same conditions.

The following headings cover the points to be kept in mind: (1) Continuity of service; (2) commercial considerations; (3) operating expense; (4) salvage value.

Continuity of Service—The value of an uninterrupted service is indeterminate, as a delay may easily entail many times the cost of repairing the fault which caused the interruption. The effect of service on public confidence has a direct bearing on the very existence of the road through its revenue, and therefore should receive most careful attention. This has been especially true since the advent of the public service commissions, to which the public has easy access for the correction of repeated failures in this respect.

The failures of the electrical equipment may be either mechanical or electrical, and frequently these are so closely associated as to make a correct diagnosis diffi-

cult. The selection of additional equipment, which will be most free from failures, obviously depends, however, to a large extent on the accuracy of this diagnosis, thereby assuring that in the endeavor to lessen, for instance, the number of brush-holders destroyed through flashovers, the purchaser may not insist on motors which will "carry 250 per cent load with practically no sparking" if the real reason for past troubles has consisted in the design of the brush-holder springs.

It is the writer's opinion that too little attention is usually given to the keeping of carhouse records of this nature.

Commercial Considerations.—These are meant to include the first cost, terms of payment, guarantees obtainable, diplomatic reasons for placing the order with this or that manufacturer, and deliveries. Any of these may properly result in the selection of apparatus which would not be purchased were the general headings 1, 3 and 4 alone to be considered. It will be appreciated that this, unfortunately, from the standpoint of the operating department, frequently represents 75 per cent of the influence which governs the purchase.

Operating Expense—It will be readily appreciated that a certain total seat-miles which may be required per day can be provided by a number of combinations of schedule speed, headway between cars and seating capacity. On a new electrification a compromise of all of these factors which will best satisfy the demands of the community served is usually made. As the number and size of equipments necessarily vary with these different combinations it will be plain that the platform expense, maintenance and depreciation, and amount of power required will vary also, but as before mentioned these facts must be more or less neglected and a compromise attained.

More frequently new equipment is intended for use on cars which will operate on lines with other cars already running and the schedule speed is therefore fixed by them. It will be assumed that the purchaser has the following information: Weight of car body and trucks; number of trucks; seating capacity of car; diameter of wheel; profile of road; time required for a trip in each direction; number and location of stops in each direction; average duration of each stop; average layover at each end of the line; maximum voltage; average voltage.

It is impossible for the purchaser, without a full knowledge of the resistances, core loss and capacity for heat dissipation of the motor to determine whether the one he may have in mind will perform his work with safe temperature rise. Even with these data at hand and after their correct application it is necessary to make further corrections to take care of the additional ventilation afforded through the motion of the car itself, position of the motors on the car, etc. It is therefore strongly recommended that the customer give the above data to the manufacturer, that they be reduced to a "typical run" which can be made under test conditions for purposes of check by the customer, and that the manufacturer be requested to accompany his quotation with both calculated and guaranteed schedule speed, temperature rise and energy consumption.

The object of requiring both calculated and guaranteed values is plainly to insure that the same leeway or factor of safety is provided by all bidders. The justice of this can be seen after inspecting the speed-time-energy curves shown.

Graph A represents a schedule speed of 10.55 m.p.h. (including a ten-second stop) while making seven stops per mile with an 18-ton car. To accomplish this the two motors must be capable of commutating 83 amp each at 600 volts and the energy required is:

Series, 83 amp. × 600 volts × 4.3 sec. =	214,000
Parallel, 166 amp. × 600 volts × 5.3 sec. =	528,000
Total during controller period.....	742,000
During motor curve running.....	593,800
Total for the cycle.....	1,335,800 watt-sec. or,
1,335,800 × 5280	
1000 × 3600 × 755 =	2.61 kw-hr. per car-mile.

If the schedule is to be increased 3 per cent. as shown by graph B the car must be accelerated at a constant rate of 1.53 m.p.h. per second as before (this being about as fast as practicable) up to a speed of 28 m.p.h., where before it was necessary to maintain this rate only up to 14.6 m.p.h. The commutating capacity of the motors must therefore be increased 92 per cent with a proportional increase in the normal rating of the motors and control, and the energy required becomes:

Series, 160 amp. × 600 volts × 7.8 sec. =	748,000
Parallel, 320 amp. × 600 volts × 8.4 sec. =	1,610,000
Total during controller period.....	2,358,000
During motor curve running.....	0,000,000
Total for the cycle.....	2,358,000 watt-sec. or,
2,358,000 × 5280	
1000 × 3600 × 755 =	4.57 kw-hr. per car-mile,

which is equal to an increase of about 75 per cent.

In other words, a small variation in the factor of safety may mean a very large variation in the selling price. It is clear that much responsibility rests on a correct definition of the service actually to be performed as the expense entailed in asking for more than is really required may assume large proportions.

If the additional cost of operating motors too large for the work were limited to the increased interest on the investment it might be condoned as this would be offset in part by decreased maintenance and depreciation due to the lower temperatures reached and the fact that the average motor efficiency, in a cycle like that shown, would be slightly higher. However, considering the increased weight to be carried, more expensive repair parts, etc., it will be found uneconomical, in most cases, to use motors which show a temperature of much under 75 deg. Cent. in continuous service. This refers to motors insulated with cotton, varnished cambric and other vegetable fabrics. If the insulation is mica throughout a higher minimum temperature should be used, probably 85 deg. Cent.

If the cars on which the proposed motors are to be mounted are single truck the customer is relieved from deciding between two and four motors, and his principal aim will be to select a motor of such mechanical design as he can most conveniently handle with his shop equipment.

The manufacturer's guarantee of the power which will be required relieves him also of consideration of the weight, except as it may have to do with the effect on the track, breaking of axles, etc. That is to say, it is possible, due to the fact that one motor, through having a slow speed armature and thus capable of being geared to nearer the correct car speed for the work to be done, may be heavier than another and still require less power per car-mile. In this case the decreased cost of power must be balanced against the increased cost in other regards.

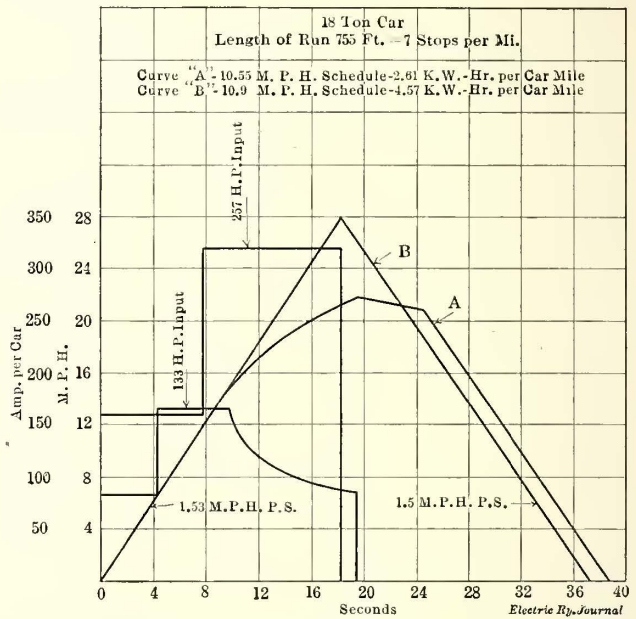
If the car is double truck and permits the use of a four-motor equipment, the following disadvantages will usually be found as compared to a two motor: Greater first cost; more car wiring and motors to inspect and maintain; more controller, gear, pinion and gear case maintenance, and greater total weight. These are offset wholly or in part by more even distribution of weight on the track, less liability of wheel slippage under extreme conditions of grade or bad track, and lighter parts to handle.

Depreciation and Salvage Value—Of the five factors which go to make up depreciation (obsolescence, deteri-

oration, loss of useful association, inadequacy and fall in prices) deterioration is practically negligible, there being few if any parts of a railway motor which actually wear beyond repair.

A few years ago the mechanical design of several motors in the market was such that when subjected to continual vibration certain bearing surfaces on the frame, bearing housings, etc., would peen out to the impairment of their life. Various types of gear cases and the methods of suspending them were also such as to result in very short life. However, in practically every case where there is any marked deterioration it will be found chargeable to some radical design, mistakenly instituted as an improvement or to satisfy the demand of the customer.

Virtually all of the depreciation of the motor consists of obsolescence, probably not 1 per cent of the motors sold being retired on any other account. It would therefore appear that the depreciation can best be controlled by the selection of motors embodying, in



SPEED-TIME CURRENT CURVES SHOWING HEAVY INCREASE IN ENERGY FOR SLIGHT INCREASE IN SPEED

the way of ventilation and mechanical construction, the latest features which may have demonstrated their virtue by actual use, even though this may entail some sacrifice in the way of interchangeability.

Other things being equal, the motors which will have the greatest salvage value will be those with no radical features of design, as they thus more readily find a market for future use as motors and reach that market without great depreciation. If the salvage value consists of the scrap value it is obvious that the motor should contain as much copper and brass as possible, but as the salvage value is small at best it does not deserve much consideration.

CONCLUSION

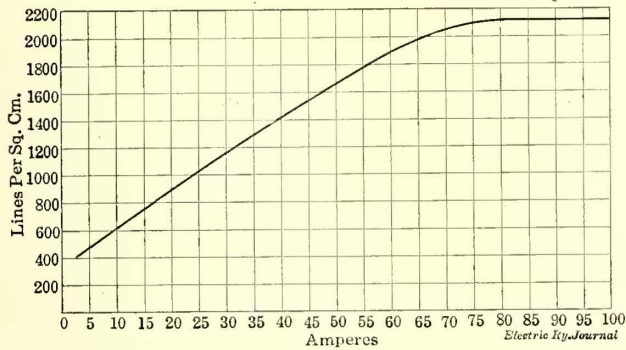
There are then no general rules for the selection of the motor equipment. It is possible to say that "other things being equal" the slowest maximum speed consistent with the schedule speed desired should be used, as this condition represents the smallest energy consumption, which is always a large item in the cost of operation. Numerous other similar statements could be made with this qualification, but with the many variables involved "other things" never are equal and the equipment must therefore always be selected to suit specific conditions.

Equipment Defects—Controller Blow-Out Coils—III

BY C. W. SQUIER, E. E.

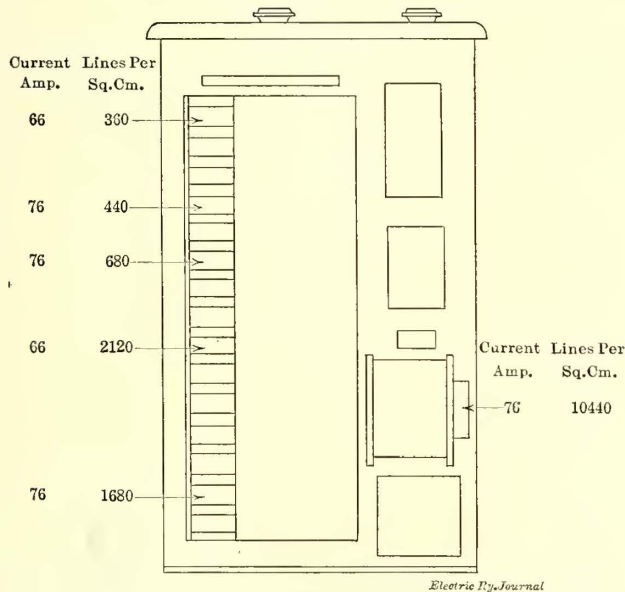
Magnetic Flux Distribution.—To illustrate more fully the distribution of the magnetic flux in controllers with the various types of blow-out coils discussed in previous articles, the accompanying controller illustrations with tables are presented to show the results of some tests of flux densities made on five different types of controllers. A careful comparison of the figures will show how the flux varies at different points in the same controller and also how the different types of blow-out affect the flux density at the contacts.

The figures obtained for the B-18 and Westinghouse No. 210 controllers show how the flux density decreases



SATURATION CURVE OF T1A CONTROLLER TAKEN OVER CENTER FINGER LEFT-HAND SIDE

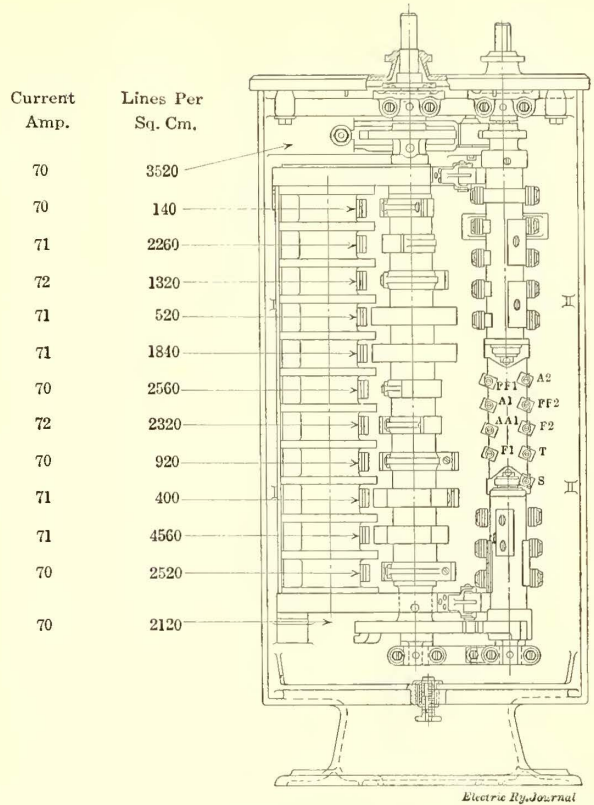
with the distance away from the coil where a single blow-out coil located some distance away from the contacts is used. Thus in the B-18 controller 4000 lines per square centimeter were found at the contacts nearest the blow-out coil and the flux at the contacts on the same side of the controller gradually decreased until at



FLUX DENSITY NO. 210 CONTROLLER WITH DIRECT FLUX BLOW-OUT

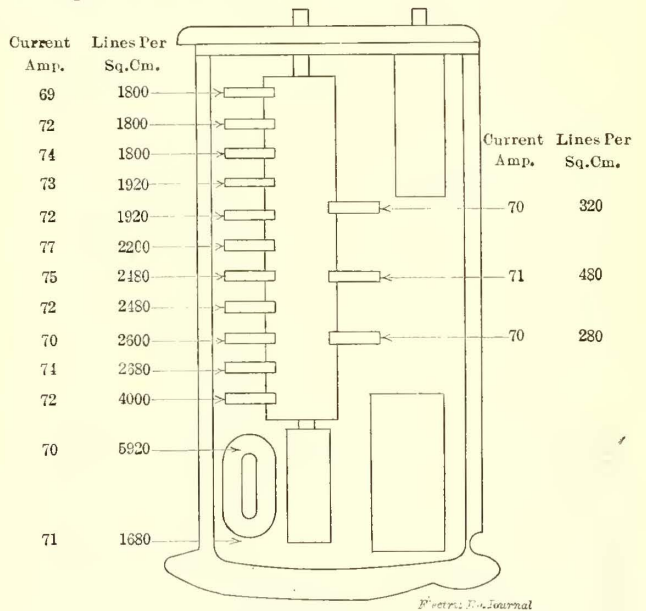
the top contacts but 1800 lines per square centimeter were found. A still greater variation was found in the No. 210 controller which showed 2120 lines per square centimeter for contacts adjacent to the blow-out coil, and this decreased to 360 lines per square centimeter at the top of the controller.

The uniformity of flux obtained by using a long coil



FLUX DENSITY DB1 CONTROLLER WITH METALLIC SHIELD BLOW-OUT

extending the entire length of the contacts is clearly shown by the results obtained with the H1A and T1A controllers which have pole-piece blow-out and field-type blow-out respectively. There is, however, a slight decrease in the flux density at the center of the controller as compared with the ends.



FLUX DENSITY B-18 CONTROLLER WITH 4000 LINES PER SQ. CM. AT CONTACTS NEAREST THE BLOW-OUT COIL

The results obtained with the metallic-shield type of blow-out used in the Dick-Kerr controller show a great irregularity of flux due to the number of poles used.

SATURATION OF THE IRON IN POLE PIECES

In connection with these tests a great number and variety of saturation curves were also made from the

a day, and the general foreman in charge of the yard was paid \$2.25 a day. Five men were at work constantly and two helpers put in part time.

At present two methods of timber treatment are used. Both are applications of coal-tar distillates, the one being applied by high pressure in hermetically sealed cylinders, and the other an "open tank" process. The pressure process requires expensive apparatus, and a large outlay for labor and freight. As the installation cost of the equipment is too great to admit of transportation to individual localities, it must be permanently located at the point most convenient for the supply of material and the delivery of the finished product. This treatment uses a cheap grade of oil known as creosote which, if heated to 315 deg. Cent., will leave a residue of less than 25 per cent. The open-tank treatment, on the other hand, uses a distillate known as anthracine oil, which, if heated to the same temperature, leaves a residue of about 80 per cent.

Anthracine oil is the last fraction of coal tar to distill over, beginning at 270 deg. Cent. and continuing to the end of distillation. Its use in America has been mainly in proprietary articles such as carbolineum and various wood preservers of high quality. In the application of anthracine oil, steaming of the tie with subsequent forcing in of the oil at excessive pressures is not required. The average absorption of air dried timber is ample for preservation. This oil has been used extensively for more than twenty years by railroads entering New York and other coast cities on their floating equipment, wharves, station platforms, bridges, fence posts, poles, etc. Specifications for it have been issued by the American Railway Engineering Association.

When the Natick Junction plant was first put in service the railway had examined a number of untreated oak ties in the ground at Southboro. After about eight months' service these untreated ties were so far decayed that the ends could be taken off. Some 600 were on hand when the plant was started, and in June, 1913, a number of these were treated with "Letteney" preservative, and are now in virtually as good condition as then. It has been found that the treatment at least doubles and probably triples the life of the tie.

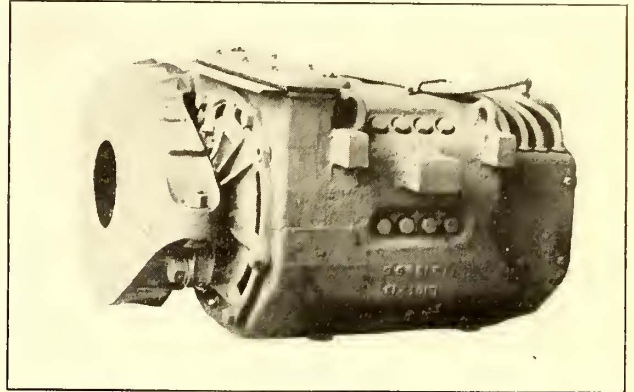
The preservative was supplied by the Northeastern Company, Boston, Mass., and the plant was designed by E. H. Howard, civil engineer, Framingham, Mass. The Northeastern Company has recently made a contract with the Portsmouth Street Railway & Light Company, Portsmouth, Ohio, for the open-tank treatment of 55,000 ties and has contracted with the Lexington Traction & Terminal Company, Lexington, Ky., for a year's supply. The cost is about 50 cents per gallon, with reductions according to quantity. The Denver City Tramway, Public Service Corporation of New Jersey, Utah Railway, Light & Power Company, Galveston Electric Company, Houston Electric Company, Union Street Railway Company, New Bedford, Mass., and others have recently used the open-tank treatment.

BOSTON & WORCESTER STREET RAILWAY COMPANY SPECIAL TREATED-TIE REPORT

Date.....	Weather.....	Temperature.....
Location of plant.....		
Number of ties treated.....		
Number of ties prepared.....		
Approximate number oak ties treated.....	Chestnut ties treated.....	
Depth of oil center of tank at 7:00 a.m.....		
Depth of oil center of tank at 5:30 p.m.....		
Temperature of oil in tank, morning.....		
Temperature of oil in tank, afternoon.....		
Labor foreman.....		
Labor fireman.....		
Labor hauling ties to and from tank.....		
Labor dipping ties.....		
Labor shaving ties.....		
Labor stripping off bark.....		
Length of time ties have been cut before treating.....		
Remarks:		
	Signed.....	

High-Tension D.C. Tap-Field Motors for the Central Argentine Railway

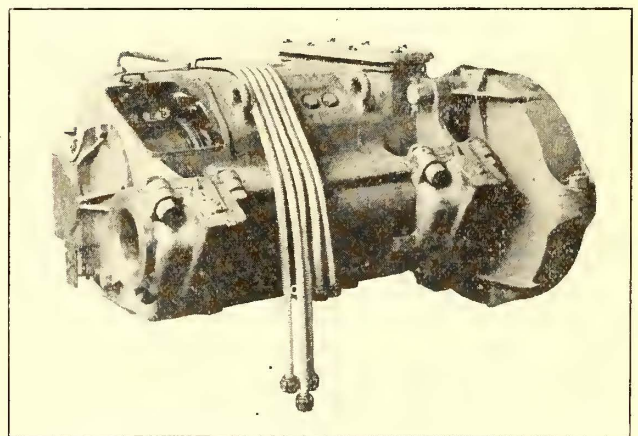
The contract for the Central Argentine Railway of South America, which the British Thomson-Houston Company, Ltd., Rugby, England, has nearly completed, comprises two-motor, four-motor and trailer equipments, the coaches for which will have a motorman's cab at each end. The equipment consists of railway



ARGENTINE MOTOR—SEEN FROM PINION END

motors, master controllers, contractors, and auxiliary parts for automatic control, switch panels, etc., also all electrical details in connection with vacuum brakes, ventilating and lighting systems.

These motors are for use on an 850-volt continuous-current system, and are rated at 250-hp each. In view of the high speeds which are required for operating express trains, these motors are arranged for tap-field control, enabling speeds up to 65 m.p.h. to be obtained. Efficient ventilation is provided by a fan attached to the armature, which draws air through a screened inlet over the armature and back through longitudinal ducts in the core, insuring uniform radiation of heat and the elimination of hot spots. In this way the radial ducts, which are used in the ordinary type of armature, are eliminated, making it possible to



ARGENTINE MOTOR—SEEN FROM COMMUTATOR END

build a much tighter core and to protect completely the armature coils on the under side. The armature coils are insulated with mica, this material being used wherever possible throughout the motor. The field windings consist of copper strip insulated with asbestos and impregnated, any movement or chafing being effectually prevented by spring flanges which hold the coils in position. All external leads from the motors are incased in flexible metallic tubing, thus effectively

protecting the insulation from injury. The axle bearings are fitted with heavy gun-metal linings, while the armature bearing linings are of gun-metal lined with babbitt. That part of the axle between the bearings is inclosed by a dust guard, a dust cap being also fitted to the armature shaft bearing at the commutator end. The gear case is of strongly-ribbed, malleable iron, arranged for three-point suspension.

The pinion is cut from a solid forging of high-grade steel and subsequently oil-tempered. It is shrunk on the shaft and retained in position by a nut fitted with a lock washer which engages with a slot on the pinion face. The gear wheel consists of a rim of high-grade oil-tempered steel shrunk on to a cast steel center.

Electric Service Supplies Company Controls the "Reliable" Signal

The Electric Service Supplies Company now controls the "Electric Service" automatic block signal, formerly known as the "Reliable" signal, manufactured by the Street Railway Signal Company, Philadelphia, Pa. It is announced that this exclusive control was entered into only after very searching investigations into the reliability and dependability of this signal. It was

Their construction and operation are so arranged that any unusual car or train movements will be taken care of perfectly. H. R. Stadelman, formerly secretary of the Street Railway Signal Company, has been retained as signal engineer by the Electric Service Supplies Company, to which all correspondence relative to signaling work should now be addressed.

Direct-Connected Exciters

The present tendency in power plant design is to lay out the station as a number of independent units, so that trouble on part of the system will not cause a shut-down of feeders and apparatus other than those directly affected. This trend is especially noticeable in hydroelectric plants where the energy is used over a wide territory via long transmission lines which are particularly liable to trouble. To render each generator unit independent, many engineers favor the use of individual exciters, each connected to its own generator.

The Westinghouse Electric & Manufacturing Company has perfected a line of exciters especially adapted for such service. The chief point urged against direct connection is that trouble in the exciter necessitates shutting down the generating unit unless leads are provided for exciting the generator from some other exciter unit. Hence reliability is the primary requirement in exciters designed for direct connection. It is stated that the company's designers have fully recognized this fact, the exciters being characterized by rugged construction and great overload capacity. While the exciters generally are built especially for the particular generator to which they are to be attached, their details of design and construction are similar to this company's standard engine and belt-driven d.c. generators.

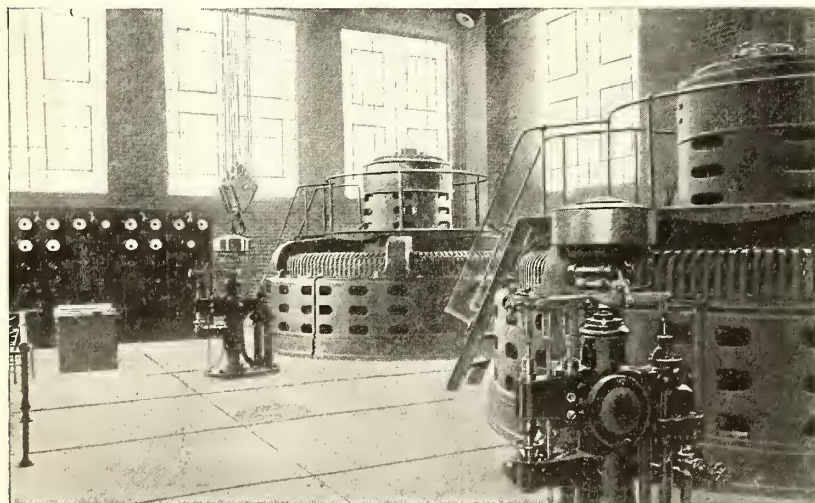
Several methods of mounting the exciter are employed. In the case of a vertical generator the exciter is carried by the thrust-bearing bracket. With a horizontal generator, the exciter frame may be mounted on an extension of the generator bed plate, on a bracket attached to the bearing pedestal, or on a separate base.

The use of the direct-connected exciter has the following advantages: Each generator is dependent only upon its individual exciter, the number of plant auxiliaries is reduced, rheostat losses tend to be less, belt troubles are eliminated and a compact appearance is secured.

In addition to the advantages of greater freedom from trouble, etc., it is frequently true that an outfit of direct-connected exciters will be cheaper than any other arrangement. This is particularly the case in hydroelectric plants where other arrangements, affording equal independence, entail a much greater first cost.

Interurban Zone Fare Register

In the article published on page 593 of the issue of March 20 describing a double fare register adapted for city and zone operation, made by the New Haven Trolley Supply Company, the view published showed the company's double register for city service alone. The general external appearance of the two registers, in fact, is exactly the same except that the direction indicator of the city register shows only "in" and "out" signs, whereas in the interurban register these indications are replaced by the numbers of the successive zones.



TWO 1875 KVA, VERTICAL WATERWHEEL-DRIVEN UNITS WITH DIRECT-CONNECTED EXCITERS. NORTH CAROLINA POWER COMPANY, ASHEVILLE, N. C.

found that installations that had been in service for some time showed records of performance approached by no other contactor type of signal; that operation with speeds of from 40 to 60 m.p.h. was an entire success; that the contactors, which are mechanical and directional in operation, were absolutely dependable and worked equally well with cars running at high or low speed.

The signals, as is well known, were the first to conform to the official A. E. R. A. aspects, giving indications thus:

A green light—allowing car to proceed.

A red light—bringing car to stop because of occupied block.

A red and yellow light—permissive signal allowing car to proceed if green light changes to these colors when car passes contactor.

A red and green light—showing the following car that the block is occupied by a car running in same direction and allowing the following car to proceed if the yellow light changes to the opposite side of red when the car passes the contactor.

Electric Railway Legal Decisions

CHARTERS, ORDINANCES, FRANCHISES

Maryland.—Crossing Other Railroads—Determination of Right—Power of Public Service Commission.

The statute creating the Public Service Commission and the amendments thereto have not taken away the right of a railroad company to condemn a crossing over another road. (*City & Suburban R. Co. v. Washington, W. & G. R. Co.*, 87 Atlantic Rep., 834.)

Michigan.—Street Railway Franchise—Revocability.

A street railway permit or franchise which was revocable at the pleasure of the city, as required by Const. Art. 8, Sec. 25, but which fixed no definite term for its expiration if not revoked, did not conflict with Const. Art. 8, Sec. 29, prohibiting the granting of a franchise for a longer period than thirty years, since, in the absence of a limitation in the grant, it must be assumed that it cannot extend beyond the term fixed by the constitution.

A provision in a street railway permit that, in case the city should engage in municipal ownership and operation of street railroads, it should purchase the tracks and equipment at a price to be fixed by agreement or arbitration is not a limitation upon the power retained by the city in the permit to revoke the permit, and therefore the provision is not contrary to Const. Art. 8, Sec. 25, prohibiting the granting of franchises which are not revocable by the municipality. (*Peck et al. v. Detroit United Ry. et al.*, 146 Northwestern Rep., 978.)

New York.—Refund of Money Paid for Instruction by Discharged Employee.

An application for the employment of a street car conductor provided that, in the event of his leaving the services for any reason whatever within six months, the money paid him for work under instruction while on trial should be deducted from such moneys as should be due from the company on the date of his "leaving." Held, that the word "leaving" meant to quit or depart, implying volition on the part of the person leaving, and limited the forfeiture of the instruction wages to a case where plaintiff left defendant's employ of his own volition, nor was such instruction affected by the words, "for any reason whatsoever." (*Muesling v. International Ry. Co.*, 147 New York Sup., 177.)

Oregon.—Eminent Domain—Remedy of Owner—Punitive Damages.

One who goes without the owner's consent upon another's land and appropriates a part thereof and changes its physical features, as by making a railroad cut contrary to the owner's wish, may be held liable in punitive damages. (*Kingsley v. United Rys. Co.*, 133 Pacific Rep., 786.)

Tennessee.—No Contempt for Injunction on Speed of Cars.

Where a temporary injunction issued to restrain a railroad company from condemning a right-of-way immediately in front of complainant's residence was dismissed on stipulation, which provided that both parties should apply for a dismissal, and that the road should be constructed in a certain manner and the trains operated at less than a certain rate of speed, the officers of the railroad company cannot be proceeded against as for contempt for violation of the injunction because they operated the trains at a greater rate of speed. (*Caldwell v. Nashville Interurban Ry. Co. et al.*, 164 Southwestern Rep. 774.)

Washington.—Power of Regulation by Municipality Disappears After Appointment of State Public Service Commission.

Public Service Commission law (law 1911, Chap. 117) declares that the term "common carrier" shall include street railroads; that the term "transportation of persons" includes any service in connection with the carriage of persons, the term "service" being used in its broadest sense; that whenever the Public Service Commission shall find that the rules of any common carrier as to transportation are unjust or insufficient, it shall determine reasonable and just rules, and that a complaint may be made by any individuals or body politic, or municipal corporation. Const. Art. 11, Secs. 10 and 11, authorize municipalities of a certain size to form their own charter and to exercise police power, not in conflict with the general laws. Held, that as the statute

expressly applies to street railways, and authorizes action by the Public Service Commission on the petition of municipalities, a municipality is, since its enactment, precluded from further regulation of a street railroad in its borders, even though the commission has not acted. (*Seattle Electric Co. v. City of Seattle et al.*, 138 Pacific Rep., 892.)

LIABILITY FOR NEGLIGENCE

Alabama.—Collision with Unregistered Automobile.

In an action for injuries to an automobile in collision with a street car, whether the machine was or was not registered in compliance with the criminal laws of the state was immaterial. (*Birmingham Ry., Light & Power Co. v. Aetna Accident & Liability Co.*, 64 Southern Rep., 44.)

Illinois.—Crossing Accident—Care Required.

While a traveler approaching a railroad crossing is required to use ordinary care to avoid being struck by a train, and this usually demands the use of the faculties of sight and hearing, a failure to look and listen does not bar a recovery as a matter of law, but is usually a question of fact which the jury may consider in determining whether ordinary care has been exercised. (*Gibbons v. Aurora, E. & C. R. Co.*, 104 Northeastern Rep., 1064.)

Louisiana.—Abuse of Street Car Passenger—Right of Action.

Where a conductor charges such passenger in the following language, "You want to beat somebody out of a nickel; you want to cheat me out of a nickel," he humiliates and mortifies him in his own eyes, and damages will be allowed therefor. (*Carter v. New Orleans Ry. & Light Co.*, 65 Southern Rep., 16.)

Louisiana.—Right-of-Way in Center of Street Liable for Paving Assessment.

Land held in private ownership, running through the middle of a street, with a roadway on either side, in a city having a population exceeding 10,000 (New Orleans excepted) is subject to local assessments for paving as "abutting" property, under Act No. 10 of 1896. (*City of Shreveport v. Shreveport Traction Co.*, 64 Southern Rep., 414.)

Massachusetts.—Garnishment of Goods in Transit—Carrier Not Liable.

A carrier, having property in its possession in actual transit, may be charged as trustee or garnishee, and the property reached thereby by the creditors of the owner of consignee.

A carrier, surrendering in good faith and without negligence goods taken under a valid legal process issued against the owner, is excused from further liability. (*Clifford v. Brockton Transp. Co.*, 101 Northeastern Rep., 1093.)

Massachusetts.—Passenger Walking Along Running Board of Open Car Not Negligent.

When plaintiff boarded a street car, it seemed to be full. He stood for a few seconds on the running board at about the middle of the right side, and then walked slowly and carefully along the running board while the car was in motion toward a vacant place which he saw in the second seat from the front, and with one hand on one stanchion and the other hand on another was in the act of stepping into the car to take the seat when he was thrown therefrom. Held, that he was not negligent as a matter of law in walking along the running board under such circumstances. (*Holliday v. Boston Elevated Ry. Co.*, 101 Northeastern Rep., 1074.)

Massachusetts.—Liability for Cause of Death in Case of Person with Incurable Disease.

Under St. 1907, Chap. 392, a street railway corporation which negligently causes the death of a passenger, shall be punished by a fine recoverable by indictment, to be paid to the executor or administrator, and it shall also be liable in damages assessed with reference to the degree of its culpability, recoverable in an action of tort by the executor or administrator. Held, that damages are recoverable for the death of a person afflicted with Bright's disease, which continued from the time of the accident and was a contributing cause to the death, occurring about seven months thereafter, where the death was hastened or caused sooner than it would otherwise have occurred by an accident caused by negligence, since such was the rule at common law on

an indictment, and the act for which the action of tort lies is the same as that for which an indictment will lie. (*Wiemert v. Boston Elevated Ry.*, 104 *Northeastern Rep.*, 360.)

Massachusetts.—Injuries to Passenger—Negligence.

Where a street car passenger standing on the rear platform fell off the car while running at 7 or 8 m.p.h. along a straight track and there was no evidence of any jolt or jar, or of negligent starting or stopping of the car, there was no actionable negligence of the street railway company. (*Slo-tofski v. Boston Elevated Ry. Co.*, 102 *N. E. Rep.*, 418.)

Massachusetts.—Starting Bell Rung by Unauthorized Person.

Where a street car was started in response to a signal while plaintiffs were preparing to alight, the fact of the ringing of the bell warranted an inference that it was sounded by or by the authority of the servants in charge. The conductor admitted that while the signal to stop was sounded by an unauthorized person, he took no precaution to prevent the ringing of the starting bell by an intermeddler. (*Shols-berg v. Boston & N. St. Ry. Co.*, 103 *N. E. Rep.*, 634.)

Massachusetts.—Contributory Negligence of Plaintiff Not Bar to Recovery in Some Cases.

Where the motorman of a street car negligently drove the car rapidly so close to a team carrying a projecting pole that any movement of the team out of a straight line would cause the pole to strike passengers, as it did, the fact that the driver of the team was also negligent did not relieve the railway company of liability. (*Anderson v. Old Colony St. Ry. Co.*, 101 *Northeastern Rep.*, 1072.)

Michigan.—Care Required as to Defects in Street.

Where a public street, because of repairs, was badly torn up, so that it was difficult for vehicles to cross the car tracks, both the driver of a vehicle and the motorman were bound to use additional care to avoid an accident. (*Ra-haley v. Detroit United Ry.*, 142 *Northwestern Rep.*, 1100.)

Missouri.—Master and Servant—Liability for Injuries to Pit Man.

An employee in a carhouse, who had been working in a pit under a track, and who knew that the operator of a car on such track knew that he was in the pit, was not negligent, as a matter of law, in failing to keep a constant watch for the car as he gathered his tools and left the pit by a ladder or stairway, as he could rely in some degree on the car not coming back without warning. (*Stockton v. Metropolitan St. Ry. Co.*, 164 *Southwestern Rep.*, 177.)

Missouri.—Damages Not Reduced Because Poor Health Increased Injuries.

The fact that the physical condition or health of one street railway passenger, injured in a derailment, is such that she received a more serious injury than she would have received had she been in better health, or than another passenger in better health would have received, is not a defense to an action for such damages, or a ground for reducing the damages recoverable. (*Patterson v. Springfield Traction Co.*, 163 *Southwestern Rep.*, 956.)

Oregon.—Damages Under Employers' Liability Act.

Under employers' liability act (laws of 1911, page 16), Sec. 1, requiring persons or corporations engaged in the manufacture, transmission, or use of electricity to use every precaution practicable for the safety of employees, and Sec. 4, providing that, if there shall be any loss of life by reason of the neglect of provisions of the act by any person liable thereunder, the heirs shall have a right of action, without any limit as to the amount of damages, while the beneficiary may recover any money loss, including the value of services during minority and the benefits reasonably to be expected therefrom, there can be no recovery for loss of comfort, society, and protection of the decedent. (*McFarland v. Oregon Electric Ry. Co.*, 138 *Pacific Rep.*, 458.)

Pennsylvania.—Violent Ringing of Gong Sometimes Negligence.

While it is a motorman's duty to ring his gong with emphasis on proper occasions, it may be negligence to ring it violently and unnecessarily in proximity to a frightened horse, whose condition is manifest. (*Lapsley v. Pittsburgh Rys. Co.*, 89 *Atlantic Rep.*, 874.)

Pennsylvania.—Torts of Servant—Scope of Employment.

Where a motorman was riding on a trolley car as a passenger during a strike, and was doing no act on behalf of the company, and shot plaintiff from the rear platform, and there was no evidence that in firing the shot he was acting for the company, it was not liable for the resulting injuries. (*Drexler v. Philadelphia Rapid Transit Co.*, 90 *Atlantic Rep.*, 452.)

Washington.—Injuries to Animals—Measure of Damages.

In case of an injury to an animal, the measure of damages is the difference in value before and after the injury, and expenses incurred, provided the total damages do not exceed the original value, but if an animal is injured and expenses of treatment are reasonably incurred under the belief that the animal may be cured, such expenses in case of its death, together with the actual value of the animal, may be recovered. (*Douglass v. Seattle Electric Co.*, 132 *Pacific Rep.*, 230.)

Washington.—Care Required in Removing Automobile from Track.

A street railroad, in an attempt to remove an automobile partly overturned on its track and obstructing traffic, with the consent of the owner's agent, owed the owner no duty further than to exercise due care. (*Augerson v. Seattle Electric Co.*, 132 *Pacific Rep.*, 223.)

Washington.—Termination of Relation of Passenger and Carrier—Injury to Pedestrian from Overhanging Platform on Curve.

Plaintiffs and others alighted from a street car on a planked roadway running parallel with the street car track and passed to the rear of the car, crossed the tracks, and stepped upon a platform erected in the street by the street car company, and were walking along the platform, when the street car, as it rounded a curve in passing them, swung some 3 ft. over the platform and struck plaintiff. Held, that plaintiffs were not passengers when the accident happened, so that the company owed them no greater duty to look out for their safety than it owed to other pedestrians.

A street car company is not bound to warn pedestrians on the streets to prevent injury from the overhanging of the car in rounding a curve, since that is a matter of common knowledge of which everyone must take notice. (*Gan-naway et ux. v. Puget Sound Traction, Light & Power Co.*, 138 *Pacific Rep.*, 268.)

West Virginia.—Dangers of Linemen—Actionable Negligence.

A lineman employed to reset poles, who has to climb among live wires for the purpose of attaching to the old poles a pulley used in hoisting the new ones assumes the risk of all ordinary dangers incident to so hazardous an employment but not the risk of unknown and abnormal dangers due to the master's negligence.

It is negligence for which the master is liable to a servant who is injured or killed while so employed to permit a joint or connection to be made in a highly charged electric wire and remain uninsulated and so close to one of the metal braces supporting a cross-arm on the pole as to charge it. (*Perry v. Ohio Valley Electric Ry. Co.*, 78 *South-eastern Rep.*, 692, 693.)

Wisconsin.—Contributory Negligence by Man Stationed to Watch Broken Wire.

Where a fireman was stationed by his superior officers to keep passers-by away from a pole from which hung a live wire occasionally emitting sparks, the fireman was guilty of contributory negligence in attempting to break the wire with his bare hand, and no recovery can be had for his death, it appearing that he was a man of mature years and had passed a civil service examination. (*Glander v. Milwaukee Electric Ry. & Light Co.*, 144 *Northwestern Rep.*, 972.)

Wisconsin.—Parent and Child—Imputed Negligence.

Where the parents of a minor child allowed him to go driving with his grandfather, the contributory negligence of the grandfather in attempting to drive in front of a rapidly approaching car, which struck the vehicle and killed the child, must, in an action by the parents for the wrongful death, be imputed to them. (*Kuchler v. Milwaukee Electric Ry. & Light Co.*, 146 *Northwestern Rep.*, 1133.)

LONDON LETTER

Considerable New Work Going On in England Despite the War—London Underground Earnings Affected

(From Our Regular Correspondent)

The council of the Incorporated Municipal Electrical Association has decided that instead of the proposed convention in 1915, in Dundee, business meetings shall be held in London for the transaction of routine business necessitated by the articles of association and for the discussion of matters of general interest to the members. A meeting will be held at the Institution of Electrical Engineers on June 17 to receive and discuss a report prepared by A. S. Blackman, chief electrical engineer, Sunderland, and T. Roles, chief electrical engineer, Bradford, on behalf of the "Point Five" Association, on "The Practical Result of the Point Five Tariff"; and to receive and discuss a report prepared by Frank Ayton, chief electrical engineer, Ipswich, secretary of the electric vehicle committee of the Incorporated Municipal Electrical Association, on "The Use of Electric Vehicles in Municipal Service." On June 18 the annual general meeting will be held.

In March of last year, J. S. D. Moffet, manager of the West Ham Corporation Tramways, advised his committee that "a clean sweep" of the existing electrical equipments of the rolling stock would be in the interests of the undertaking. The experience he has gained in the interval has convinced him that it would undoubtedly pay the corporation to replace the equipments by motors of higher power and greater efficiency, and that the matter ought to be taken in hand at once, so that the tramways may be in a high state of efficiency to meet the motor-bus competition which exists to-day, and which is likely to be keener after the war. In a report which he has prepared for the electric lighting and tramways committee on the subject, Mr. Moffet points out that one of the chief factors in the transportation of passengers to-day is speed. The board of trade, as recently as December, 1913, increased the maximum speed allowance to 16 m.p.h. on practically every route in the borough, and, in Mr. Moffet's opinion, even speeds up to 20 m.p.h. and over are practicable under certain conditions with perfect safety to the traveling public. Mr. Moffet estimates that the saving that could be effected, after completing the change-over of the equipments, would be in the neighborhood of £4,000 per annum, making no allowance for the benefits that are bound to accrue from fewer breaks in the service and a more satisfied public.

A new scheme for dealing with extraordinary traffic is under consideration by the Leeds Corporation. Leeds suffers from the regular transit of heavy goods through its streets. Recently, when reconstructing one side of a roadway over which this traffic passes, the engineers found that the setts had been fractured to the point of crumbling. The new proposal is to convey the heavy loads by tramway. For this purpose, it is proposed to construct hopper wagons to be drawn over the tramway lines by electric locomotives. The wagons are to have a capacity of 10 tons each, and a charge of 4d. per ton-mile is to be made.

The controversy with regard to the advisability of the Bristol Corporation purchasing the Bristol Tramways & Carriage Company's undertaking continues to excite interest in Bristol. The corporation experts have estimated that the undertaking is worth £670,000, but Sir George White, the chairman of the company, says that the claim will be something like £2,000,000. The special committee of the corporation which is dealing with the matter has invited the directors of the company to a conference with a view to arriving at an amicable arrangement.

The Glasgow Corporation decided some time ago to extend its electricity-producing facilities by the erection of large works at Dalmarnock, which, when completed, will form the chief source of supply for both lighting and power purposes. The excavation operations for the new buildings are under way. It is hoped that the first part of the works will be ready to deliver energy at the beginning of the winter of 1916-1917. The site covers more than thirteen acres, and was purchased for £27,112. The ultimate capacity of the works will be at least 140,000 kw, or 200,000 hp. It is intended to transmit electricity at 20,000 volts.

Exception is taken by the highways committee of the London County Council to the proposal of the finance committee to charge the war service allowances to officers and employees of the Council who have joined His Majesty's forces to the account of the particular service concerned. During the South African war, allowances to tramways employees were charged to the general county account, and the suggestion of the highways committee is that this precedent should be followed. The effect on the tramways undertaking of the adoption of the finance committee's proposal would be serious; it is estimated that the working of the tramways during the current financial year, despite the abnormal circumstances and the increased costs under many heads, will show a surplus, whereas if this surplus be charged with this additional expenditure it will be turned into a deficit. The tramways general reserve fund stood at March 31, 1914, at £190,597, after a large sum had been withdrawn to meet the deficiency on the previous year's working, and a deficit through the proposed policy respecting war allowances will further deplete it. Were it exhausted it would be necessary for the Council to levy a general rate to make good the deficiencies. The decreased competition of motor omnibuses owing to the war is benefiting the Council tramways, which now have an increased revenue of £5,000 weekly as compared with the previous year.

The Leeds Corporation has completed the extension of its tramways from the old terminus at Guiseley to the White Cross Hotel in the same township. In regard to the trackless system which it is intended to carry forward to Burley and Otley, in Wharfedale, good progress has been made with the erection of the standards, and, according to a statement made recently by J. B. Hamilton, the general manager, it is hoped to install service at the end of May or early in June.

The directors of the Edinburgh & District Tramways have decided that for the present it will be unnecessary to introduce women conductors on the system. The tramwaymen objected, and after holding meetings on the subject decided to act on the suggestion from the tramways manager that if they were willing to co-operate by working overtime when required the necessity for introducing women conductors would be overcome. It is stated that there was a good response to the tramway company's advertisement for women conductors, and that had it been necessary to employ women there would have been no scarcity of such labor.

A sub-committee of the tramway committee of the Edinburgh Town Council has decided that experiments with self-propelled cars, with a view to the possible introduction either of electrically or petrol-driven vehicles, should be made. The lack of elasticity of the cable system in Edinburgh is now being keenly felt.

The Underground Electric Railways, which controls most of the tubes in the London district, complains that the passenger earnings of some of the concerns in which it is interested have been adversely affected by the war. The commencement of work on the enlargement of the City & South London tunnels is postponed. Interesting details are given from which it can be gathered that the total passengers carried (omitting the District Railway in each case, the line being now under government control in connection with the war) for 1914 was 730,968,970, against 740,698,370 in 1913. The falling off was practically all in the London General Omnibus traffic, the numbers carried being 569,343,223, against 580,205,335. Doubtless this is largely attributable to the fact that so many of the omnibuses were taken over by the government for service in France at the outbreak of hostilities.

Dealing with the suggested new tram terminals, the committee considers that the terminals proposed by the tramways committee will form a great relief from the present congestion by enabling the tramways committee to return cars from these points north and south respectively, instead of running them through the congested central portion of the city. The committee strongly recommends the principle of terminals, or limits to the through route system, to the favorable consideration of the City Council.

A. C. S.

News of Electric Railways

BRITISH RAILWAY ELECTRIFICATIONS

The reports of the annual meetings of the various main railways in Great Britain are chiefly interesting on account of references made to the various electrification schemes. The Lancashire & Yorkshire Railway refers to the electrification of the Manchester and Bury line as having progressed so far that it was not considered desirable to stop work when the war broke out. It is progressing satisfactorily, but will not be completed quite so early as originally anticipated, as on account of the war it has been decided to extend the time necessary for completion.

The London & North-Western Railway states that its electrification scheme from Queen's Park to Watford is approaching completion. Practically all the work of widening the main railway and constructing the necessary new bridges and tunnels for the junctions between the new electric lines and the existing lines to Euston and Broad Street is well under way, and preparations are now being made to begin the new tunnels under Primrose Hill. The new electric power station and repair shed at Stonebridge Park are well advanced, and the six electric substation buildings are practically completed. The North London Railway also refers to the electrification scheme which it is carrying out in conjunction with the London & North-Western Railway, and explains that construction would have been completed this spring had it not been for delay in carrying out the contracts, which have been much affected by the war. It is still hoped, however, that before the end of the year there will be a through service of electric trains between Broad Street and Kew and Richmond over the Hampstead Junction line.

On the other hand the London, Brighton & South Coast Railway Company has practically stopped all work on capital account since the outbreak of the war, but has been obliged to proceed with the equipment of the suburban lines for electrical working, not only because contracts were made and certain orders given, but because a considerable quantity of material had been delivered which would seriously deteriorate if not used. It is further stated, however, that the electrical services which have been in operation now for some years continue to show marked expansion. Referring to the electrification scheme of the London & South Western Railway, it is stated that the declaration of war completely upset all the company's calculations and it had seriously to reconsider its position. It was committed to a sum of more than £650,000, and, in the circumstances, concluded it prudent to suspend all operations for the time. Later, however, the company reconsidered the position, and raised the necessary capital.

PRELIMINARY RAPID TRANSIT WORK

The preliminary work that is necessary to the plan for the extension of rapid transit improvements in Philadelphia was begun on March 20, attended by a fitting ceremonial in which Mayor Blankenburg, Director of Transit A. Merritt Taylor; Frank R. Ford, of Ford, Bacon & Davis; H. H. Quimby, chief engineer of the transit department of the city, and Assistant Director Atkinson participated. That part of the work officially begun is under contract with the construction firm of Peoples Brothers. It calls for the reconstruction of sewers in Walnut Street from Third to Sixth Street. Thirty-five weeks is the time allotted for the completion of the sewer work, according to the contracts. Before the expiration of this period work on the Broad Street subway will begin, providing the \$6,000,000 transit loan is authorized April 29.

The Mayor in his remarks told those who witnessed the ceremony that upon the exercise of their independent privilege as voters depended the future of the rapid transit program. The Mayor said:

"Fellow citizens, I must warn you that it is for you to decide whether or not we shall have rapid transit. If you neglect to go to the polls on April 29 and vote for the \$6,000,000 transit loan, rapid transit will be a thing of the future, how many years no man can say. And remember that every vote counts. Your vote is important."

STRIKE IN SPRINGFIELD

A strike was declared on the Springfield (Mass.) Street Railway on March 31 by the local branch of the Amalgamated Association. The disagreement arose from the company's refusal to retain men discharged for irregularities in connection with fares pending the installation of transfer registers. J. T. Harmer, president, addressed the following statement to motormen and conductors:

"At a conference with the committee of your association held in my office on Friday afternoon, March 26, three requests were made of the company:

"1—That additional registers be installed on the cars so that transfers could be rung up.

"2—That until the registers were installed no more men should be discharged for irregularity in handling fares.

"3—That three men who had recently been discharged for that cause should be reinstated.

"I made the reply at that time that the Springfield Street Railway had about the same practice as in other places of the same size—transfers were not rung up on registers, and when men were checked up and found irregular they were discharged; but the argument of the committee that additional registers were a protection to the character of the men appealed to me and I agreed to take the matter under consideration. With regard to the second request, I declined to accede to it. With the third request, that the three men be reinstated, I declined to do comply, but stated to the committee that under the contract all grievances had to be arbitrated, and that I would agree to arbitrate the discharge of the three men.

"At the meeting a demand was made that transfer registers be installed on the cars and that the three men discharged should be reinstated, in accordance with a vote of the employees taken on March 29, and that unless I granted this demand the cars would not be run out of the barns on Wednesday morning. I again offered to arbitrate the cases of the three men, and further, at the close of the meeting, agreed to install transfer registers, it being understood, however, that if the cars were not run out of the barns Wednesday morning I should not be held to this agreement.

"As the company has done exactly what the contract demands, it does not consider itself responsible if work should be suspended on the cars, and it also feels that it is its duty to the men and public to make the above facts known, so that the men will have a full understanding of them before they take the responsibility of stopping service."

In a statement to the public on behalf of the union, J. H. Reardon condemned secret inspection and attacked the company for not installing transfer registers in the past. The statement entirely failed to meet the willingness expressed by the company to arbitrate the cases of the three conductors in question or to acknowledge the company's willingness, after conference, to install transfer registers.

On March 31 the company made no attempt to operate any but mail cars.

On April 1 the men voted to accept the proposition of the State Board of Conciliation to return to work. In a statement which he issued, Mr. Harmer said that the company of its own volition is to install transfer registers on the cars and that the other questions would be taken up by the board for investigation next week.

REPORT OF INDIANA COMMISSION

According to the annual report of the Public Service Commission of Indiana for the fiscal year ended Sept. 30, 1914, the total mileage of electric interurban railway in operation in that State is 2,798.4 miles, of which 2,732.49 miles are single track. On June 30, 1913, the companies had outstanding \$109,217,286 of capital stock and \$93,010,047 of funded debt. The companies have an average stock issue of approximately \$40,000 per mile of single track and an average bond issue of \$34,000 per mile of single track. The commission states that it would not be a violent assumption to estimate the average cost of reproduction on this basis.

For the year ended June 30, 1913, the companies paid in

dividends \$924,286, or less than 1.2 per cent on the par value of the stock outstanding. Many of the stock issues are paying 5 per cent dividends, but the commission says that in other instances the bonds and stock have dropped far below the par value. What has been lost to individual investors, however, has been made up to separate communities through the increase in the value of real estate.

The total revenues derived from the interurban railways in 1913 were \$15,090,417. The total operating expenses, including taxes, were \$8,972,020, leaving a balance of \$6,118,397. The companies received \$2,040,759 from sources other than passenger revenue, as follows: Baggage revenue, \$53,749; parlor and special car revenue, \$38,029; mail revenue, \$10,106; express revenue, \$344,944; milk revenue, \$110,646; freight revenue, \$1,127,961; switching revenue, \$10,805; miscellaneous transportation revenue, \$3,250, and operations other than transportation, \$342,359. For the year ended May 1, 1914, the total deaths by interurban railways was 74 and the total number of injuries 167, as compared to 371 and 2279 on steam railroads.

LEGISLATION IN OHIO

The bill making it legal to file suits during receivership in any county through which an electric railway passes was passed by the House on March 25 and is before the Governor.

The public utilities committee of the House has reported favorably the Reighard bill, which is intended to remove the mandatory feature of the law requiring the physical valuation of all public service companies by the Public Utilities Commission. It gives the commission discretionary power, even where city councils demand a valuation for the purpose for fixing rates. It may not affect the valuations that are now being made, if enacted into a law.

The bill relating to bonds issued for municipal ownership purposes has been recommended for passage by the Senate committee on public utilities. It provides that such bonds shall be a lien on the property only in so far as the bonds issued exceed the limitations provided by the Longworth bond act.

The Smith bill, requiring inclosed cabs for motormen, has been amended in such a way as to give the Public Utilities Commission discretion in its application.

Representative Hyle has introduced a bill providing that eight hours shall constitute a day's work for all railroad and electric railway employees, from switch engine and switch car hands to trackmen, who are employed in the yards.

The bill regulating the hours of employment of street and electric railway motormen and conductors has been recommitted to the House committee on labor, because of an amendment that is not clear.

The House committee on public utilities has recommended for passage the Myers bill, which will allow steam and electric roads to join in the construction of union depots.

MONTANA EARNINGS AND ACCIDENTS

The Board of Railroad Commissioners and ex-officio Public Service Commission of Montana has issued its seventh annual report for the year ended Nov. 13, 1914. According to this report, the operating revenues and expenses of the electric railways in the State for the year ended June 30, 1914, were as follows: Anaconda Copper Mining Company, operating revenue, \$81,732, and operating expenses, \$50,788; Billings Traction Company, operating revenue, \$26,395, and operating expenses, \$25,256; Butte Electric Street Railway, operating revenue, \$546,213, and operating expenses, \$536,711; Gallatin Valley Railway, reports not available; Helena Light & Railway Company, operating revenue, \$97,763, and operating expenses, \$83,353; Missoula Street Railway, operating revenue, \$79,426, and operating expenses, \$75,002, and Montana Power Company, operating revenue, \$2,130,041, non-operating revenue \$800,765, and operating expenses, \$755,981.

A summary of the accidents during the year ended Sept. 30, 1914, shows that two employees were killed by the railways and three injured as compared to three and sixteen for electric utilities and six and twenty-nine for all utilities.

For persons other than employees the railways had two killed and sixteen injured, out of a total of two killed and twenty-four injured.

LEGISLATION IN PENNSYLVANIA

The Senate has passed the House bill to allow municipalities to regulate motor conveyances, etc. The House bill taxing switches, turnouts, etc., in cities of the second class has been passed by the Senate on first reading. The House has passed the bill taxing wires, poles, etc., in cities of the second class. The House has also passed on second reading the bill taxing the real estate of public service companies in cities, boroughs and townships. The House bill limiting the hours of labor of motormen, etc., has been returned with a negative recommendation. The House has passed on second reading the bill authorizing street railways to operate motor buses. It has also passed on second reading the bill providing for a municipal tax on motor vehicles. The bill introduced in the Senate relative to the employment of labor and advertising during strikes, etc., has been referred to the judiciary general committee. The House has referred to the committee on corporations the bill providing for the formation and regulation of stock companies and authorizing the issue of stock without par value on reorganization, etc. The House has referred to the judiciary general committee the supplement to the Public Service Company law empowering the commission to order connections between street railways and lines owned, leased and operated by municipalities, etc.

ARTICULATION OF BOSTON LINES

On April 4 train service will be extended from Harvard Square, Cambridge, through Park Street, Boston, to the Washington station of the Dorchester tunnel, now under construction. The operation of trains through to Washington Street, 0.5 mile, will tie together the Tremont Street subway, Washington Street tunnel and the Cambridge subway. The new facilities will be centered at the Washington station, which is expected to become the most important downtown transfer point in Boston on the rapid transit lines.

The new station differs from all others on the Boston Elevated Railway in arrangement. It extends under Summer Street from Washington to Chauncy Street, and is built in two levels. The lower level contains two platforms about 350 feet long each, which will be used as the berths of Harvard Square trains until the next section of the Dorchester tunnel is opened. The upper level is a 500-ft. promenade or lobby with exits to the surface and to the winter and summer stations of the Washington Street tunnel. An escalator will also be in service between the lower level and the street. Free bodily transfer will be given between tunnel and subway trains, and between trains and surface cars, as previously outlined in this paper.

COMMISSION INQUIRY COMPLETED

It was announced on March 30 that the legislative committee which has been conducting the investigation into the affairs of the Public Service Commissions of the First and the Second Districts of New York had completed its work and that the findings with regard to the commission for the second district would probably be returned within ten days. It is said that the committee will recommend that one commission of seven members replace the present commissions, three members of this single commission to be appointed from New York City, three from the up-State districts and a chairman appointed at large. It is also said that the report of the legislative committee will advocate a reduction in the salary of the commissioners from \$15,000 to \$10,000 a year, with \$2,000 additional for the chairman. Senator Thompson, chairman of the committee, was quoted as stating that the report regarding the commission for the second district would make no recommendation as to the personnel of the commission, unless recommendations were especially requested by Governor Whitman in a formal letter.

STOCKHOLDERS AUTHORIZE DETROIT SALE

The stockholders of the Detroit (Mich.) United Railway on March 31 authorized the directors to sell the property of the company in the one-fare zone to the city at the price offered by the city railway commission plus betterments and extensions made after April 1. The offer was made public on April 2 by the railway commission.

IMPROVEMENTS IN CINCINNATI

Replying to a letter from Director of Public Safety Fossick of Cincinnati, Walter Draper, vice-president of the Cincinnati Traction Company, sent a communication on March 25, in which he outlined the improvements the company is ready to make and added a number of suggestions as to how the work should be done in order to avoid inconveniencing the public. Mr. Draper suggests that the work be done in sections and that some sections be allowed to remain over to another season. He advised the committee that the company could make improvements only to the extent of its finances. The double-tracking of Central Avenue will cost about \$150,000, and the addition of the Sixth Street extension would make the expense very heavy. The improvements are to be paid for largely out of income. The following day the street railway committee decided to formulate an ordinance requiring the company to give transfers at a number of additional points.

MASSACHUSETTS LEGISLATURE

Governor Walsh has signed the bill eliminating the 1-cent toll charge levied in the East Boston tunnel upon passengers carried by the Boston Elevated Railway. If the bill is accepted by Mayor Curley and the City Council by Dec. 31, 1915, a 5-cent fare will be established in the tunnel as on all other parts of the system. About 80,000 people in the East Boston district of the city will be benefited. The tolls have been collected by the railway and turned over to the city; but if the act is accepted the city will make annual appropriations until 1922 from the tax levy, and these, with the rental received from the company for the use of the tunnel, will meet the interest and sinking fund requirements on the bonds issued to pay the cost of construction of the tunnel. The Governor has also signed a bill authorizing the Boston Transit Commission to contract for the temporary use of portions of the Dorchester tunnel. The bill providing for the electrification of railroads in the Boston district has been referred to the next Legislature. Leave to withdraw has been reported upon the bills for the state ownership of street railways. The bill authorizing the ownership of pleasure resorts by street railways has been engrossed.

"ELECTRICAL PROSPERITY WEEK"

"Electrical Prosperity Week" has officially been set for the first week in December this year. The executive committee, which is to guide the campaign for this event is composed of the following men: Chairman, A. W. Burchard, vice-president General Electric Company; alternate, F. H. Gale, advertising manager General Electric Company; Gerard Swope, vice-president Western Electric Company; alternate, E. W. Rockafellow, sales department Western Electric Company; J. R. Strong, president Tucker Electrical Construction Company; alternate, George Weideman, George Weideman Electric Company, Inc.; Frank W. Smith, vice-president United Electric Light & Power Company, New York; alternate, George Williams, Henry L. Doherty & Company; Hugh M. Wilson, vice-president *Electrical World*; alternate, Frank B. Rae, Jr., *Electrical Merchandise*.

General charge of the affair will be in the hands of J. M. Wakeman, general manager of the Society for Electrical Development. H. W. Alexander, manager of the department of publicity of the society, will have charge of the publicity work. At the next meeting of the executive committee on April 7 it is proposed to appoint fifty local committeemen to handle the campaign in different geographical centers. The most prominent men in these centers will be named. A national advertising campaign will be carried in magazines, while local newspaper advertising will be done to emphasize the campaign in each locality. Motion

pictures, poster stamps, billboards, electric signs and car cards will also be used to awaken enthusiasm.

Indeterminate Franchises in New Jersey.—The Senate of the State of New Jersey has passed the Pierce indeterminate franchise bill and it is now up for passage in the Assembly. At two previous sessions the Senate approved the bill, but both times it failed in the House.

Texas Commission Bill Fails.—It was stated at Austin, Tex., on March 13 that Senator Robbins had abandoned all hope of passing his bill providing for the creation of a public service commission at the present session of the Legislature, but that he might make an effort to have the question submitted by Governor Ferguson at the coming special session, which will be held this month.

Railway's Right to Purchase Light Company Affirmed.—An opinion has been rendered by the attorney general of Pennsylvania in the matter of the York Railways' application for approval of the Public Service Commission, to purchase the property of the Merchants' Electric Light Company in which the right of a street railway to purchase and operate an electric light company is affirmed.

New Trolley Line to Philadelphia.—A new rapid transit electric railway route to Philadelphia will develop as the result of plans of the Reading (Pa.) Transit Company to build a connecting link between Boyertown and Pottstown, Pa. This would also mean a direct electric railway route to Philadelphia from Lancaster by way of Reading. Engineers are now making a survey of the proposed line and work is expected to start shortly.

Lehigh Valley Transit Power For Reading Line.—The Allentown & Reading Traction Company, operating between Allentown and Reading, Pa., has abandoned its power plant at Griesemersville and in the future will be supplied with power from the lines of the Lehigh Valley Transit Company. The generating plant at Kutztown will be continued in operation to supply the district between that town and Reading. Dorney Park, which is owned by the same company, will also be supplied with lighting current during the summer season.

Decision in Ohio Extension Case.—The City Council of Cincinnati endeavored recently to compel the Cincinnati (Ohio) Traction Company to extend the Warsaw Avenue line. The company objected and carried the matter to the Public Utilities Commission. The decision being favorable to the company, the city appealed to the Supreme Court. That court holds that if the route would entail unusual and unwarranted dangers and jeopardize the lives of passengers the commission is authorized to relieve the company of the obligations sought to be imposed by the ordinance.

Railroad Service Exhibition.—A national railroad supply and service exhibition will be held at the Grand Central Palace, New York City, from May 17 to May 22, 1915, inclusive, under the direction, management and supervision of the Order of Railroad Telegraphers, Dispatchers, Agents and Signal Men of America. It will be the aim to show the progress made by inventors and makers of safety appliances to protect and to safeguard the traveling public and the railroad servants. Applications for space may be made to the order at its offices in the Temple Court Building, New York.

New Haven Minority Suit.—Arguments in the suit of minority stockholders of the New York, New Haven & Hartford Railroad to recover for the company approximately \$102,000,000 alleged to have been wrongfully spent, and, in addition, double that amount in penalties, were made before the full bench in the Supreme Judicial Court on March 19. For street railways it is claimed \$46,000,000 was thus improperly expended. The principal contention of the defendants is as to the right of minority stockholders to bring a bill of this nature, their claim being that such a bill could not be maintained even if brought in the name of the corporation itself.

Hearings on Alleged Chicago Violations.—Hearings have been held by the Illinois Public Utilities Commission as a result of the complaints filed by J. B. Hogarth, formerly general superintendent of the Chicago Railways, as noted in the *ELECTRIC RAILWAY JOURNAL* of March 20. Evidence was taken as to whether or not the association of individuals

forming the collateral trust was a public utility. Gilbert E. Porter, counsel for the trustees, described in detail how the trustees purchased the controlling interest in the three elevated railways through a contemporaneous issue of notes, and stated that the three members forming the association were not amenable to the commission, although the function of the trust was to borrow the money needed by the railways. Hearings were continued.

Toronto Bills Rejected.—The city of Toronto, Ont., had its bill affecting the Toronto Railway thrown out by the private bills committee of the Ontario Legislature on March 23. The city asked that the word "tracks" be defined as meaning roadbed and rails instead of just rails. The city also asked that it be allowed to expropriate the Toronto Suburban Railway in Ward Seven. Another request was that the agreement of 1891 be interpreted to mean that the city had the right to say on what streets the Toronto Railway should lay tracks. This was rejected, as was also the request that the company be forced to put 180 new cars on the system. As the result of the city's request it is likely that an amendment to the general act will be moved so that the Ontario Railway Board will have the supreme right to deal with all railway questions.

Assisting the Small Borrower.—Theodore P. Shonts, president of the Interborough Rapid Transit Company, New York, N. Y., Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, and Arthur Williams, of the New York Edison Company, are among the directors of the Morris Plan Company, New York, which started business on Dec. 31, 1914, with a capital stock of \$100,000 to make loans to small borrowers. The plan of making loans is simple, but is in no way a charity. It does, however, relieve the borrower from the machinations of the loan sharks. Applicants for loans must furnish references as to their character and must give information as to their income. They must have at least two indorsers or co-workers of situation and income at least as good as their own. Interest on loans is deducted in advance.

The Flood of Legislation.—Elihu Root, the president of the Constitutional Convention which will meet in April to review and remold the organic law of the State of New York, was the principal speaker at the meeting of the members' council of the Merchants' Association of New York on March 25. Speaking of the flood of legislation recently Mr. Root said: "We are seeing now in the newspapers remarks that this Legislature has not done much. I had a count made not long ago in the library of Congress of the number of laws that had been passed in the five preceding years. That was made last year, and in the five years ended Dec. 1, 1913, I found that more than 62,000 laws had been passed by Congress and the State legislatures in this country in that five years, and I found that there had been reported during that five years and published in 630 volumes of reports of the courts more than 65,000 decisions of courts of last resort in this country. How can you possibly know them? How can you conduct your business and keep out of jail? So, give credit to the convention for what it does not do."

Hydro-Radial Hearing.—In reply to the deputation from the Hydro-Electric Association of the province of Ontario, Canada, on March 26, Premier Hearst stated that the resources of the province were at present taxed to the limit by present obligations as a result of the war, and in order to grant the subsidy of \$3,500 a mile to the hydro-radial system it would be necessary to tap new sources of revenue. Once the government's hands were free, after the present crisis was passed, the matter would be taken up and some decision reached. Shortly after the deputation had made its appeal for the subsidy the government had introduced in the Legislature a bill which provides for the creation of radial "zones" in townships. The legislation will authorize township councils to define a radial zone in the township and in that defined section only will the vote be taken. If the proposition is carried, the costs will be borne entirely by the ratepayers in the zone benefited. The bill also provides for validating the contracts and agreements of the Toronto-Markham-Port Perry Radial Line, but its provisions will not be operative except by proclamation.

Financial and Corporate

ANNUAL REPORTS

San Francisco Municipal Railways

According to a preliminary report made to the finance committee of the Board of Supervisors of San Francisco, the net profit on operation of the San Francisco (Cal.) Municipal Railways for the year ended Dec. 31, 1914, was \$185,546. After deducting the comparison charges for services rendered by other departments of the municipal government and for taxes, the net profit was \$81,790. These comparison charges included \$97,737 for federal, state and municipal taxes and \$6,018 for the estimated value of other departmental services, although these amounts are not actually paid.

The statement of income, profit and loss for 1914 follows:

Operating revenues:	
Passenger revenues	\$1,150,236
Miscellaneous revenues	9,202
Total	\$1,159,438
Operating expenses:	
Way and structures	\$27,633
Equipment	48,091
Power	137,839
Traffic	356
Conducting transportation	354,332
General and miscellaneous	45,904
Comparison charges required by charter	6,018
Depreciation—18 per cent of gross revenue	208,699
Total	\$828,872
Net operating revenue	\$330,566
Add miscellaneous income—income from municipal bonds owned	1,318
Gross income less operating expenses	\$331,884
Deductions from income:	
Taxes—comparison charges required by charter:	
State franchise—5¼ per cent on gross revenue	\$60,870
Municipal franchise—3 per cent on passenger revenue	34,507
Municipal car license	1,534
Federal income—1 per cent on net income	826
Total taxes	\$97,737
Interest on funded debt	148,617
Other interest	3,740
Total deductions	\$250,094
Net profit for the year 1914	\$81,790

Winnipeg Electric Railway

The statement of income, profit and loss of the Winnipeg (Man.) Electric Railway for the year ended Dec. 31, 1914, follows:

Gross earnings	\$4,101,302
Operating expenditure	2,416,209
Operating surplus	\$1,685,093
Fixed charges:	
Debt and bond interest	\$449,732
City percentage and car license	122,487
Taxes, insurance, etc.	118,263
Total	\$690,482
Net surplus for year	\$994,611
Balance from last year	901,698
Total	\$1,896,309
Quarterly dividends for 1914	1,080,000
Balance carried to balance sheet	\$816,309

The gross earnings for 1914 increased \$22,608, or 0.55 per cent, while the expenses of operation, including maintenance, repairs and renewals, increased \$163,602, or 7.26 per cent. The increase in the operating expenses, which occurred principally in the railway department, is attributable partly to expenditure introduced in conformity with the requirements of the Public Utility Commissioner, and partly to the annual increase in the graduated scale of wages applicable to senior service employees. The operating ratio for 1914 was 58.91 as compared to 55.23 in 1913. The net earnings in 1914 decreased \$140,994, or 7.72 per cent. The total of passengers carried decreased from 59,563,757 in 1913 to 58,489,987 in 1914, or 1,073,770, while the transfers increased from 15,039,016 to 20,277,197.

New construction and improvements entailing an expendi-

ture of \$1,308,545 were made during the year. These included the laying of about 7½ miles of track in Winnipeg, the construction of an 18-mile branch line from Middlechurch to Stonewall and the establishment of a fast electric service between Winnipeg and Stonewall. Twenty large double-track closed motor cars were constructed in the company's Winnipeg shops. Practically all of the company's double-track closed single-end cars have been converted to comply with operating conditions under the "pay-as-you-enter" system, the rear vestibules being equipped with safety doors. To provide for the foregoing capital expenditures, the directors arranged the sale of additional 4½ per cent consolidated debenture stock, the proceeds of which amounted to \$879,468. The proceeds of treasury notes were \$500,000, making in all \$1,379,468.

Ottawa Traction Company, Ltd.

The first annual report of the Ottawa (Ont.) Traction Company, Ltd., for the year ended Dec. 31, 1914, contains the following statement, which includes the operations of the Ottawa Electric Railway:

Gross earnings of Ottawa Electric Railway	\$1,096,459
Operating expenses and maintenance	665,227
Net earnings	\$431,232
Disposition of net earnings:	
Four quarterly dividends of 3 per cent and a bonus of 3 per cent	\$281,535
Interest on bonds and loans	39,109
Mileage payments	15,751
Taxes	16,722
Contingent account for reduction of track renewals, car equipment and other accounts	55,000
Total	\$408,117
Balance transferred to profit and loss	\$23,115

The gross earnings for 1914 were \$1,096,459, as compared to \$1,041,282 in 1913, an increase of \$55,177. The total expenses, including mileage payments, taxes and interest, increased from \$675,853 in 1913 to \$736,809 in 1914, or \$60,956. The net income, therefore, showed a reduction from \$365,428 in 1913 to \$359,649 in 1914, or \$5,779. The total of passengers carried was 25,321,547 in 1914 as compared to 23,987,883 in 1913, an increase of 1,333,664.

The report states that notwithstanding the business stringency throughout the country for the first seven months of the year, which was added to by the outbreak of the war, every month showed an increase in the gross receipts. The directors are confident as to the future. During the year nine double-truck cars were added to the rolling stock, and a new bridge costing \$15,000 was built at New Edinburgh. This spring the company intends to put heavier rails on Bank Street from Wellington Street to Gladstone Avenue, which will complete the track renewals throughout the system.

Toronto Railway

The statement of income, profit and loss of the Toronto (Ont.) Railway for the year ended Dec. 31, 1914, follows:

Gross earnings	\$6,127,096
Operating and maintenance expenses	3,529,546
Net earnings	\$2,597,550
Less:	
Interest on bonds	\$182,499
Percentage on earnings	955,740
Pavement charges and taxes	191,651
Total	\$1,329,790
Surplus earnings	\$1,267,660
Balance last year	4,448,611
	\$5,716,271
Dividends—four at 2 per cent	923,901
Surplus carried forward	\$4,792,370

The gross earnings for 1914 were \$6,127,096, or \$78,077 more than in 1913. The passenger earnings were \$6,043,512, an increase of \$62,816. The various charges against the earnings for operation, maintenance, etc., amounted to \$3,529,546, an increase of \$406,237 for 1914. The operating ratio was 58.4 per cent. The payments made to the City of Toronto, including the percentage on earnings, pavement charges and general taxes, totaled \$1,122,914, an increase of \$33,206 over 1913. The net earnings decreased

\$328,159 during 1914. Passengers carried totaled 152,966,153, an increase of 1,729,228, and transfers totaled 65,778,022, an increase of 2,694,904. The company reports that \$790,220 of its currency and sterling bonds have been drawn for redemption, and that during 1914 it disposed of \$480,000 of its currency bonds and also issued and offered \$1,000,000 of capital stock to present stockholders.

Dominion Power & Transmission Company, Ltd.

The statement of income, profit and loss of the Dominion Power & Transmission Company, Ltd., Hamilton, Ont., for the year ended Dec. 31, 1914, follows:

Gross earnings	\$2,395,967
Operating expenses	1,390,847
Net earnings	\$1,005,120
Transfer to maintenance and renewal account	101,023
Balance	\$904,097
Bond interest and interest	377,106
Surplus earnings	\$526,991
Balance from 1913	995,862
Total	\$1,482,853
Dividends declared	461,392
Bad debts—written off	1,056
Surplus for 1914	\$1,020,405

The report states that the closing down of factories considerably reduced the power receipts during the year, and the street railway traffic fell off to a marked extent. In view of the widespread and general derangement of business, however, the position of the company is regarded with satisfaction. During the year the company made bond and sinking fund payments of \$134,390, besides setting apart 20 per cent of the gross for renewals and maintenance. After the outbreak of the war the work on the new steam power station was discontinued, but the report states that it will probably be advisable to complete the building and install the plant during the coming summer so that at least one or two units may be ready for operation before winter.

Butte (Mont.) Electric Railway.—The Butte Electric Railway has defaulted the March 1 interest payment on its \$700,000 of first mortgage 5 per cent bonds. This is the first time the company has been unable to pay the interest on its bonded indebtedness. In spite of strict economies the company has not been able to overcome the monthly deficit caused by the falling off of its business in the present depression. Last year the company borrowed \$150,000 to buy new cars, change old cars into modern ones and install other new equipment. This sum is carried as a floating debt, so that the liabilities of the company at present may be considered to be \$850,000.

Central California Traction Company, San Francisco, Cal.—The California Railroad Commission has authorized the Central California Traction Company to lease its lines in Stockton to the Stockton Electric Railroad for \$12,500 per annum for the first three years and \$15,000 per annum for the remaining period of the lease, which is to run from Jan. 1, 1915, to Jan. 1, 1953. At the hearing in this case it developed that the interurban line of the company between Stockton and Sacramento has been placed under the general manager of the Stockton Electric Railroad, who acts in a similar capacity with reference to the Fresno Traction Company and the Visalia Electric Railway, all of which corporations are subsidiaries of the Southern Pacific Company. Witnesses for the Central California Traction Company, who are also its principal stockholders, vigorously denied that it was the intention to sell their line to the Southern Pacific Company, or that any negotiations were pending, and stated that the supervision of the main-line operations exercised by the general manager of the Stockton Electric Railroad was simply in the interest of economy. In this regard the commission comments as follows: "We have no reason to doubt the sworn testimony of these witnesses. At the same time, we have here a most remarkable situation of a supposedly competing line being managed by an official of certain subsidiaries of its competitor. The competition may be either actual or fictitious, but it has nothing to do with the merits of this particular application. It may be well, however, to call attention to the fact that the commission does not look with favor upon any act which might be employed to evade the utilities act."

Chicago (Ill.) Elevated Railways.—The National City Bank, Lee, Higginson & Company and N. W. Halsey & Company, New York, are offering at 91 and interest, to yield about 5.65 per cent, the unsold portion (less than \$500,000) of the present issue of \$12,500,000 of first mortgage 5 per cent gold bonds of the Northwestern Elevated Railroad, dated 1911. These bonds are due in 1941, but are callable as a whole although not in part, except for the sinking fund, at 102 and interest at any interest date upon thirty days' published notice.

Chicago, Harvard & Geneva Lake Railway, Walworth, Wis.—The Wisconsin Railroad Commission has authorized the Chicago, Harvard & Geneva Lake Railway to issue \$78,500 of 5 per cent refunding bonds and to reduce its capital stock from \$150,000 to \$75,000.

Cities Service Company, New York, N. Y.—The comparative figures of the Cities Service Company for 1914 and 1913 are as follows: Gross earnings—1914, \$3,934,453; 1913, \$2,172,411. Expenses—1914, \$116,908; 1913, \$85,348. Net earnings—1914, \$3,817,545; 1913, \$2,087,063. Net interest—1914, \$420,000; 1913, \$123,062. Net to stock—1914, \$3,397,545; 1913, \$1,964,001. Net to surplus—1914, \$1,290,504; 1913, \$588,797. H. L. Doherty, president, states that the earnings were satisfactory in view of existing conditions.

Columbus, Delaware & Marion Railway, Cincinnati, Ohio.—On March 23 the Ohio Supreme Court affirmed the decision of the lower courts in awarding a judgment to Eli M. West, receiver Columbus, Delaware & Marion Railway, for a balance, reported to be \$1,023,253, due from John G. Webb.

Duluth-Superior Traction Company, Duluth, Minn.—According to a recent letter to stockholders from C. G. Goodrich, president Duluth-Superior Traction Company, it was decided at a recent meeting of the board of directors that it would be unwise to continue the common stock on a 4 per cent basis, and that the payment of dividends should be made semi-annually instead of quarterly. Under this policy a semi-annual dividend of 1 per cent was declared for the six months ended June 30, 1915, payable on July 1. It is stated that since the strike of the company's employees in 1912 the cash position of the company has not been so strong as it should have been for the comfortable operation of the property. It was hoped that the increased growth of business would gradually overtake the deficit in liquid assets as compared with current liabilities, but this has not been the case.

Fairmount Park Transportation Company, Philadelphia, Pa.—Announcement has been made that on March 22 Frank Silliman, of E. W. Clark & Company, Philadelphia, was appointed co-receiver of the Fairmount Park Transportation Company with Samuel M. Clements, Jr. The receivers have been authorized to issue the necessary certificates as security for a loan of \$20,000 to be advanced by the reorganization committee for the purpose of meeting bond interest due on April 1. It is reported that two-thirds of the money raised by assessment on the assenting stock has been paid in, and definite arrangements for putting the reorganization plan into effect will soon be completed. Details of this plan were noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16, Feb. 27 and March 6.

Hartford & Springfield Street Railway, Warehouse Point, Conn.—It is reported that negotiations are under way for the sale of the Hartford & Springfield Street Railway, which operates suburban lines between these two cities, with branches to Suffield and Rockville, to the Northern Connecticut Light & Power Company. The latter company is now before the General Assembly for permission to increase its capitalization to \$2,000,000.

Interborough Rapid Transit Company, New York, N. Y.—As compared to the passenger traffic in January and February, 1914, the Interborough Rapid Transit Company during these two months this year carried 2,800,000 less passengers on its subway and elevated lines. The January decrease was largely caused by the temporary falling off of traffic on account of the accidents in the subway, but the February decrease was brought about by the fact that in 1914 the traffic was abnormally large on account of the heavy storms that paralyzed the surface lines. In spite of this decrease in traffic, during the eight months ended Feb. 28 the company earned 14.3 per cent on its stock, as compared to 13.5 per cent last year. At the end of Feb-

ruary the surplus available for dividends was \$297,198 ahead of last year, and it is expected that the increase for the year ending June 30 will be about \$500,000.

Jersey Central Traction Company, Keyport, N. J.—The Jersey Central Traction Company, which operates a line in Middlesex and Monmouth Counties, New Jersey, has been purchased by Laird Brothers, Wilmington, Del. The price paid is said to have been about \$1,000,000. Laird Brothers are reported to represent the DuPont powder interests. Morris Brothers & Company, Philadelphia, have been the controlling factors in the company.

Montreal Tramways & Power Company, Ltd., Montreal, Que.—Potter, Choate & Prentice, New York, are offering at 99¼ and interest, to yield 6.4 per cent, the remaining portion (less than \$700,000) of the issue of \$7,000,000 of two-year 6 per cent collateral trust gold notes of the Montreal Tramways & Power Company. Previous reference to this note issue was made in the *ELECTRIC RAILWAY JOURNAL* of Feb. 27.

New York (N. Y.) Railways.—The arbitration committee appointed to fix the rate of interest on the 5 per cent adjustment income bonds of the New York Railways for the six months ended Dec. 31, 1914, has decided that the payment shall be 1.769 per cent, payable on April 1. The rate paid for the first six months of 1914 was 1.288 per cent, making a total for the year of 3.057 per cent. This compares with payments of 3.981 per cent for 1913 and 3.021 per cent for 1912. Previous references to the 1914 payment were made in the *ELECTRIC RAILWAY JOURNAL* of March 6 and March 13.

North American Company, New York, N. Y.—The North American Company, under whose petition the St. Louis & San Francisco Railroad was placed in receivership three years ago, has been restrained by order of Federal Judge Sanborn from attempting to collect until Feb. 10, 1916, a note for \$625,000 held against the railroad company. The court also forbade the sale of the \$5,000,000 of first mortgage bonds held as security for this note. The order, however, which follows a mutual agreement between the receivers of the railroad and the officers of the North American Company, designates the dates on which interest is to be paid on the note.

Pacific Electric Railway, Los Angeles, Cal.—The California Railroad Commission on March 17 authorized the Pacific Electric Railway to sell its heating and lighting system at Playa del Rey to the Southern California Edison Company for \$1,544.

Pacific Gas & Electric Company, San Francisco, Cal.—In regard to the non-inclusion of sinking fund deductions in the annual income statement of the Pacific Gas & Electric Company, A. F. Hockenbeamer, vice-president and treasurer, says: "We have not at any time advanced the claim before either the California Railroad Commission or other rate-making body that our rates should be high enough to permit us to earn sufficient revenue to retire our bonded debt. To do so would ultimately result in the company securing the entire title to its property from its rates, provided it allowed in addition a proper depreciation charge. What we asked the commission to do some months ago and what it has granted us is this—when we pay off a \$1,000 bond through the operation of some sinking fund, to replace this retired capital with an equivalent amount of our common stock, a most conservative procedure. As the commission allows depreciation to be included in operating expenses and the rate of return is computed only after depreciation has been provided for, there is no reason why an additional allowance should be made for sinking funds."

Philadelphia Company, Pittsburgh, Pa.—According to Mason B. Starring, president United Railways Investment Company, which through stock ownership controls the Philadelphia Company, the estimated earnings of the Philadelphia Company for the fiscal year ended March 31, 1915, show a decrease in gross of less than 4 per cent as compared with the previous year. Mr. Starring states that in all departments rigid economies have been put into effect, and there is no valid reason to question the ability of the company not only to meet all its fixed charges but to provide for cash dividends on all its stock. It is said to be reasonably certain, therefore, that the forthcoming dividend upon the common stock will be paid in cash. The payment of the second scrip

dividend of the company was noted in the ELECTRIC RAILWAY JOURNAL of Jan. 9.

Riverside, Rialto & Pacific Railroad, Riverside, Cal.—The Riverside, Rialto & Pacific Railroad has been taken over by the Pacific Electric Railway, which will run interurban trolley cars from the terminus of the new branch direct to the depot in Los Angeles. An operating schedule was put into effect on March 15 whereby seven trains each day will run between Riverside and Los Angeles, the rail distance on the new line being 63.8 miles and the running time two hours and fifteen minutes. Previous references to recent corporate changes in this company were made in the ELECTRIC RAILWAY JOURNAL of Jan. 30 and Feb. 20.

United Gas & Electric Corporation, New York, N. Y.—It is announced that Drexel & Company, Philadelphia, has sold or exchanged more than \$4,000,000 of the \$5,500,000 of three-year 6 per cent gold notes of the United Gas & Electric Corporation, dated April 1, 1915, and due on April 1, 1918. The sale of the notes to the bankers was mentioned in the ELECTRIC RAILWAY JOURNAL of March 6. The bankers were offering the remaining notes for sale or exchange if, when and as issued, at 98½ and interest for delivery on April 1. The notes are secured by \$7,650,000 of thirty-year 6 per cent collateral trust bonds, dated April 1, 1915.

Washington Railway & Electric Company, Washington, D. C.—The Public Utilities Commission of the District of Columbia on March 23 authorized the Washington Railway & Electric Company to issue \$353,000 of general improvement 6 per cent debenture bonds, dated Jan. 2, 1915, and due on Jan. 1, 1925, to be sold for the highest price obtainable. The proceeds of this issue are to be used to cover the cost of certain betterments and improvements. The commission states that certain information which it will consider in acting upon the application to issue the remaining \$487,000 of the bonds will not be in its hands before the completion of the valuation of the company now in progress. Previous reference to this matter was made in the ELECTRIC RAILWAY JOURNAL of Jan. 23.

Winnipeg (Man.) Electric Railway.—The directors of the Winnipeg Electric Railway on March 20 declared a quarterly dividend of 2½ per cent on the company's \$9,000,000 of stock, payable on April 1. This compares with 3 per cent quarterly from July, 1911, to January, 1915, inclusive. The reduction to a 10 per cent basis was expected in view of the steady decrease in earnings reported. One cause of the falling off in the revenue is said to be the departure of so many young men from Winnipeg for foreign service. The jitney competition is also said to have been harmful.

DIVIDENDS DECLARED

Aurora, Elgin & Chicago Railroad, Wheaton, Ill., quarterly, 1½ per cent, preferred.

Boston Suburban Electric Companies, Newtonville, Mass., quarterly, \$1, preferred.

Citizen's Traction Company, Oil City, Pa., quarterly, 1½ per cent, preferred.

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

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii, quarterly, 2 per cent.

Ottawa (Ont.) Traction Company, Ltd., quarterly, 1 per cent.

Ottumwa Railway & Light Company, Ottumwa, Ia., quarterly, 1¼ per cent, preferred.

Philadelphia Company, Pittsburgh, Pa., 3 per cent, preferred.

Ridge Avenue Passenger Railway, Philadelphia, Pa., quarterly, \$3.

Scioto Valley Traction Company, Columbus, Ohio, quarterly, 1¼ per cent, first preferred and preferred.

South Carolina Light, Power & Railways Company, Spartanburg, S. C., quarterly, 1½ per cent, preferred.

Stark Electric Railroad, Alliance, Ohio, quarterly, three-quarters of 1 per cent.

Tidewater Power Company, Wilmington, Del., 3½ per cent, common.

Tri-City Railway & Light Company, Davenport, Ia., quarterly, 1½ per cent, preferred; quarterly, 1 per cent, common.

Winnipeg (Man.) Electric Railway, quarterly, 2½ per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

BATON ROUGE (LA.) ELECTRIC COMPANY						
Period		Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Jan., '15		\$15,634	*\$10,198	\$5,436	\$2,180	\$3,256
1 " " '14		15,020	*10,230	4,791	2,105	2,686
12 " " '15		179,438	*114,246	65,192	25,099	40,093
12 " " '14		164,722	*104,140	60,582	25,147	35,435
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1m., Jan., '15		\$7,462	*\$7,478	\$17	\$1,145	†\$1,162
1 " " '14		7,333	*7,261	72	1,066	794
12 " " '15		121,885	*101,967	19,919	13,220	6,699
12 " " '14		123,864	*98,799	25,065	13,019	12,046
CLEVELAND, PAINESVILLE & EASTERN RAILROAD, CLEVELAND, OHIO						
1m., Jan., '15		\$27,713	*\$17,019	\$10,693	\$10,961	†\$263
1 " " '14		28,814	*16,795	12,020	10,789	1,231
COLUMBUS (GA.) ELECTRIC COMPANY						
1m., Jan., '15		\$60,767	*\$26,872	\$33,896	\$28,792	\$5,104
1 " " '14		55,986	*24,205	31,780	25,282	6,499
12 " " '15		686,888	*301,000	385,387	328,148	57,239
12 " " '14		614,099	*291,343	322,755	278,042	†73,487
EL PASO (TEX.) ELECTRIC COMPANY						
1m., Jan., '15		\$92,402	*\$43,995	\$48,607	\$4,186	\$44,221
1 " " '14		92,713	*49,548	43,166	4,284	38,881
12 " " '15		1,041,482	*569,919	471,562	51,258	†420,305
12 " " '14		898,671	*486,064	412,708	59,563	†371,514
DALLAS (TEX.) ELECTRIC COMPANY						
1m., Jan., '15		\$179,354	*\$105,019	\$74,335	\$33,417	\$40,918
1 " " '14		201,071	*128,399	72,672	26,779	45,893
12 " " '15		2,187,162	*1,264,280	922,882	377,600	545,283
12 " " '14		2,223,756	*1,302,363	921,393	305,113	616,280
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.						
1m., Jan., '15		\$53,527	*\$30,286	\$23,241	\$8,770	\$14,471
1 " " '14		55,014	*36,589	18,425	8,242	10,181
12 " " '15		671,608	*395,629	275,979	102,164	173,815
12 " " '14		466,062	*291,814	174,248	112,980	137,510
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.						
1m., Jan., '15		\$161,999	*\$102,011	\$59,988	\$36,209	\$23,779
1 " " '14		197,277	*120,147	77,130	36,485	40,645
12 " " '15		2,388,842	*1,292,723	1,096,119	440,850	655,269
12 " " '14		2,400,726	*1,307,396	1,093,331	324,037	609,294
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.						
1m., Jan., '15		\$20,016	*\$16,026	\$3,990	\$5,605	†\$1,615
1 " " '14		22,137	*15,198	6,939	5,610	1,329
12 " " '15		274,512	*179,686	94,826	67,059	27,767
12 " " '14		294,611	*179,682	114,929	67,450	47,479
JACKSONVILLE (FLA.) TRACTION COMPANY						
1m., Jan., '15		\$54,761	*\$37,502	\$17,258	\$13,449	\$3,810
1 " " '14		62,546	*38,152	24,394	12,868	11,526
12 " " '15		707,470	*467,406	240,064	153,223	86,842
12 " " '14		692,344	*443,174	249,170	145,546	103,624
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO						
1m., Jan., '15		\$98,337	*\$71,812	\$26,525	\$35,925	†\$9,401
1 " " '14		105,489	*60,480	37,009	35,058	1,951
NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEXAS						
1m., Jan., '15		\$144,672	*\$87,270	\$57,402	\$27,265	\$30,137
1 " " '14		173,094	*106,248	66,846	24,227	42,618
12 " " '15		2,042,677	*1,132,260	910,418	320,541	589,877
12 " " '14		2,148,247	*1,192,216	956,031	286,310	669,721
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.						
1m., Jan., '15		\$26,073	*\$16,724	\$9,349	\$7,796	\$1,554
1 " " '14		25,670	*18,157	7,513	7,679	†166
12 " " '15		303,918	*192,651	111,267	91,547	19,720
12 " " '14		295,570	*195,022	100,548	90,308	10,240
PENSACOLA (FLA.) ELECTRIC COMPANY						
1m., Jan., '15		\$20,232	*\$13,236	\$6,996	\$7,382	†\$366
1 " " '14		23,701	*14,937	8,764	7,268	1,490
12 " " '15		261,371	*168,091	93,280	86,943	6,437
12 " " '14		283,141	*181,196	101,945	82,068	19,877
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.						
1m., Jan., '15		\$670,886	*\$421,650	\$249,235	\$178,139	\$71,096
1 " " '14		754,035	*434,635	319,400	173,899	145,501
12 " " '15		8,367,824	*4,994,023	3,373,801	2,123,096	1,250,705
12 " " '14		8,665,995	*5,005,097	3,660,899	2,071,120	1,589,779
SAVANNAH (GA.) ELECTRIC COMPANY						
1m., Jan., '15		\$70,590	*\$46,744	\$23,847	\$23,410	\$437
1 " " '14		72,461	*49,038	23,423	23,015	408
12 " " '15		840,768	*550,693	290,076	275,727	14,349
12 " " '14		832,449	*556,883	275,566	267,570	7,996
TAMPA (FLA.) ELECTRIC COMPANY						
1m., Jan., '15		\$85,360	*\$40,971	\$44,389	\$4,425	\$39,964
1 " " '14		80,158	*43,855	36,303	5,062	31,241
12 " " '15		986,202	*517,194	469,008	53,852	415,156
12 " " '14		856,941	*475,616	381,326	56,016	325,310

*Includes Taxes †Deficit ‡Includes other income.

Traffic and Transportation

THE JITNEY BUS

Progress of Legislation—State and City Measures Pending— Summary From Texas

The measure introduced in the Legislature of New York by Senator Thompson to regulate the jitneys was passed on third reading in the Senate on March 29. The measure provides that buses shall obtain permission to run from local authorities rather than from the Public Service Commissions. Other provisions are that the buses must repair all pavements damaged and must not run in competition with street railway lines. The measure amends Section 25 of Chapter 219 of the laws of 1909 entitled "An act in relation to transportation corporations, excepting railroads, constituting Chapter 63 of the consolidated laws," as added by Chapter 495 of the laws of 1913. The measure is to go into effect immediately.

In the City of New York several applications for permission to operate buses are pending. One of the companies, the New York Central Transportation Company, Inc., has asked the Board of Estimate to permit it to operate 5-cent vehicles between the Pennsylvania Railroad station and the Grand Central Station.

On March 24 the franchise committee of the Board of Estimate and Apportionment met to decide upon routes for motor bus lines to conform somewhat to the applications of the five different companies that desire franchises. In explaining the scope of the work of the franchise committee, Mayor Mitchel said:

"The committee has decided upon a map of the city which traverses the streets in which it is desirable that there be omnibus service. Now the committee will determine the conditions as to payments to the city, fares, restrictions as to operation, responsibility of applicants for franchises, etc. The committee will then report to the Board of Estimate. As far as I am concerned the whole matter is a traffic question. I do not intend to go into the jitney matter until it is actually before me."

Harry P. Nichols, chief of the bureau of franchises of the Board of Estimate and Apportionment of New York, has reported to the Mayor on the application of the Far Rockaway Transportation Company, Inc., for a franchise to operate three stage or omnibus routes for public use in the conveyance of passengers and property in Far Rockaway and Rockaway Beach. Mr. Nichols says that the data on hand with respect to the cost of operation of omnibuses show that a company could not profitably carry passengers the distance proposed by the applicant for a fare of 5 cents. Omnibuses are to be run at intervals of not more than thirty minutes between 6 a. m. and 12 o'clock midnight. The company is to be required to pay to the city during the time of the original grant 5 per cent of its gross receipts, such payments to be the first year not less than \$500, but during the succeeding four years not less than \$1,500 and during the remaining time not less than \$2,000 per annum.

Several of the smaller towns in Texas, such as San Angelo, Sherman and Denton, have passed ordinances which have regulated the jitney so effectively that they have been compelled to cease operation. In Fort Worth the ordinance is being held in abeyance by the authorities pending a decision from the Texas appellate courts. One arrest was made by agreement for violation of the provision requiring a bond of \$5,000 to protect persons riding in jitney cars against loss by accident. The case was rushed through the city and district courts and then appealed to the court of criminal appeals on a writ of habeas corpus. The case was set by the Appellate Court for submission on March 31. A decision is expected within ten days from that time.

The proposed Dallas ordinance would require a bond, either with an indemnity company or with personal security, of \$2,500 to protect the city and property owners against damage to property. It would not require any bond for protection of passengers, the city commission taking the position that any person riding a jitney must do so at his own risk. Dallas is in the throes of a city municipal campaign now and action on the ordinance will likely be deferred until after the election on April 6.

Houston jitney owners are urging the city commission there to defer action on the proposed ordinance. The ordinance there is similar to that proposed in other cities, the chief feature being a provision requiring liability insurance for protection of passengers and pedestrians who might be hurt by such cars. The Houston jitney men say so far there is but one company in Texas that will write this kind of insurance and the rates charged are prohibitive; that if the proposed ordinance should become effective, it would have the effect of putting the jitneys out of business.

The City Council of Beaumont, Tex., on March 16 adopted a jitney ordinance which will become effective in twenty days. The ordinance requires that a license shall be secured by jitney operators. The application must contain information in regard to the car, make, number, seating capacity, and horse-power, etc. The proposed route must be designated together with the terminals and the schedule which the applicant desires to observe. Cars seating five people must pay \$20 a year each, those seating seven people \$30 and for every passenger over seven the operator must pay \$5 extra per person. Operators are not to be permitted to carry more than the stated seating capacity of their cars. The word "bus" must be printed in large letters on the car. Operators must file indemnity bonds with the city in the sum of \$5,000.

At the hearing in El Paso, Tex., on March 15, the ordinance pending in that city was declared to be unduly burdensome by the operators of the jitneys. The law requires the driver in applying for a license to indicate over what streets he intends to operate and between what terminals, and requires the driver to operate only upon these streets. It fixed a bond of \$5,000 to cover liability for any accidents that occur.

The jitney ordinance passed in San Antonio was to go into effect on April 1. A bond not to exceed \$5,000 is demanded to secure the payment of damages to all persons injured by carelessness or negligence on the part of jitney operators. Each car is to be held to a regular schedule and operate on certain streets. All automobiles engaged in general transportation are to be assessed \$25 for each seven-passenger car and \$3.50 for each additional seat, the license to run for one year. The schedule, which must be filed with the city clerk before a license is issued to an operator, must give the terminal of the route, the time to be consumed in making the trip, the number of cars and when each car will leave terminals and arrive at other terminals.

The bill to regulate jitney buses introduced into the Legislature of New Jersey has been passed by the Assembly on fifth reading. An amendment adopted provides that no special franchise taxes such as are required now of street transportation companies shall be paid by jitney corporations if their earnings are less than \$5,000 a year. The bill is intended to prevent the operation of jitneys except by corporations under the utilities law and requires that these corporations must obtain a franchise before doing business.

A joint Senate and Assembly committee hearing on the jitney was held at Sacramento, Cal., on March 22. Chairman Cogswell of the committee said: "The proposition must be plain to all parties that the State must see that there is fair competition and that neither the jitney nor the railway be given an advantage. The jitneys must pay the same rate on the gross income as the electric railways and we must take into consideration the fact that the electric railways are required to pave and keep in repair the center of the street." Among those who appeared at the hearing to present the case of the railways were Charles N. Black, vice-president of the United Railroads of San Francisco, and E. L. Lewis, superintendent of the Los Angeles Railway.

In the course of the campaign being carried on at the California State Capitol for legislation that will regulate the jitney bus, it was stated that the gross earnings of the United Railroads of San Francisco have decreased 11 per cent since March 1 as a result of jitney competition. Brokers who canvassed the situation in San Francisco stated that there were more than 500 jitney buses in operation on Market Street, exclusive of those that ply between the Ferries and the Exposition at 10 cents per passenger. Assuming that each jitney bus takes in \$5 a day, this makes a total of \$2,500 a day deflected from the receipts of the

United Railroads. The Municipal Railway System has not, it was stated, suffered to any great extent.

An act has been introduced into the Rhode Island House by Representative Boswell to regulate the jitney and Councilman Harden of Providence, R. I., has presented to the Common Council of that city a resolution providing for a report upon the need of regulating the jitneys.

The federal trustees of the Rhode Island Company, Providence, have sent a letter to the City Council committee on ordinances pointing out that unless the local jitney bus service is regulated under conditions analogous to those faced by the railway, or unless the latter is relieved of some of its obligations to the city, the company will be unable to continue business. The trustees call attention to the fact that in 1914 there was insufficient revenue to pay a dividend on the company's stock, and that this year the dividends earned will be cut in two, if not wiped out altogether, by the competition of unregulated jitneys. The trustees offer to consider regulative ordinances.

An ordinance governing the operation of jitneys in Cedar Rapids, Ia., has been prepared by Commissioner Lazell and referred to F. S. Dawley, city solicitor, for an opinion as to its legality. The ordinance is modeled after the measure now in effect in the city of Boise, Idaho, which was published in full in the *ELECTRIC RAILWAY JOURNAL* Feb. 20, 1915, page 397.

At a meeting of the City Council of Toronto, Ont., on March 22, Alderman Walton asked the city solicitor if the jitney bus service could be legally operated on the streets of the city without interference with the franchise rights of the Toronto Railway. The solicitor said that he thought so. The Mayor is reported to have said: "I am glad to see the jitneys on the street, I am sorry that the Council turned down my proposals in the last two years for motor buses. The city should take hold of this scheme itself. We must, however, have the jitneys under reasonable control. They have come to stay, and the city should have a fleet of them. The city should get a reasonable percentage of the receipts of the jitneys. They have proved to be popular, and they are going to depreciate the receipts of the street railway and the city's share of those receipts. The jitneys will act as an educator to motor buses. I am going to take up the matter of their proper regulation with the Toronto members of the Legislature."

After a three-hour session on March 25 Chairman Lee of the joint committee on street and electric railways of the Council of Atlanta, Ga., named a sub-committee to look into the jitney bus ordinances passed by other cities and into the information furnished by the Georgia Railway & Power Company preparatory to drawing up a new ordinance for Atlanta.

A jitney ordinance drafted by the Board of Public Service of the city of St. Louis has been introduced in the Council by Dr. Randall providing rules and regulations for the operation of buses. The bill follows closely the tentative regulations prepared recently by Mr. Talbert, the director of streets and sewers.

The city attorney of Salt Lake City, Utah, has completed the draft of a regulatory ordinance there and turned the measure over to the City Commission. Included within the scope of the ordinance are all motor-driven vehicles operated for transportation of the public in competition with the street cars, except ordinary "for rent" cars such as hotel buses and sight-seeing cars.

The Memphis (Tenn.) Street Railway has just mailed out to a large number of citizens of Memphis pamphlets in which it makes a frank plea for such regulation of "jitney" bus lines as will place them on a fairly competitive basis with the street railway. The statement is given over to a plain discussion of the relations between the city railway and the city and it is stated that each month the railway company pays out in money for street paving more than 675 "jitneys" would pay into the city treasury in a year, under the present licensing law. One of the paragraphs in the pamphlet reads as follows:

"With the increase of investment and the growth of its business, direct taxes of the street railway have steadily increased until \$140,000 is the sum which this company is now required to pay annually to the city, county and state and federal governments. It is interesting to present this direct tax burden in another way. The company operated

in 1914 an average of 165 cars for an average of fifteen hours each day. These cars average thirty-eight seats each. More than half of the time each day in 1914 half of these seats were hauled empty. For each of the thirty-eight seats in each of the 165 cars the company paid over \$22 direct tax and, including the paving tax, the annual tax for each seat was \$41.79, or \$1,588 per car." There are said to be more than 300 jitneys in operation under license on the streets of Memphis.

According to figures taken from the records at police headquarters in the city of Seattle there were 314 jitney bus accidents between Dec. 28 and March 17. In these accidents eighty-five pedestrians were struck down, thirty-four passengers were injured at the time the autos in which they were riding were damaged, and 195 buses were damaged without injury to passengers or pedestrians.

The Portland Railway, Light & Power Company has contracted with an auto bus company for the interchange of business on the East Side District in Portland, Ore., so as to serve a residence district now without street railway service.

Under an opinion rendered by Attorney-General W. B. Tanner of the State of Washington, Secretary of State I. M. Howell will refuse to accept the filing of any referendum petition against the bill requiring the filing of \$2,500 surety bonds by jitney bus and taxicab operators. Mr. Tanner holds that the emergency clause making the act effective on April 10 is valid on the grounds that the act is necessary for the public safety, under exercise of the police power of the State.

NEW COMPANY PUBLICATION

The Virginia Railway & Power Company, Richmond, Va., has begun the publication of *Public Service News*. The first issue was dated March 18. The paper is 6 in. wide by 8¼ in. high. It emphasizes in its title safety first and efficient service. The announcement by the company to its patrons regarding the purposes of the publication follows:

"The Virginia Railway & Power Company is operating in five cities and six counties of this State. It is carrying more than 200,000 passengers and serving more than 20,000 customers with electric light and power every day in the year.

"Its service is an essential element in the daily life of these people, and upon the quality of that service depends not only the convenience, but the growth and prosperity of the communities served.

"To keep the varied and complicated machinery required for this service always ready for immediate demand, to direct the efforts of over 2000 employees, of varying dispositions and fitness, to reasonably satisfy the tastes and ideas of 250,000 people every day, is a difficult task.

"We want to make the street railway and light and power service in the communities served by this company the best in the world. You would like to have it so. Neither the company nor the public can accomplish this alone. They must work together. As partners in a common enterprise—the making of a prosperous and progressive city—there must be mutual understanding and co-operation to attain success.

"The company has long felt the need for some closer and more direct means of communication with its patrons. We want to 'talk it over' with you; to tell you something of the problems which confront us; some of the difficulties encountered by our employees; and some of the ways in which you can help us to give you a good service.

"As a means to this end *Public Service News* will be published and distributed to our patrons on the cars. It is not an advertising scheme. It will not invade the fields of newspapers, but will be used as a medium for talking directly to our patrons, for improving relations with our employees and helping them in the discharge of their difficult duties to the public, for creating a better understanding and closer co-operation between the company and its patrons, and for any other purpose which has as its end and object the improvement and perfection of the public service.

"Intelligent criticism is helpful, but the mere 'knocker' never did and never will do any good. He is a common nuisance. The people who 'reason together' for the solution of their problems and promotion of their common good make community progress and prosperity possible."

INCREASE IN FARES ASKED

As announced briefly in the *ELECTRIC RAILWAY JOURNAL* of March 27, page 651, Clinton Q. Richmond, general manager of the Berkshire Street Railway, Pittsfield, Mass., has sent a petition to the Massachusetts Public Service Commission asking for authority to establish a new schedule of fares on the road. The petition says in part:

"Your honorable commission in an order dated July 13, 1914, made on petitions of the selectmen and residents of Lanesboro relative to fares and service on the Berkshire Street Railway, Numbered P. S. C. 20 and P. S. C. 479, has said, speaking of your petitioner, as follows:

"From an investigation of the present financial condition of the Berkshire Street Railway it appears that the company has been unable to meet its operating expenses and fixed charges. This company reported a deficit for the year ending June 30, 1913, of \$92,320.43 and no dividend was paid to the stockholders."

"That for the year ending June 30, 1914, the petitioner was unable to meet its operating expenses and fixed charges, and incurred a deficit of \$72,507.17 and no dividend was paid to the stockholders. That owing to the increased cost of labor, the rise in prices and the general increase in the cost of doing all kinds of business, it is necessary that your petitioner should increase its rates of fare, in order, if possible, to meet the cost of providing safe, convenient, adequate and comfortable transportation service for its patrons, and in order to provide an adequate return upon the investment in its property."

Attached to the petition is a schedule providing for the increase of fares by the establishment of zones in which 5, 6 and 7-cent fare units shall apply. Local rates in Pittsfield and North Adams are not increased by the proposed tariff.

LIMITING CAR CAPACITY

The order of the commissioner of health of New York, limiting the carrying capacity of cars, now applies to the cars of the following lines: Eighty-sixth Street, Fifty-ninth Street, Sixth Avenue, Eighth Avenue, Lexington Avenue and Madison Avenue surface lines and the Second Avenue elevated line in Manhattan; Graham Avenue, Flatbush-Seventh Avenue and Third Avenue surface lines in Brooklyn, and the lines of the Staten Island Midland Railroad in Staten Island. The Brooklyn Rapid Transit Company says that persons excluded from the cars of the lines of its system affected by the order crowd cars operating over the same or near-by streets and increase the congestion on these lines.

On March 30 Health Commissioner Goldwater announced that he had received a letter from Theodore P. Shonts, president of the New York Railways, in which he agreed to comply with the orders concerning the Sixth and Eighth Avenue lines after April 5. In his letter to Dr. Goldwater President Shonts said: "We accept this order, reserving the right to raise the question of your jurisdiction in the premises at the proper time." Mr. Shonts said further that his company would not permit inspectors to put passengers off the cars, but would instruct its employees to refuse to move cars when passengers boarded them in excess of the limits prescribed by the health board. Dr. Goldwater further announced on the same day that the Richmond Light & Railroad Company and the Staten Island Midland Railroad had agreed that the order should be adopted permanently on April 12. On March 30 an arrest was made in Brooklyn for overcrowding.

The order limiting the carrying capacity of cars to one and one-half times their seating capacity was extended to the Third Avenue Railway on April 1.

Sunday Operation in Toronto.—The Toronto Suburban Railway obtained permission from the railway committee of the Ontario Legislature on March 26 to run cars on Sunday on the lines through Ward Seven (West Toronto) to Lambton and to Weston, Woodbridge and also Guelph. At present the operation of cars on Sunday is prohibited by the railway act under a penalty of \$400 fine.

Reduction in Fare Refused.—The Public Utilities Commission of Maine has issued its decision in the case of the

Androscoggin Electric Company on petition of residents of Androscoggin and Cumberland Counties asking that a local service be furnished on the interurban railroad of the company between Portland and Lewiston and that certain rates of fare be changed. The local service is ordered to begin on July 1, 1915, but the reduction in fare is refused.

Public Safety Calendar.—The Sheboygan Railway & Electric Company, Sheboygan, Wis., has just issued a calendar which is attracting considerable attention locally as an effective safety-first medium. The calendar begins with the month of April, 1915, and runs to and through the month of May, 1916. It is 11½ in. high by 8½ in. wide. The upper half is given over to illustrations in the interest of safety methods and the lower half to the calendar proper. It is printed in two colors.

Freight Business Appeal.—The Empire United Railways, Inc., Syracuse, N. Y., is distributing to shippers with the suggestion that they tack it up in their shipping rooms a poster, 24 in. wide by 20 in. high, giving details of its "fast freight service at slow freight rates." In addition to the time-tables the poster contains a table of less than carload class freight rates in cents per hundred pounds from Rochester to other points on the system. In the center there is a half-tone engraving showing one of the new fast three-car electric freight trains.

Retaliatory Measures.—Notice has been served on the Puget Sound Traction, Light & Power Company by the Public Service Commission that unless it continues its present arrangement of carrying passengers on the West Seattle Port Ferry and the stub line in the suburbs for a 5-cent fare the commission will require it to furnish enough cars on the Alki and Fauntleroy lines to provide every passenger with a seat. The announcement by the commission was made on the eve of the company's advertised discontinuance of the Ferry Street car plan.

"Transit Problems in Brooklyn."—The Brooklyn (N. Y.) Rapid Transit Company has reprinted the article "Transit Problems in Brooklyn" contributed by W. C. Jenkins to the *National Magazine*, and is distributing the article in the form of a pamphlet 4¼ in. wide by 7¼ in. high. The account of the development of the company is very interesting, but it is not altogether free from the tendency of the magazinist to exaggeration. The article is illustrated with a portrait of T. S. Williams, president of the company, and with halftone reproductions of photographs of cars, equipment and men connected with the company.

"The Man with a Job."—H. S. Newton, general manager of the Ohio Valley Electric Railway, Huntington, W. Va., is distributing to the employees of the company a pamphlet entitled, "The Man with a Job." It is written by Wightman D. Roberts and gives the reflections of the man with a family and a job, when urged by socialists to join their ranks. He admits that there are some dark corners in life—in his own life, in the lives of others, and even of the "boss." At the same time he wonders whether his lot will be any better under a socialistic "commonwealth" where he will probably be a "minority stockholder." His conclusion is that he is not going to kick the ladder out from under his feet.

Welfare Work in St. Louis.—The recent annual pamphlet report of the United Railways, St. Louis, Mo., contained the following reference to the welfare work of the company: "The Employees' Mutual Benefit Association, which was started in February, 1914, has proved a great success. On Dec. 31, 1914, the association had 3247 members, and during the eleven months of its existence paid out in sick benefits \$19,212, and in death benefits \$5,100. Nothing which the company has even done has been of so much benefit and nothing has brought about such close relations between our employees and the company as the institution of this association. We propose to put into effect in the year 1915 a pension system for aged and incapacitated employees, and also a savings and loan association for the benefit of those employees who wish to save their money, or build or purchase homes of their own."

Demurrage Information for Transportation Men and Farmers.—The United States Department of Agriculture has prepared Bulletin No. 191, a twenty-seven-page digest of the demurrage laws in effect in each of the states for

both intrastate and interstate traffic. While intended primarily for farmers and shippers of foreign products, this bulletin should be of interest to shippers of all commodities and to transportation men generally. As indicating how the agricultural industry is affected by existing regulations and practices in the matter of car supply and the marketing of farm products, the salient points of each state code are compared, and the state codes are also compared with the uniform code or national car demurrage rules. The principal provisions of the various codes are listed in tabular form in an appendix. This bulletin can be procured from the superintendent of public documents, Government Printing Office, Washington, D. C., at 5 cents a copy.

The Motorman as an Example.—The Stark Electric Railroad, Alliance, Ohio, has recently posted in its cars a card reading as follows: "Observe the Motorman. Safety first is a good sign to display conspicuously on the front of a trolley car; it is an admonition well to keep always in the eyes of people while they are using the streets. But there would be very few street accidents if everybody were as careful as the motorman. The man at the controller has the right of way and he knows it. In case of a collision he stands a better chance of escaping uninjured than the driver of a wagon or automobile. Yet he is unabating in his constant watchfulness and carefulness. There isn't a day during which somebody does not owe his life to one of the seemingly stolid but really alert fellows in the front vestibules of the cars. Time and experience have given them a charitable feeling toward the surprisingly large number of people who thrust themselves into danger on the streets needlessly and when they really know better. The motormen have trained themselves to look out for the careless persons. Be as careful as a motorman."

Change in Fare at Lexington, Ky.—Return to the old system by which residents of the country districts adjacent to Frankfort, Lexington, Georgetown, Versailles and Paris, Ky., ride on a 5-cent fare is announced by the Kentucky Traction & Terminal Company, to take effect about April 1. The change was made early last year when the act of the Legislature, fixing a rate of 2½ cents a mile, became effective and the company recast its schedule of fares on that basis, believing the law was mandatory, a minimum fare of 10 cents resulting. Since then the law has been held invalid by the courts, and through the unofficial efforts of William F. Klair, member of the State Railroad Commission, the company has decided to reduce rates. In announcing the decision to revise the rates of fare, F. W. Bacon, vice-president, wrote to Mr. Klair in part as follows: "Although the company would not reconsider a recast of its entire fare system, we have decided to re-establish the 5-cent fare minimum zone on the basis of 2½ cents a mile and to re-establish adjacent to the various towns the old 5-cent fare zones, as they originally existed." The Kentucky Traction & Terminal Company was the only electric line in the State affected, as no other lines measure 50 miles in length.

Maine Freight Service Increases.—The freight-by-trolley service between Portland and Lewiston, Maine, has been established by the Cumberland County Power & Light Company. A large business in the carrying of cream to the Auburn creamery, also a good milk-carrying business from the small towns to Portland, has already been worked up by the company, as well as a daily order for transporting several tons of grain from the city wholesale houses to way stations. On account of the decision of the Eastern Steamship Company to make Gardiner its northern terminus on the Kenebec River and to discontinue its service between Augusta and Gardiner, the Lewiston, Augusta & Waterville Street Railway, controlled by the Cumberland County Power & Light Company is considering the establishment of an electric freight service between Gardiner and Augusta and between Gardiner and Waterville. Under the proposed plan freight from Boston will be taken from the steamers at Gardiner and dispatched to Hallowell and Augusta and points between to Waterville. The company has seven freight cars in course of construction at the Laconia Car Works, five flat cars and two motor cars. The company also plans to build a connection to the steamboat wharf at Gardiner and to erect a freight shed there.

Personal Mention

Mr. James O. Marcum, claim agent of the Ohio Valley Electric Railway, Huntington, W. Va., has again been elected Mayor of Ceredo after having served two terms.

Mr. L. B. Wickersham has resigned as assistant engineer of the Spokane, Portland & Seattle Railway and as vice-president of the United Railways, Portland, Ore., which is controlled by the Spokane, Portland & Seattle Railway through the Oregon Electric Railway. He will engage in general engineering work.

Colonel William Hayward, legal adviser to Governor Whitman of New York, nominated by the Governor for appointment as a member of the Public Service Commission for the First District of New York, has been confirmed by the Senate. He succeeds Mr. Milo R. Maltbie, whose terms of office expired on Feb. 1. Colonel Hayward is counsel for the Thompson legislative committee, which has been investigating the conduct of the Public Service Commissions. The new commissioner gained his military title in the Spanish war. He was graduated from the University of Nebraska and went to the front as captain of the Second Nebraska Infantry, and before hostilities closed had been appointed to the command of his regiment. He was three times Republican State chairman of Nebraska and was secretary of the Republican national committee and western manager of the Presidential campaign of Mr. Taft with headquarters in Chicago. Colonel Hayward was an assistant district attorney under Governor Whitman when the latter was district attorney of New York.

Mr. Milo R. Maltbie, who retires from the Public Service Commission of the First District of New York in favor of Colonel William Hayward, is the last of the original commissioners appointed by Governor Hughes. He took office on July 1, 1907, and his first term expired on Feb. 1, 1910. He was reappointed and since Feb. 1, 1915, has been a hold-over. Mr. Maltbie was born at Hineckley, Ill., in 1871. He was graduated from Upper Iowa University in 1892 with a degree of Ph.B., and has the degree of Ph.M. from Northwestern University and Ph.D. from Columbia University. He was professor of economics and mathematics at Mount Morris College from 1893 to 1895, a fellow in administrative law at Columbia University in 1895, secretary of the Reform Club committee on city affairs from 1897 to 1902, and editor of *Municipal Affairs* from 1897 to 1903. He was prize lecturer on municipal government at Columbia University in 1900 and was secretary of the Art Commission of the city of New York from 1902 to 1907. He investigated municipal conditions in Europe for the Reform Club in 1899, was a delegate to the International Congress on Housing in 1902, a member of the committee on municipal ownership and operation of the National Civic Federation and conducted an investigation in Great Britain into the relative merits of municipal and private operations of public utilities for the National Civic Federation in 1906.

OBITUARY

William Borchers, who became associated with Mr. W. B. Strang, president of the Strang Line from Kansas City to Olathe, Kan., nineteen years ago in New York and who came to Kansas City with Mr. Strang as his personal assistant, died on March 15. Mr. Borchers was about forty years old. He was unmarried.

Benjamin Ellery Chase, banker, manufacturer and a director of many corporations, died in New York on March 27 at the age of seventy-two years. Mr. Chase was born at Floyd, Oneida County, N. Y., and was educated at Vernon Academy. He entered the clothing business and later became a manufacturer. He was president of the Central Bank of Rochester, of the East Side Savings Bank of Rochester and of the Ludlow & Southern Railroad of California and was a director of the General Railway Signal Company.

George F. McCulloch, one of the pioneers in the promotion of interurban lines in Indiana, died at his home in Summit, N. J., on March 27. Mr. McCulloch was born in Lancaster, Ohio, on Sept. 25, 1855. His parents removed to Muncie when he was quite young, and he attended the public schools

of Muncie, and was graduated from the high school there. In 1872 he was appointed deputy county clerk. During the six years of his service in that office he studied law, and was admitted to the bar in 1881. In 1899 Mr. McCulloch founded the Muncie *Morning Star*, and later became one of the principal promoters of the syndicate which established the Indianapolis *Star* and Terre Haute *Star*. He promoted the first electric street railway in Muncie, Ind., and a few years later, in connection with Mr. Charles L. Henry, Indianapolis, and Mr. Randal Morgan, Philadelphia, he promoted and constructed the interurban lines from Muncie to Indianapolis. Mr. McCulloch was president and treasurer of the original Union Traction Company of Indiana, and for some years acted as general manager of the property. When Mr. McCulloch retired from active management and was succeeded as president of the company by Mr. Arthur W. Brady, he became chairman of the board of directors. During the last few years Mr. McCulloch lived in the East, having withdrawn from the newspaper field and activities in the electric railway business. The funeral was held on Wednesday, March 31, at Muncie, Ind. The body of Mr. McCulloch was brought from the East by Mr. Arthur W. Brady, who is a brother-in-law of Mr. McCulloch. From Fort Wayne the remains were conveyed to Muncie on the Union Traction Company private car, "Martha," which was built for Mr. McCulloch when president of the company and named after his daughter. The private car of Mr. Robert I. Todd, president of the Terre Haute, Indianapolis & Eastern Traction Company, carried as Mr. Todd's guests many former associates of Mr. McCulloch from Indianapolis to Muncie for the funeral. Many glowing tributes were paid to Mr. McCulloch's memory. One of his gifts to Muncie was a finely wooded tract of eighty-five acres, which is now known as McCulloch Park.

OHIO SERVICE CASE

On March 23 the Ohio Supreme Court passed upon questions of law in the case of the Hocking Valley Railroad against the Public Utilities Commission, wherein the commission had ordered the company to resume the operation of electric cars between Hamden and Wellston, a service which had been abandoned on the ground of unprofitableness. The substitution of steam cars was not satisfactory to the patrons of the road, and appeal was taken to the commission. The court says that the fact that some loss would result from compliance with the service order is an important element, but does not of itself conclusively establish the unreasonableness of the order. When a transportation company proposes to abandon a service which it has maintained and for which it received a franchise, the court says the burden of the proof is on it. The court will examine the entire record in connection with the proceeding to determine whether or not the finding of facts by the commission is so much involved with and dependent upon questions of law as to be in reality a decision of law.

FEBRUARY CLEVELAND REPORT

The operating report of the Cleveland Railway made to the directors on March 27 showed a total revenue for the month of \$602,772, an increase over the same month in 1914 of \$58,821. The revenue from transfers amounted to \$53,559. The actual surplus for the month was \$45,848, while the net ordinance surplus was \$19,307. This increased the interest fund to \$318,157. It is the first report in the last four months to show an increase in revenue over the same month last year.

A resolution was introduced in the Council of Cleveland, Ohio, on March 29, providing for the extension of the Warner Road line of the Cleveland Railway into Garfield Park. Action was postponed on Councilman Wood's ordinance to extend the Payne Avenue line to the East 105th Street line. The extension is opposed by Peter Witt, street railway commissioner. At the meeting the company was authorized to contribute \$3,000 to the Employees' Mutual Benefit Association.

The directors of the Cleveland Railway have accepted the grant for the section of Euclid Avenue between East Twenty-second and East Fortieth Streets, known as Millionaires' Row.

Construction News

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

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

RECENT INCORPORATIONS

*East Georgia Railway, Savannah, Ga.—Application for a charter has been made by this company to build an interurban electric or steam railway from Glennville to Adabelle, with a branch line from Hagan to Claxton. Capital stock, \$212,500. Incorporators: Henry P. Talmadge, William B. Stillwell, J. K. McIver, George J. Baldwin, J. F. Minis, T. M. Cunningham, Jr., W. W. Mackall, Leopold Adler and Edwin Leffler, all of Savannah.

*Savannah, Piedmont & Western Railway, Columbia, S. C.—Incorporated in South Carolina to build an interurban railway from Greenwood to North Augusta, 60 miles, with a minimum capital stock of \$30,000 and a maximum capital stock of \$3,000,000. Incorporators: J. Peyton Clark, New York City, and S. H. McGhee and Kenneth Baker, Greenwood.

FRANCHISES

Fresno, Cal.—The Fresno Interurban Railway has received a twenty-five-year franchise from the Council to extend its lines in Fresno.

Riverside, Cal.—The Pacific Electric Railway has received a franchise from the Council to operate its new line on Market Street from the north end of Magnolia Avenue to the connection on North Market Street with the Riverside, Rialto & Pacific Railway lines in Riverside.

Ayer, Mass.—The Lowell & Fitchburg Street Railway has asked the Council for permission to extend its tracks in Main Street in Ayer across the railroad tracks to connect with the Ayer terminus of the Shirley-Ayer line of the Fitchburg & Leominster Street Railway.

Louisville, Ky.—The Louisville Railway has received a franchise from the Board of Works to extend the West Chestnut Street line from Twenty-seventh Street and Chestnut Street to Shawnee Park via Madison Avenue in Louisville.

Lancaster, N. Y.—The Buffalo & Depew Railway has received permission from the Council to extend its line from Burlington Avenue along Ellicott road to Central Avenue in Lancaster. Permission also was granted to extend its lines along Transit Road to Bowmansville.

Syracuse, N. Y.—The New York State Railways has asked the Council for a franchise for a double track on Euclid Avenue, in Syracuse.

East Linden, Ohio.—Councilman Lamneck introduced an ordinance in Council at Columbus, Ohio, on March 8, giving the East Linden Electric Railway a franchise for a line extending from the Leonard Avenue viaduct north on Joyce Avenue to the corporation line. This line is to be extended to Shepard. It is in addition to the line to East Linden, for which the company already has a franchise.

Toronto, Ont.—The Toronto & York Radial Railway has received from the Ontario Legislature a two years' extension of time on its franchise to begin the construction of certain lines outside the city limits of Toronto.

Toronto, Ont.—The Humber Valley Electric Railway has received from the Ontario Legislature a two years' extension of time on its franchise in which to begin work on its line through the Humber Valley from Lambton to the mouth of the Humber River and along the shore to Sunny-side. [Feb. 20, '15.]

Pawtucket, R. I.—The Pawtucket Street Railway has asked the Council for a franchise to lay rails on Broad Street over the abandoned roadbed of the New Haven Railroad and relocate rails in Dexter Street and Broad Street and to build new track on Barton Street, between Baxter Street and Broad Street in Pawtucket.

Corpus Christi, Tex.—The Corpus Christi Street & Interurban Railway has received a franchise from the Council to remove its tracks from Buford Avenue, to discontinue the operation of the belt line and instead operate two lines to South Bluff.

TRACK AND ROADWAY

Birmingham & Chattanooga Railroad, Birmingham, Ala.—Surveys have been completed by this company between Birmingham and Chattanooga, 145 miles, grading has been completed from Boaz northeast for about 3 miles, and construction will be resumed as soon as financial conditions are improved. J. M. Spradin, Boaz, president. [April 11, '14.]

Fresno (Cal.) Interurban Railway.—Plans are being made by this company for an extension east from the Fresno extension to Las Palmas where the road would cross the Southern Pacific Railway tracks and go east ½ mile, and then north through the Lynch and Tarpey properties to the Melvin road, where it will continue north toward the eastern border of Clovis. The company will soon ask the Clovis City Council to grant a franchise on Fifth Street, from the eastern to the western city limits, from which point it is hoped to extend to the Glorietta vineyard.

Vallejo-Benicia Electric Railway, Vallejo, Cal.—This company reports that the proposition to build an electric railway between Vallejo and Benicia has been abandoned for the time being on account of financial conditions. No construction work has been begun. Joseph J. Henry, president. [Jan. 30, '15.]

Danbury & Bethel Street Railway, Danbury, Conn.—Work will be begun at once by this company to extend its electric lines from the Stearns Lime Company near the Danbury line through Brookfield Junction to Brookfield Center, a distance of 4 miles.

Jacksonville (Fla.) Traction Company.—This company is double tracking its line on Hogan Street and Forsythe Street in Jacksonville.

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—During the next few weeks this company will award contracts to build about 2 miles of new track with two turnouts in Lewiston. H. C. Hartung, Lewiston, general manager. [March 20, '15.]

Centralia (Ill.) Traction Company.—This company is extending its line about 1 mile south to the Illinois Central Railroad shops in Centralia.

Galena, Ill.—F. J. Meller, secretary of the Galena Commercial Club, has received word from promoters of the proposed electric railway from Galena to Freeport that they will begin surveying for the line about April 10. Headquarters will be in Galena.

Kewanee & Eastern Electric Railway, Kewanee, Ill.—Surveys are being made and right-of-way is being obtained by this company on its line in Kewanee. C. G. Lampman is interested.

Illinois Traction System, Peoria, Ill.—This company has given up the plan, at least temporarily, to build the branch line from Martin Stop to Wapella.

Kankakee & Urbana Traction Company, Urbana, Ill.—Plans are being made by this company to extend its line in a northerly direction from Kankakee.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Arrangements are being made by this company to extend its Lewis Street line to the eastern city limits of Fort Wayne.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Board of Public Works has directed that this company pave between the tracks; that the work of rebuilding the lines be done on Senate Avenue from Tenth Street to Twenty-first Street; on Kentucky Avenue from West Street to Sand Street; on Oliver Avenue from Birch Street to Division Street, and on Brookside Avenue from Massachusetts Avenue to Eighteenth Street in Indianapolis.

Lafayette & Northwestern Railway, Lafayette, Ind.—Preliminary arrangements are being made by this company to begin work soon on its proposed electric railway to connect Lafayette and Chicago, via Rensselaer, Hammond, Princeton, Round Grove and West Point. O. L. Brown, general manager. [March 6, '15.]

Tri-City Railway & Light Company, Davenport, Ia.—During the next few months this company reports that it plans to relay some of its tracks, using in all about 250 tons of new rails.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—This company awarded contracts on March 19 to S. Dolman Sons, Topeka, at \$100,000, for grading the roadbed between Bonner Springs and Lawrence, Kan., a distance of 20 miles. Four bridges from 60 ft. to 160 ft. in length and six or eight smaller ones over culverts will be contracted for very shortly. Contract for the grading calls for work to start April 1 and it is expected that track laying will begin Aug. 1.

United Railways & Electric Company, Baltimore, Md.—This company is asked to consider plans to extend the Columbia Avenue line to Lansdowne and the adjacent section.

Minneapolis, Minn.—Frederick W. Cappelen, city engineer, states that the project to build a municipal electric railway in Minneapolis has been abandoned for the present. [Nov. 29, '13.]

Electric Short Line Railroad, Minneapolis, Minn.—An extension from Minneapolis to Faribault via Shakopee is being planned by this company.

Minnesota Northwestern Electric Railway, Minneapolis, Minn.—This company reports that it has placed in operation the 20-mile section of its line between Thief River Falls, Silverton and Goodridge. The company's repair shop is located at Thief River and it operates one car. Capital stock, authorized, \$50,000. Capital stock, issued, \$50,000. Bonds, authorized, \$150,000. Bonds, issued, \$150,000. Daniel Shaw, Thief River, president. [Aug. 8, '14.]

Southern Minnesota Traction Company, St. Paul, Minn.—Plans are being considered by this company to begin work soon on its proposed line between Faribault and Waseca. H. C. Theopold, Faribault, is interested. [Oct. 3, '14.]

Caldwell County & Southern Railway, Kingston, Mo.—This company reports that work will not be begun on this proposed 9-mile electric railway between Kingston and Hamilton until financial backing has been secured. David Miller, Kansas City, president. [April 18, '14.]

Moberly, Huntsville & Randolph Springs Railway, Moberly, Mo.—The work of grading the right-of-way for this railway will be resumed as soon as weather conditions will permit. Equipment and provisions are now being assembled, in charge of C. H. Dameron, the promoter, and the active work will be in charge of John Dameron. Most of the grading yet to be done is in the corporate limits of Huntsville, the remainder of the line having been graded and concrete culverts installed during the summer of 1913. [March 27, '15.]

Nevada Water, Light & Traction Company, Nevada, Mo.—Work has been begun by this company on the extension on South College Street in Nevada.

Ismay, Ekalaka & Southern Electric Railway & Power Company, Ismay, Mont.—This company reports that the construction of this proposed railway from Ismay to Ekalaka has been indefinitely postponed for want of funds. William Fulton, Ismay, president. [April 25, '14.]

Moncton Tramways, Electric & Gas Company, Ltd., Moncton, N. B.—A 4-mile extension from Moncton to Fox Creek is being considered by this company.

Jersey Central Traction Company, Keyport, N. J.—During the next few weeks this company expects to build about 1 mile of new track.

Albany Southern Railroad, Albany, N. Y.—Contracts have been filed with the Public Service Commission for the Second District, by this company and the United Traction Company, providing for a double-track loop around the Plaza at the foot of State Street, which the Albany Southern Railroad wanted for its cars. The new plans have been approved by Inspector Barnes of the commission, and by the city authorities.

Brooklyn (N. Y.) Rapid Transit Company.—This company has filed with the Public Service Commission for the First District a form of contract and plans for widening the elevated structure on Fulton Street, from Nostrand Avenue to Adams Street, so as to provide for a third track. The plans provide also for a number of changes in stations west of Franklin Avenue. Two stations are eliminated, one at Boerum Place and the other at Cumberland Street. Changes are also made at Duffield Street, where the entrances are

removed from Duffield Street to a point west of Bridge Street and a point east of Elm Street, in Brooklyn.

New York, N. Y.—On Friday, April 9, the Public Service Commission, First District, will receive bids for the construction of Section No. 4 of Routes Nos. 4 and 36, that part of the Broadway-Seventh Avenue subway in Manhattan lying between Fifty-first Street and Fifty-ninth Street, for operation under the dual system agreements by the New York Municipal Railway. This line is now entirely under contract save for the stretch in Broadway and Seventh Avenue between Thirty-eighth Street and Fifty-ninth Street. It is expected that the contract for the section extending from Thirty-eighth Street to Fifty-first Street will be advertised for bids within the next few weeks.

Syracuse & Suburban Railroad, Syracuse, N. Y.—Improvements to cost more than \$10,000 will be made to this company's line between Jamesville and Orville shortly after April 1. The engineers of the company have completed the plans for the work. It is planned to start the improvements as soon as the weather will permit. The roadbed will be reinforced with gravel and new steel rails will be laid.

Cleveland (Ohio) Electric Railway.—An extension of the Payne Avenue line through Hough Avenue to East 105th Street in Cleveland is being contemplated by this company.

Defiance (Ohio) Interurban Railway.—This company reports that no definite plans have been made when work will be begun on this proposed railway to connect Defiance, Ohio, and Fort Wayne, Ind., via Ashland, Emmett, Paulding, Cecil, Antwerp and New Haven. K. V. Haymaker, Defiance, president. [March 9, '12.]

Waynesburg & Blacksville Street Railway, Waynesburg, Pa.—Plans are being made by this company for the completion of its line between Waynesburg and Blacksville, W. Va. A meeting of the stockholders is announced to be held at Waynesburg on April 5. The object of the meeting is stated as being for the election of directors, the authorization of the sale of securities and the approving of the contract for the completion of the railway.

Port Arthur (Tex.) Traction Company.—This company has begun work on the construction of the line over the pleasure pier causeway.

San Antonio & Austin Interurban Railway, San Antonio, Tex.—Directors of this company, following a meeting in the office of Vorles P. Brown here, announced that plans were about made whereby the project would be financed. Prediction was made that work of construction would begin in a few weeks. [Aug. 8, '14.]

Monongahela Valley Traction Company, Fairmont, W. Va.—This company is rebuilding with heavier rails about 3½ miles of its lines in Fairmont, which includes repaving along improved lines with adequate foundation.

SHOPS AND BUILDINGS

Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine.—This company has made arrangements to purchase land with a 50-ft. front on Lincoln Street and extending 200 ft. through to the river, for a freight terminal in Lewiston.

St. Louis Water Works Railway, St. Louis, Mo.—This company has completed its new passenger station at Baden, the southern terminus of the waterworks line. The structure is of Roman brick and red Roman tile, and is 225 ft. long.

Atlantic Coast Electric Railway, Asbury Park, N. J.—This company is erecting a new office building and storehouse at Allenhurst, N. J.

POWER HOUSES AND SUBSTATIONS

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—During the next few weeks this company expects to purchase one 125-motor generator set for its power house in Lewiston. H. C. Hartung, Lewiston, general manager.

Arkansas Valley Interurban Railway, Wichita, Kan.—This company has decided to install an electric lighting and power plant at Burrton.

Toledo Railways & Light Company, Toledo, Ohio.—This company has placed a contract with the Westinghouse Electric & Manufacturing Company for a 20,000-kw turbo-generator, with all electrical equipment.

Manufactures and Supplies

ROLLING STOCK

Port Arthur (Tex.) Traction Company is reported as having ordered four double-truck trailer cars.

Lehigh Valley Transit Company, Allentown, Pa., is converting four open cars to closed cars in its Allentown shops.

Southern Illinois & St. Louis Traction Company, Harrisburg, Ill., through W. H. Schott & Company, Chicago, has ordered eighteen interurban cars from the American Car Company.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., advises that it is about to let a contract for four new passenger cars which will be larger and capable of higher speed than those already in operation.

Toronto (Ont.) Civic Railway received till March 30, 1915, through the Department of Works, Toronto, tenders on one sweeper body and equipment for the St. Clair Avenue Division and four car bodies, including mechanical and electrical equipment for the Lansdowne Avenue extension.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn., has ordered forty-five box cars, nine passenger trail cars, two combination mail and express cars and one baggage car from The J. G. Brill Company, and two gas-electric motor cars and three gas-electric locomotives from the General Electric Company.

Chicago Automobile Transportation Company, Chicago, Ill., is the name of the company which was noted anonymously in the *ELECTRIC RAILWAY JOURNAL* of March 6, as having ordered forty auto buses from The J. G. Brill Company. S. E. Lyon is president. The chasses have not been selected as yet, but two types are now up for final decision. Information regarding details of equipment will be forthcoming shortly. This is a 10-cent-fare line.

TRADE NOTES

Algoma Steel Company, Sault Ste. Marie, Ont., has received an order from the Northern Ohio Traction Company for 500 tons of rails.

Federal Signal Company, Albany, N. Y., announces that its New York office is now located in the Vanderbilt Concourse Building, 52 Vanderbilt Avenue, with direct underground connection with the Grand Central station and Interborough subway.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order to equip with No. 323-A four-motor equipments the first lot of twenty cars which were recently ordered by the Binghamton (N. Y.) Railway from the Cincinnati Car Company.

The J. G. Brill Company, Philadelphia, Pa., is reported as having received orders to ship through L. Rubelli's Sons, Philadelphia, fourteen cars to South America, including three cars already shipped for Venezuela, and eleven cars to be shipped later this month for use in Sao Paulo, Brazil; Bogotá, Colombia, and Quito, Ecuador.

Pennsylvania Steel Company and Lorain Steel Company have received an order from the Rhode Island Company for 1600 tons of girder rails. The former company also received an order from the New York Municipal Railway for 800 tons of rails, while the latter company received from the same railway an order for 1600 tons of girder rails.

A. G. Shaver has opened an office as consulting engineer at 1640 Transportation Building, Chicago. He will give particular attention to work in railway signaling and telephone and electric power plant construction. Mr. Shaver recently resigned as secretary of the Hallet Iron Works, manufacturers of line material and tools, Harvey, Ill. He was formerly signal engineer for the Chicago, Rock Island & Union Pacific Railroad, and for the Hall Signal Company.

American General Engineering Company, New York, N. Y., has secured the manufacturing rights and general sales agency for the Krombach centering device for the accurate boring of motor bearings. This company has recently sold to the Brooklyn Rapid Transit Company a number of A. G. E. portable telescope jacks for removing air compressors from the underframes of cars. These jacks will be installed in the twelve main repair shops and depots of the railway.

Western Electric Company, Hawthorne, Ill., in connection with the quarterly meeting of the Electrical Jobbers' Association and the Electrical Manufacturers' Association, held at Chicago during the week of March 15, invited the members of both organizations to visit its plant at Hawthorne on March 19. Many of the members of both associations accepted the invitation and made the trip to Hawthorne in a special train provided for the purpose by the company. Luncheon was served in the company's restaurant, after which the visitors were shown through such portions of the plant as time permitted.

Edwin G. Hatch has recently resigned as treasurer and manager of the Clark Electric & Manufacturing Company, New York. Mr. Hatch has also been associated with Walter G. Clark and for more than a year has had entire charge of Mr. Clark's New York office and the specification, testing and shipping of high tension electrical material. Mr. Hatch has not made definite plans for the future, but will probably open an office for consulting work in connection with the purchase, etc., of material for transmission lines and power houses. He will also probably specialize in protection systems for overhead line crossings.

Standard Woven Fabric Company, Framingham, Mass., manufacturer of friction tapes, splicings and rubber specialties for general electrical and mechanical uses, has appointed Frederick J. Gleason as director and general superintendent. Mr. Gleason was the founder of the Massachusetts Chemical Company and has had twenty-two years' experience in the manufacture and handling of rubber goods. Up to the time of joining the new company he was vice-president and general superintendent of the Walpole Tire & Rubber Company. The Standard Woven Fabric Company will open an office in New York at 1779 Broadway, which will be in charge of Charles O. Anthony.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order from the Union Traction Company of Indiana, Anderson, Ind., for twenty complete quadruple equipments of No. 333-V motors and HL control. These new equipments will replace some of this railway's high-speed passenger equipment consisting of 50-C motors and Type L hand control. Aside from the reduced maintenance, resulting from the more efficient types of motors and control, the desirability of train operation was one of the factors in making this change, and the new cars will not only run in trains with each other but also with the present equipments of Westinghouse No. 303 motors and HL control, of which the Union Traction Company of Indiana has seventeen equipments now in operation.

Edison Lamp Works of General Electric Company, Harrison, N. J., has reduced its list prices for practically all the sizes and types of Edison Mazda multiple lamps. On the regular straight side and round bulb lamps, from the 10-watt to the 250-watt sizes, also on sign lamps, stereopticon lamps, etc., the reductions range from 3 cents to 20 cents per lamp, according to the size. These reductions average about 10 per cent. The new concentrated filament vacuum lamps of 25, 40 and 60-watt sizes now list at only 5 cents per lamp more than the regular lamps of corresponding sizes. On the gas-filled, multiple lamp of 100 to 1000-watt sizes the reductions range from 50 cents to \$1 per lamp, the average reductions being between 20 per cent and 25 per cent. The introduction of gas-filled lamps has been exceptionally rapid. More than a million are already in use.

ADVERTISING LITERATURE

Bridgeport Brass Company, Bridgeport, Conn., has issued a sheet on its "phono-electric" trolley wire.

Ohio Brass Company, Mansfield, Ohio, has issued a folder containing marginal illustrations of a number of the more prominent electric railway installations of its catenary materials. The folder also announces this company's order for approximately 100,000 hangers to be used on the second section of the Chicago, Milwaukee & St. Paul Railroad's new electrification. About 67,000 Type X strain insulators will be used on both sections. The transmission lines are to be equipped with O B suspension type insulators.

St. Louis Malleable Casting Company, St. Louis, Mo., has

recently published a catalog which describes in detail its electrical pole and line hardware. A number of new designs which are of particular interest to electric railways have been illustrated in this catalog. Some of the products included among the new designs are malleable-iron split insulators for feed wires, in the form of insulated racks and feed-wire holders; malleable-iron pole sleeves for reinforcing steel poles, malleable-iron screw clamp ears, trolley frogs, cross-ings, pullovers, strain plates and hangers. Other hardware specialties described are: malleable-iron gear cases, journal boxes, cast-iron brakeshoes with hard-iron inserts, pole anchors, wooden strain insulators, pole-top pins, lightning arresters and various kinds of pins and brackets. While this catalog directs attention to the completeness of this company's line of electrical pole and line hardware, it also mentions the fact that patterns for special designs and sizes to meet the requirements of any engineer will be made free of cost if reasonable quantities are required.

Steel City Electric Company, Pittsburgh, Pa., has issued a folder describing and illustrating its Marchand clamps for stranded wire. Clamps for seven-wire strand are made in three styles—clevis clamps, twin clamps and pole clamps. Clamping is effected in a simple manner by means of a wedge. The clamp proper consists of a cone-shaped socket and conical wedge. The conical wedge is slotted to allow compression and has a hole through the center for the core or center wire to pass through. The strand is first inserted in the socket and the tapered plug is forced over the core or center wire so that the sheath wires are spread apart. The cable is then drawn back into the socket by the cable strain, the tapered plug compresses and grips the core wire or wires and the sheath wires are gripped or wedged between the tapered plug and the wall of the socket. A separate sheet which accompanies the folder reproduces fac-simile copies of reports submitted by the Pittsburgh Testing Laboratories which are evidence of the effectiveness of the clamps.

NEW PUBLICATIONS

Facts on Municipal Ownership in 268 Towns and Cities. By Glenn Marston. Public Service Publishing Company, Chicago, Ill. 32 pages. Paper, 25 cents.

This pamphlet contains an alphabetical list of cities in the United States where municipal utilities have either actually gone out of business or are dependent on the taxpayers for continued existence. It is stated that nearly 200 of the places listed were personally investigated by the author, and in other cases the information was secured from the most reliable sources, generally city and state officials and reports. The cases cited in this pamphlet are mostly those of gas, electric and water utilities.

Public Utilities Reports Annotated. Decisions of the Public Service Commissions and of State and Federal Courts. Lawyers' Co-operative Publishing Company, Rochester, N. Y. Annual subscription, \$5 per volume; single advance parts, \$1 each.

No. 1 and No. 2, dated respectively Feb. 18 and March 4, have appeared. No. 1 contains 128 pages, and No. 2, 254 pages. The advance sheets, published fortnightly in this form, will be followed by bound volumes on thin India paper to be published as sufficient matter accumulates in advance sheets. The purpose of this publication was set forth in the *ELECTRIC RAILWAY JOURNAL* of Dec. 5, 1914. The series began with cases decided after Jan. 1, 1915. Editorial preparation of the reports is in the hands of the publishers' permanent staff, in special charge of Henry C. Spurr. The publishers also acknowledge the services of A. S. Hills, formerly in charge of the bureau of commission research of the legal department of the American Telephone & Telegraph Company, and of Messrs. Smith, Knowlton and Hatch, attorneys, with offices at Colorado Springs, Col.

The wide and valuable scope of the work is shown by the fact that cases in the first numbers relate to gas, electric, telephone, water, and steam and electric railway utilities. The publication gives utility officials promptly the complete text of all leading decisions in this field of jurisprudence. A service of this kind has been needed. Accurate knowledge of all higher court and commission decisions on regulation is indispensable for all utilities.