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## WHY RUSH-HOUR ENERGY COSTS MORE

The rather disappointing increase in energy unit cost in Chicago, noted in a reference to the recent report of the Board of Supervising Engineers on page 138 of last week's issue of this paper, emphasizes the unfortunate effect of rush-hour traffic on the power station load factor. In Chicago between 1909 and 1913 the cost of energy rose from 0.711 cent to 0.742 cent per kilowatt-hour, although the consumption increased more than 68 per cent. In the same period, however, the statistics show that the average load factor for the year decreased from about 55 per cent to about 45 per cent. It costs more to generate energy for rush-hour service for the same reason that rolling stock and labor cost more per car-mile when used in intermittent service. Power plant equipment must be provided for the maximum demand no matter how short the duration of the demand may be. A typical load-duration curve printed on page 422 of the issue of the *ELECTRIC RAILWAY JOURNAL* for Sept. 5, 1914, shows that with a 30,000-kw. plant installed in Rochester, N. Y., the load is above 20,000 kw. for but 450 hours per year; it is above 16,000 kw. for but 3000 hours, and above 12,000 kw. for but 5500 hours, while only 4000 kw. of load continues throughout the year. J. C. Parker, electrical engineer of this plant, estimates the annual cost of the extra generating and distribution equipment needed to supply the short-duration load at \$750,000, or about 50 cents a kilowatt-hour, with no allowance for fuel, labor, etc. This is worse than the relative cost of the traditional amateur gardener's cabbages.

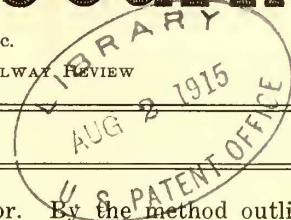
## ENERGY COST AND LOAD FACTOR

The purchaser of electrical energy is apt to think of it as a commodity to be purchased at a more or less uniform price per kilowatt-hour in given quantities. Of course, he ordinarily expects to, and does, get the energy more cheaply in large quantities, but as has been seen this is not a necessary result. Whether a company generates its own power or buys it, the cost will be determined partly by the "when" factor and partly by the "how much" factor. This is true of the small customer's demand, as well as of the demand by the large customer, although the principle with small customers is still being but grudgingly accepted. The Chicago Surface Lines' contract, involving as it does such enormous monthly charges, about a quarter of a million dollars, is undoubtedly as scientifically drawn a contract as is possible. While its application to such an extreme case was not contemplated, it is interesting to inquire what it would show if the load were of 100

per cent load factor. By the method outlined in last week's abstract a simple calculation shows that if the present annual consumption, divided according to the relative requirements of the surface line companies in the proportion given in the report, could be used at a uniform rate the cost would be about 0.57 cent per kilowatt-hour. The difference from the actual cost of 0.74 cent, 0.17 cent, or nearly 30 per cent increase over the theoretical minimum, is due to the poor load factor and measures the cost, to the railway company, so far as power is concerned, of the irregularity of its traffic. In Chicago the demand charge is determined from the average of six hours' load taken from the morning and evening peaks on three successive days, provided that this is not less than previous demands similarly determined and that it is the maximum average which can be obtained by the given method during the month. For each extra kilowatt of demand the price averages about \$1 per month and the price of the corresponding kilowatt-hour is very high because the load peaks are of short duration.

## ELECTRIC ROADS RANK HIGH IN PUNCTUALITY

An appropriate obituary of the old joke about the chronic irregularity of trains appeared recently in the editorial columns of the *New York Evening World*. In order to show the improvement made by the railroads in running trains on time the editorial quotes figures issued by the Public Service Commission of New York, Second District, which show that of 67,080 passenger trains running on the railroads included by this district during June, 1915, 93 per cent arrived at their division terminals on time, *i.e.*, not more than five minutes late, the New York, Westchester & Boston Railway holding the highest percentage for any one railway of the group, namely, 99.4 per cent. While we agree heartily with the closing recommendation of our contemporary's editorial to "give modern railroading its due" for the high standard of punctuality attained, we think it only fair to add also, "give heavy electric traction its due!" That the Westchester percentage is not a chance figure is shown by the fact that this line averaged 99.2 per cent for twelve months ending June 30, 1915. The high standard of punctuality for electrified roads is not confined to the Westchester alone. The electric divisions of the other lines included by the same Second District territory, *i.e.*, the Hudson and Harlem divisions of the New York Central lines, and those of the New York, New Haven and Hartford Railroad show in the recent reports excellent figures for promptness, the figures in every case being above and



sometimes well above the average for that month. The average number of minutes late per train run by these same lines is also proportionately low, the New York, Westchester & Boston Railway even averaging for the last year under one-tenth of a minute late per train.

#### THE PUBLIC'S INTEREST IN SKIP-STOPS

Time saved for the traveling public may have a rather nebulous value when calculated in dollars and cents. Nevertheless, experience with the jitney has shown beyond a doubt that the average rider considers his minutes spent en route to be no insignificant factor, and on that basis the recently proposed skip-stop plans in Chicago and St. Louis stand as an impressive public benefit. A simple calculation will determine what the latter is. Taking St. Louis, for example, the proposed plan involves the abolition on the routes in question of 720 stopping points, each one of which necessitates a roughly approximate loss of fifteen seconds in acceleration and retardation and in the stop itself whenever a car passes. Upon the assumption that the average stopping point is passed by a car at least 200 times during the course of a day and that the average car contains some thirty passengers, there is a daily saving of 20,000 passenger-hours. Even under a time value for passengers of only 10 cents per hour (a figure that might be otherwise expressed as equivalent to a willingness on the part of the average passenger to pay 5 cents for a ride that could be made in fifteen minutes, although he could get to his destination without expense in three-quarters of an hour) the time-saving value to the public of the St. Louis skip-stop plan would be \$2,000 daily, or \$600,000 per annum. Here is an indirect return to the community that is roughly equal to the amount now paid in taxes to the city by the railway. It seems impossible to imagine that a proposal to increase the tax payments by 100 per cent could meet with public disapproval, yet this attitude, or its equivalent, seems invariably to follow any plan to eliminate stops. Is not this a good subject for a campaign of popular education?

#### LABOR AND ARBITRATION

Undoubtedly one of the most serious problems now before the electric railway companies of the country is the labor problem. The jitneys have been making inroads into the gross receipts of the companies, but this trouble is generally considered to be temporary. Labor will always be necessary to operate the cars, and labor will have to be paid, and the rate of wages will have to be determined either by mutual consent or by some outside authority, like an arbitration board. But, as we said last week, the whole tendency of arbitration boards in labor disputes is to compromise. Either the board exactly "splits the difference" between the rates proposed by either side or it declares in favor of some intermediate scale between the two schedules presented to it for consideration. The practical result of the action is serious because the company rarely, if ever, goes before the arbitration board with an offer of less

than the existing wages while the demands of the men are always for a large increase over the existing wages, undoubtedly with the expectation of a compromise decision. The consequence is that the rate of wages is constantly going up. Where is it to stop?

Recent decisions of arbitration boards avowedly ignore as essential factors in establishing a reasonable wage both the financial ability of the company to pay higher wages and the existing conditions of the labor market. The former principle was distinctly stated in the Bay State Street Railway award as published in our issue of June 26, and in the Chicago decision, testimony that plenty of labor could be secured at the existing wages and that they were 50 per cent higher than those paid in many of the skilled trades in Chicago, as well as higher than those paid for the same work in other American cities where the cost of living was greater, made no difference in that award. Even if one should admit, for the sake of discussion, that the increase given in Chicago was warranted, what is to prevent the use of the same arguments (or lack of arguments) to justify another increase of the same amount at the end of the contract period provided arbitration is followed and a compromise verdict only is rendered. This *reductio ad absurdum* of the situation only emphasizes the importance in all arbitration cases of some method which will secure a decision on the merits of the case.

Some suggestions may be obtained from the experience of the steam railroads which have been through a somewhat similar experience in their wage adjustments with the various brotherhoods, but as they are interstate corporations, federal influence and legislation have been important factors in the methods employed and the results obtained. The first most important federal legislation on the subject was the Erdman act. This act provided for two permanent mediators, the commissioner of labor and the chairman of the Interstate Commerce Commission, who were empowered to settle the matter by mediation if possible, but if they found this beyond their ability, they had authority to appoint the third member of an arbitration board if the contending parties could not agree on one. This general plan was duplicated in 1913 by the Newlands act, which also provides for mediation by a federal government board but with three members, or, if the board is not successful in settling the controversy, of an arbitration board selected much like that under the Erdman act, except that if both sides prefer it can consist of six members, two representing each side and two to be impartial.

The practical workings of all of these methods, as well as of the Canadian Industrial Disputes Board and of compulsory arbitration in New Zealand, were discussed in a paper at the last meeting of the American Economic Association by Professor Dixon of Dartmouth, who gives his preference to a permanent federal mediation board acting somewhat under the procedure followed by the Canadian Industrial Disputes Board. The method of selecting "arbitrators" will be mentioned later. According to Professor Dixon, mediators and arbitrators in wage disputes should be experts not only

in the questions involved, but with experience in the proper procedure in the cases which come before them. From such men mere compromises should not be expected. Moreover, from the successful experience with mediation, as administered by Judge Knapp and Dr. Neill under the Erdman act, he expects more successful results than if there was entire dependence upon arbitration.

Of course with any permanent board everything depends upon the personality of the officials engaged. The chief objection to a permanent board, according to Professor Dixon, is the fear of the employers that it will "get into politics" and of the employees that it would fall into the hands of the employing class. He admits that it is natural to expect that any permanent body of arbitrators would quickly become unacceptable to one side or the other or both, but mentions with seeming approval the suggestion of Professor Shortt of the Canadian Civil Service Commission, who has served as chairman of a number of railway arbitration boards, that three or four persons be named by the government as constituting a panel of eligible persons from which the chairman of each board must be selected. Nevertheless he hopes, also from the experience of Canada, that the "investigators" could often bring about a settlement without resort to arbitration. They should, as under the Canadian plan, have the power to forbid strikes and lockouts during the period of investigation, and the publication of their findings should be an important influence on public opinion. In conclusion, he emphasizes the importance of some sort of co-ordination between such a board and the Interstate Commerce Commission so that rates, if necessary, could be increased to compensate for increased wages.

It is obvious that a plan such as outlined is much more easily adapted to interstate roads and a federal form of government than to intrastate roads and a number of state governments. Nevertheless it is helpful to know the evolution through which steam railroad arbitration has passed as well as the directions in which it has broken down and in which developments may be pending. It would probably be unwise to attempt to add the duties of wage regulation to the state public service commissions, but in an industry in which the amount paid for salaries and wages is 60 per cent of the total operating expenses, as in the electric railway business, there should certainly be a very close connection between the wage schedule and the rates permitted to be charged, and increases in the former should be reflected in the latter. Finally any way in which the merits of wage disputes can be brought before the public and in which the responsibility for excessive wages can be transferred in part to the public would be a step in the right direction. We believe that with a properly educated public opinion in regard to the merits of such a case there would be much greater willingness on the part of the public to put up temporarily with the inconveniences of a strike provided there was general conviction that the railway company was right in its contention and that the wages paid were adequate for the work performed.

#### WHY NOT FIX RAIL-WEAR LIMITS?

In our study of the economics of girder and high T-rail renewals, printed elsewhere in this issue, we were led to conclude that to put this problem on a scientific basis, wear limits for the various rail sections must be arbitrarily fixed. While most engineers will agree with this conclusion, difficulty is certain to be experienced in arriving at the allowable per cent of head reduction. Misapprehension regarding the effect of this probably will exist because many will construe the fixed limit of wear as the amount all rail must be worn before it is economical to renew it. Such a conclusion is incorrect, however, since the only purpose of suggesting a limit of wear is to put the economics of rail renewals on a definite basis. Reference to the empirical formula in the article on rail renewals printed elsewhere in this issue, as well as to the curves comparing the annual cost of renewals on a fifteen and thirty year maximum life basis, should indicate the urgent need of fixed wear limits. This formula was designed to test the economy of making rail renewals, and unless rail-wear limits have been fixed, the remaining wear life of any section under investigation cannot be determined.

Some engineers may think that the limits of wear suggested for the three general types of rail sections are excessive, but computations, on both the fifteen-year and thirty-year bases, show that if the limit was 50 per cent, rail renewals would be economical at 33 1/3 per cent head reduction, and if the limit was 60 per cent, renewals should be made when the head has been reduced 40 per cent. Certainly this amount of wear is not excessive, in fact some engineers have adopted these percentages as the limits of rail wear. On the other hand, one must not lose sight of the fact that these curves do not take into account all the factors which may affect the economy of rail renewals. In other words, the conclusion should not be drawn that rails must be renewed when a certain percentage of the head is worn away. Track maintenance may not increase, joint renewals may be unnecessary after the periods assumed, and, finally, heavier and more expensive new rail may be used. If any or all of these factors are present, the curve representing the annual cost of the old rail would not intersect that for new rail at the point indicated. Moreover, limits of rail wear even greater than those suggested seem warranted since the girder strength certainly is not impaired by the amount of head reduction in percentage which this formula would permit.

In summing up we believe that rail-wear limits can and should be arbitrarily fixed for all rail sections and that such limits should only be governed by two factors, safety and economy. Rail-wear limits determined on this basis will permit the economy of renewals to be calculated within reasonable limits. This is all the more important because the present small margin of profit in the street railway business demands scientific management of the strictest kind and the magnitude of the rail investment warrants special attention to its economical use.

# Monroe (Tex.) Maintenance Shops

The Southern Traction Company's Shops at Monroe Handle Both 600-Volt City and 1200-Volt Interurban Cars—  
The Equipment Permits Much Manufacture to Be Carried On

The new Monroe shops of the Southern Traction Company are up to the high standard of this road, a general description of which was published in the *ELECTRIC RAILWAY JOURNAL* of July 4, 1914. They are modern in every respect. The best engineering practice has been used throughout, and a number of original ideas have been incorporated in their design.

## LOCATION

The shops are healthfully situated 4 miles south of Dallas on Trinity Heights. The pleasant location of the shops has helped draw to them some of the most desirable workmen in the community. The prevailing southern breezes blow directly through the main aisle, which runs north and south. Shower baths, wash basins, toilets and lockers are provided for the workmen. Most of the men live in Oak Cliff, a suburb of Dallas,

fifteen minutes' ride from the shops, on the Southern Traction line. Though Oak Cliff is a very desirable place, with cheap rent and low cost of living, several of the workmen have built homes at Trinity Heights, within walking distance of the shops.

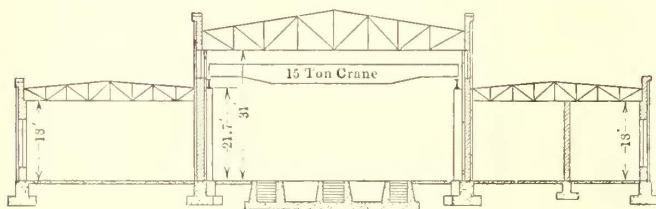
The Monroe shops are situated at the meeting point of the Dallas-Waco and Dallas-Corsicana divisions, so that disabled cars may be brought in quickly for repairs. It is also conveniently located with respect to the Texas Traction Company line, which has a terminus in Dallas and which, together with the Southern Traction Company, are under the control of the Strickland-Goodwin Management Association. All heavy repair work to Texas Traction cars is done at the Monroe shops.

Before passing on to a general description of the shops themselves, the protection of the main line and work tracks may be considered. One loop track connects all shop tracks with the main line, which is protected by a switch and short track which would send a runaway car up a slight incline and stop it against a pile of soil. All of the work tracks are protected by Hayes' details.

## GENERAL CONSTRUCTION AND LAYOUT

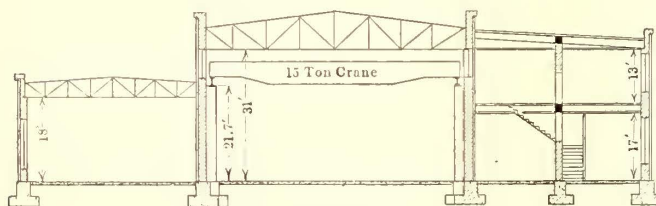
The shop building is 275 ft. long by 105 ft. wide. The main bay, as stated above, runs north and south. Built of red brick with white concrete cappings and trimmings, the edifice presents a pleasing appearance. The main division walls are of brick, and expanded metal lathing makes the other walls nearly flameproof. All ground floors are of cement. The wooden roof, with tar and gravel covering, and the inflammable contents of the building are well protected by numerous fire hydrants (with hose) located in the building, while a 50,000-gal. steel water tank furnishes water at 70-ft. head.

The west wing of the building, as shown on an accompanying drawing, has two stories. On the upper floor are three general offices, a lecture hall 40 ft. x 62 ft., and a dispatcher's office—the last being located in



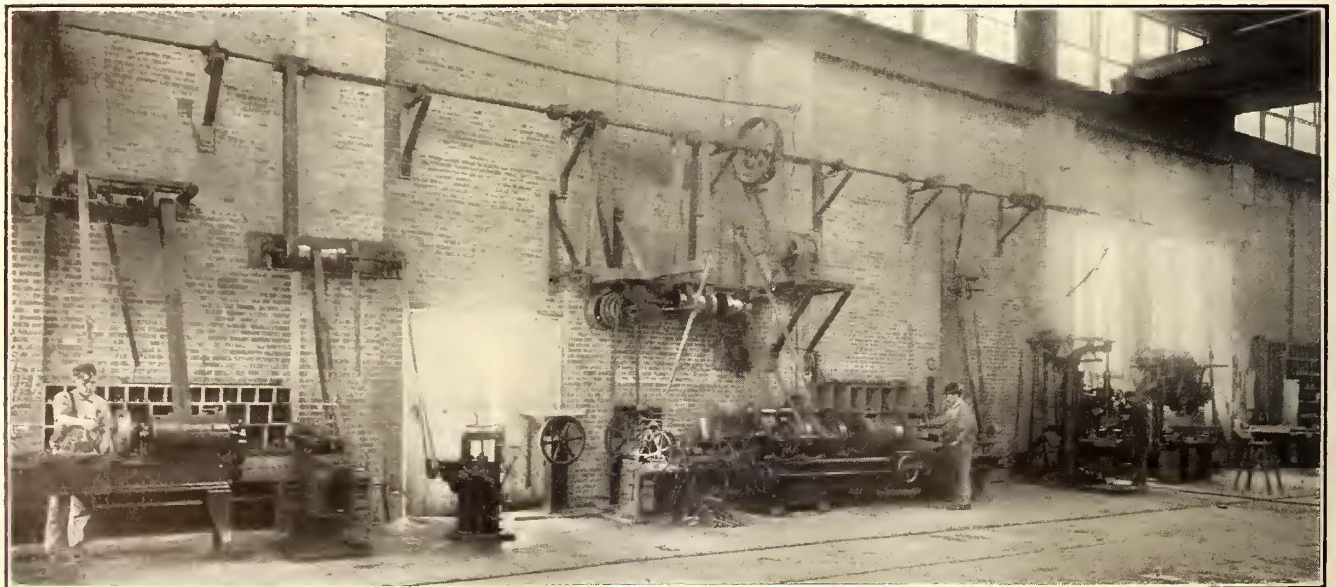
Scale 1" = 45 Ft.

Transverse Section  
X-X

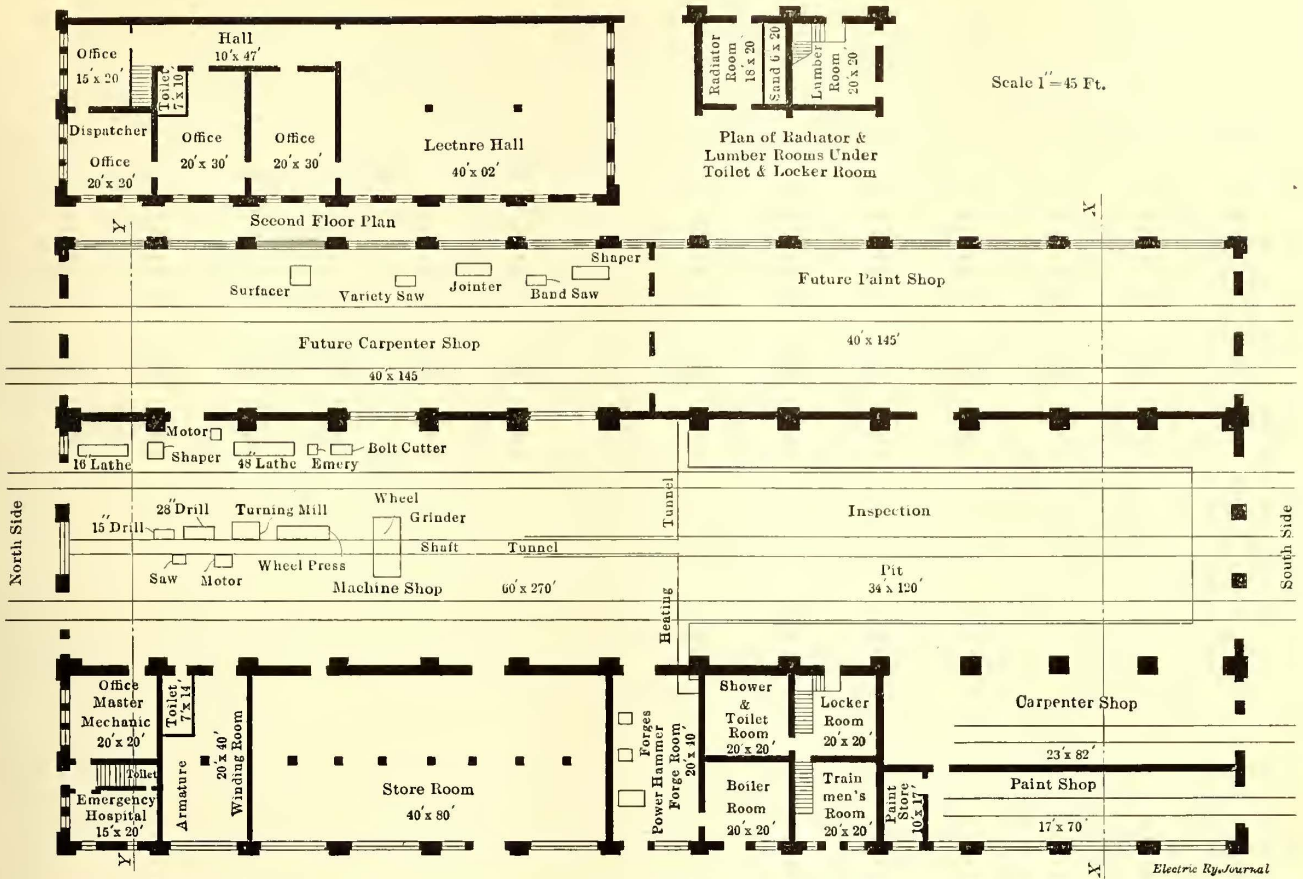


Transverse Section  
Y-Y

MONROE SHOPS—CROSS-SECTIONS OF SHOP



MONROE SHOPS—LINE OF MACHINE TOOLS IN MAINTENANCE SECTION



MONROE SHOPS—GENERAL PLAN WITH MACHINE TOOL LAYOUT

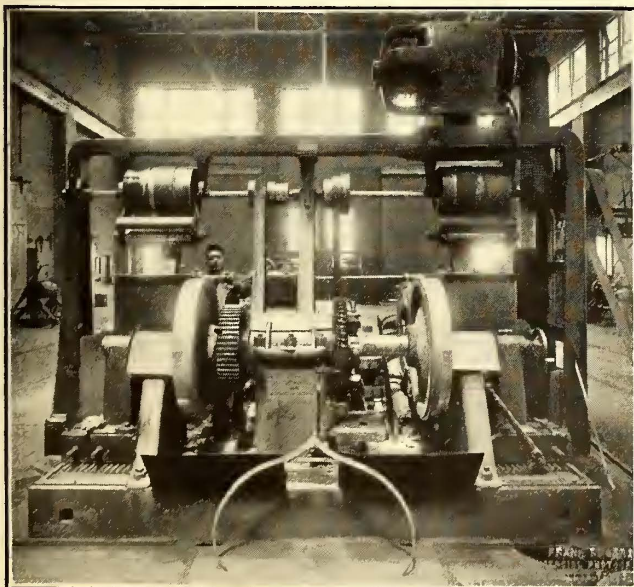
the southwest corner where a full view of the main tracks is obtainable.

On the lower floor are the offices of the shop foreman and of the superintendent of equipment. Situated also on the lower floor of this wing are the storeroom, the armature winders' room, the blacksmith shop, the boiler room, a trainmen's room, the carpenter shop and the paint shop. Each shop is separated from the others and from the main bay by brick walls and Durand's tin-clad fire doors.

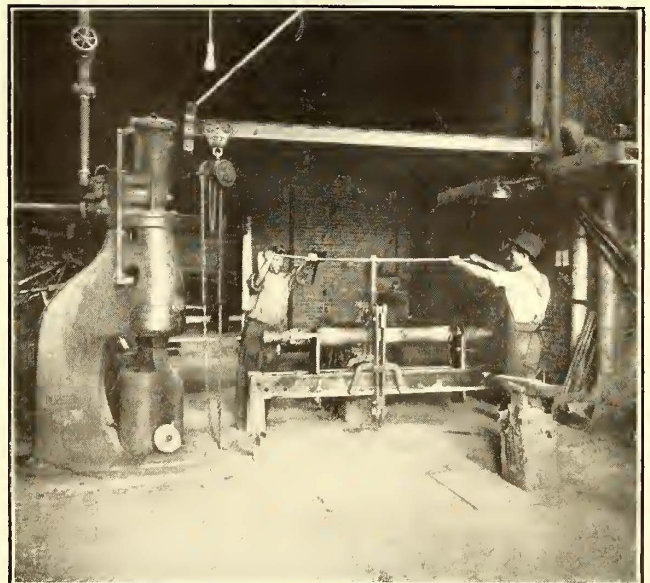
The storeroom is 40 ft. wide by 80 ft. long, and contains 1000 bins arranged in six double tiers. The black-

smith shop contains two Buffalo forges, fitted with forced draft and suction hoods, the centrifugal fans being electrically driven. The blacksmith shop also contains a 400-lb. Chambersburg hammer operated with air at 90-lb. pressure. The illustration on this page shows a home-made axle straightener and a home-made jib crane, the latter fitted with a 1/2-ton Yale & Towne hoist.

The carpenter shop is fitted with a 12-in. patent column hand planing and jointing machine, one variety saw with boxing and hollow chisel mortising attachment and with arbor arranged to receive gaining head, one



MONROE SHOPS—WHEEL GRINDING OUTFIT



MONROE SHOPS—STRAIGHTENING AXLE IN FORGE ROOM

single-cylinder surfer, one 36-in. band saw, one double-spindle shaper, one swing cutoff saw, and one knife grinder and knife balancing machine. Group belt drive is employed. The entire carpenter shop machinery comprising equipment from the J. A. Fay & Egan Company, is run by one 50-hp, three-phase, 2300-volt motor. Natural overhead light is supplied by three wire-glass skylights, each 4 ft. 2 in. wide by 15 ft. long.

In the paint shop, light from above is furnished by two skylights, similar to those in the carpenter shop; and the shop is further lighted on the west side by fourteen windows, each 3 ft. 4 in. x 11 ft. 2 in. Twelve similar windows light the storeroom.

The main aisle or bay is 273 ft. long, 60 ft. wide by 31 ft. from the cement floor to the bottom members of the structural steel trusses which support the roof. These trusses are a combination of the Warren and Pratt types with the top cord slanting to accommodate the roof which slopes from the center toward the sides; these trusses are spaced 21 ft. throughout the length of the aisle. To prevent the trusses from bulging sideways, there are provided three lines of cross bracing,

cars is necessary. The artificial illumination of the shop has been found satisfactory.

#### INSPECTION PIT AND MACHINE SHOP

Three tracks run the entire length of the main bay. The southern half of the aisle is given over to an inspection pit, 34 ft. wide by 120 ft. long. All rails passing over this pit are supported by 12-in. x 12-in. wooden joists, which rest on concrete posts, spaced every 10 ft. The pit is 4 ft. 10 in. deep; the floor is of concrete 12 in. thick. Two sets of concrete steps, one at each end, afford entrance to the pit. Wooden floors have been put in between tracks and on a level with the rails.

The northern end of the bay is occupied by the machine shop. This contains one 16-in. Lodge & Shipley lathe with patent head and 11-ft. bed, one McCabe 2-in. 26-in.-46-in. lathe with 8-ft. centers used chiefly for turning axles and large commutators and occasionally for wheel work; one 22-in. Ohio machine tool shaper, one single-head bolt threader, one grindstone and an emery wheel. These machines are run as a group, through jackshaft and belts, by a 15-hp. d.c. motor. In



MONROE SHOPS—BABBITTING JOURNAL BRASSES; INTERIOR VIEW OF MACHINE SHOP, SHOWING CRANE

running the entire length of the bay. The high winds that frequently occur in northern Texas make necessary this extra strong roof support.

#### LIGHTING

The main aisle is lighted by a row of 8 ft. x 3-ft. 8-in. windows, 22 ft. from the floor. These windows extend almost completely around the aisle, there being 103 in all. A few 3-ft. 4-in. x 11-ft. 2-in. windows, 4 ft. 2 in. from the floor, are also provided in the bay near the lathes and mechanics' benches. The aisle is lighted from directly above by five 6-ft. 5-in. x 15-ft. 6-in. wire-glass skylights. The system of natural lighting is found very effective and satisfactory.

Illumination of the main aisle by night is accomplished with ten inclosed arc lamps, hung staggered, in two rows; the globes are on a level with the lower members of the roof trusses to put the arcs out of the direct range of vision for the workmen. Condulet sockets to accommodate incandescent lamps with extension cords are provided wherever close work or inspection under

another group are one 15-in. and one 36-in. Barnes drill press, one 11½-in. Higley cold metal saw with automatic adjustable feed, one 40-in. Bullard boring mill, and a 260-ton Caldwell wheel press. This group is run by a 15-hp, 110-volt, a.c. motor, the jackshaft and motor being located in a concrete pit which is covered by concrete flags. The machine shop also contains one German-made combination splitting shear and punch sold by Henry Pels & Company, New York, and is provided with a riveting hammer and air drill. A Norton wheel grinder driven by a 35-hp, 550-volt, d.c. motor forms an important part of the machine shop equipment.

A 15-ton Box crane, driven by three d.c. motors, serves the entire main aisle, running on rails located 21 ft. 8 in. above the floor. A system of pipes and valves serves all the shops with air at 90-lb. pressure, from a 48-in. x 12-ft. air tank and a 100-cu. ft. air compressor driven by a 20-hp, 550-volt, d.c., series-wound motor. A pipe has also been run over to the Monroe substation, 300 ft. away, where the air is very effectively used in cleaning the machines.

# Girder and High T-Rail Renewals

A Summary and Discussion of Existing Practice, the Factors Influencing the Rate of Wear and the Wear Limits, and the Derivation of a Formula to Test the Economics of the Problem

BY EXUM M. HAAS, ASSOCIATE EDITOR ELECTRIC RAILWAY JOURNAL

A wide diversity exists in the practice of making renewals of girder and high T-rail in paved streets. Some railways insist upon strict economy in this regard, while others are grossly extravagant. The diminishing profits of the industry make scientific economy in all departments of utmost importance, but especially in track work, since it represents about 40 per cent of the total plant cost. Traffic conditions obviously will govern the period of renewals, but it is a moot question as to when rail is worn out. This uncertainty is due largely to the fact that wear limits for the different rail sections have not been adopted, although there is no practical reason why one cannot be fixed arbitrarily for each rail section. It may be that this limit would never be reached in service, because of the many other factors entering into the problem, but the mere fixing of a wear limit would place the economics of rail renewals on a definite basis.

Whenever a track appraisal is undertaken the engineer is confronted with the problem of determining the percentage of depreciation. At best, most of these determinations are guesses, based either on the experience of the engineer who makes the appraisal or on precedents set by previous valuations. On some appraisals as large a figure as 8 per cent per annum has conservatively been assumed as the rate of track depreciation, and records indicate that the minimum rate used in any valuation is about  $4\frac{1}{2}$  per cent. Information recently obtained after an exhaustive analysis of rail wear in one of the large cities in this country tends to show that an average of thirty-one years of wear life could be obtained. This average wear life, however, was based upon a conservative limit of rail wear which has in some cases been exceeded without affecting track economy.

## EXISTING PRACTICE

There is little or no standard practice regarding the limits of wear for the various types of girder and high T-rail. Most engineers who have a definite rule believe that with grooved-girder and tram-girder rails, the limit of wear has been reached when the wheel flanges ride on the floor of the groove or tram. Limits of wear fixed for T-rails are usually based on steam-road practice, or on limits adopted in some important valuation. Perhaps the Boston Elevated Railway has gone as far toward fixing a definite limit of wear for T-rails as any other electric road in the country. Conditions governing the life of T-rail on open elevated structures with high-speed trains, however, are not analogous to the conditions in paved streets where speeds are comparatively slow. The application of steam-road practice to electric railway tracks in paved streets is also in utter disregard of the economics of the problem at hand and results in most extravagant track-maintenance methods. Generally speaking, street railways cannot afford to use relay rails, except in temporary work, on account of the expensive construction employed and the difficulty experienced in making repairs. Some relay rails, however, have been taken from heavy trunk lines and laid in extensions of light traffic lines. Usually such practice is economical only if undertaken at the time of pavement renewals.

Perhaps present-day practice in making appraisals of tracks and in calculating their depreciation is nowhere more typically set forth than in the 1906 report of the Chicago Traction Valuation Commission. In this, track was divided into two parts: the rail and the substructure. Rail depreciation was determined by three principal factors: the wearing life in the head of the rail, the condition of the tram and the condition of the joints. Joints were depreciated on the basis that to obtain the full value in the head of the rail, joint renewals would be necessary. Where the tram was broken the rail wear-life limit was considered as reached regardless of the remaining life in the head of the rail. The wear limit of the rail head was considered as reached when it had been worn away so that the height of the head above the floor of the groove or tram was  $\frac{5}{8}$  in. or less. With this wear limit fixed, the remaining wear value of the rail was readily determined. Enough measurements of the worn rail head were taken to obtain an average. The  $\frac{5}{8}$ -in. limiting dimension was governed by the depth of the standard wheel flange. In other words, the wear limit was fixed at the point where the standard wheel flanges rode on the floor of the groove or tram.

## CHANGES IN RAIL SECTIONS INCREASE WEAR LIFE

Since that time new rail sections have been developed in which metal has been added at points where it was needed to prolong the life of the rail. In some cases the limiting factor of the life of the rail has been railway traffic, in others vehicular traffic, in still others corrosion. Provision has been made for these and other factors which might influence the serviceability of the rail in the later sections. The general adoption of the girder-grooved rail as a substitute for the old tram rail with the horizontal wagon-wheel tread is certain, except under extraordinary conditions, to eliminate vehicular traffic as a life-determining factor. The shape of the groove also makes flange riding less hazardous, and the depth of the groove, in many sections, insures a liberal wear value in the head of the rail.

Grooves, correctly designed, should be of sufficient depth to permit maximum head wear before the standard wheel flanges ride on the groove floor. The introduction of rolled-steel wheels, however, has obviated flange riding as a limiting condition. Comparatively few wheels in service are new, and even a short period of wear increases the wheel-flange depth appreciably. As a result of this, even if the groove depth were correctly designed, one could conceive of rails worn so that all wheels except the new ones would be flange riding. Obviously, wheels worn to the extreme allowable flange depth would ride before the others.

The latest types of girder-groove sections provide a liberal groove width and an angle so that they are self-cleaning. The tendency of one wheel of a pair to wear to a thick flange and the other to a thin flange, as well as for both wheels to wear to thin flanges, results in more or less flange cutting on the lips of the rail groove. Accordingly, the lips of the groove have been made heavier to provide against excessive wear of this kind. Likewise, provision has been made for wear on the gage side of the head due to wheel conditions and the

nosing of the trucks by moving the center of the head more nearly over the center of the web, thereby increasing the horizontal thickness of the head. Some companies (Chicago, for instance) have designed a rail section with additional metal under the head opposite the gage line. This insures a maximum horizontal as well as vertical head reduction before the rail is ready to be scrapped.

Other provisions against the factors which may limit the life of rails include a liberal bevel on the pavement side of the rail head. This not only avoids false treads when narrow wheels run on the track but allows a head area above the normal pavement surface. Some engineers have claimed that the limit of wear will be reached when head of the rail is worn below the original grade of the pavement, and that, consequently, a wear limit based upon any greater percentage than this would allow would be impracticable. Experience seems to indicate, however, that where railway traffic is dense, vehicular traffic also is sufficiently dense to wear down the pavement in advance of the rail. On the other hand, this extra rail-head area above the surface of the pavement insures that at least until the first pavement renewal is made the surface of the rail head will not be below that of the pavement.

In some localities the rapid deterioration of the rail web and base, due to corrosion, determines the life of the rail. Rail corrosion advances very rapidly in some districts, particularly where the drainage conditions are good and the tracks are laid on streets with rather steep grades. This is due principally to oxidation of the steel caused by frequent changes from wet to dry, conditions such as would occur where good track drainage obtains. Here, of course, the life of the rail is not determined by the head, and an increase of the metal in the webs and bases offers the only recourse.

Undoubtedly changes in the chemical composition of rails and in the methods of manufacturing them have improved their wearing qualities. Experience has shown that open-hearth steel rails wear longer than those manufactured by the Bessemer process, and in addition the former have a higher resistance against corrosion. Improvements in the methods of manufacture which have resulted in a more uniform quality and a finer grain have also had a tendency to lengthen the wear-life of rails. On the other hand, modern methods of production under pressure have to a certain extent offset the benefits which should have been derived from improvements in manufacture and changes in chemical composition. An increase in the carbon content has tended to lengthen the wear life of rails. Perhaps the best evidence that changes in chemical composition do improve the quality of the rails is to be found in the service records of titanium-treated rails. While it is possible that other alloy steel rails may produce the same results, actual service data are not available. Apparently rail corrugation which was introduced with the more rigid types of track construction has been eliminated or at least greatly delayed by the titanium treatment. In addition the structural properties, as well as the wearing qualities of the rail, have been improved.

#### EFFECT OF JOINTS, TIES AND FOUNDATIONS

Although the introduction of the welded and riveted joints has had a tendency to reduce joint difficulties in track, the old adage, "The life of the joint is the life of the rail," still holds, but to a greatly reduced degree. The additional support given to mechanical joints by the modern foundation construction also has made them less of a determining factor than in the earlier types of track laid in paved streets or in open-track ballasted construction. As long, however, as rail is not made

continuous across the joint and a line is perceptible where the rails butt together, it will be impossible to eliminate cupping at that joint. The application of the grinder to insure perfect rail surface on new track and to eliminate evidences of cupping at joints as soon as they appear, is certain to reduce the importance of the joint as a determining factor.

The type of tie used has little effect on the life of rails, although it undoubtedly has some bearing on the problem. Some engineers are of the opinion that the wooden tie, being more resilient than the steel tie, decreases the rate of rail wear, particularly where both are laid in solid concrete. Where soft wood ties are used without tie plates, they may affect the character of wear on the rail. Instances may be cited where rail has canted on soft ties to such an extent as to change the angle of wear on the head. Moreover, mechanical wear on the soft ties may force rehabilitation, which in turn might make rail renewals necessary in advance of the time dictated by rail wear or other track conditions.

If one may draw a conclusion from the rate of rail wear as found in ballasted open-track construction and in paved streets, it would be that the rate of wear on resilient construction is much less than that on rigid construction. If that is a test, then ballasted construction in paved streets should make rails wear longer than solid-concrete foundations. This is a point, however, upon which opinions differ, and strong evidence can be submitted in support of both sides of the question. On the other hand, the permanent types of track foundations have given added importance to the problem of making rail renewals. If there is any economy in the expensive permanent types of construction, and undoubtedly there is, it ought to be practicable to renew rails without any change in the foundations except with possibly some slight repairs. If no more life is to be obtained from foundations of this expensive construction than from those of cheaper construction their use should be discontinued. Experience with the improved types of foundation construction, however, indicates that they will outlive one set of rails. Renewals on old permanent foundations have been made, and will continue to be made, if the foundations have been properly designed and installed.

#### CHARACTER OF PAVEMENT

Probably no other factor is more important in considering the economics of rail renewals than the character of pavement. In districts where vehicular traffic is reasonably heavy, it is probably safe to say that the modern permanent types of track construction will outwear the pavement. Accordingly, when pavement renewals are contemplated the engineer must determine the remaining life of the rail and whether it will be economical to permit the rail to remain in service. With the large investment in the plant and the small margin of return allowed to railway companies at the present time, this question should be decided on a strictly engineering basis. In other words, if the pavement is to be renewed and the remaining wear value of the rail is such as to make it economical to leave the rail in the track until it is worn out, mere sentiment should not govern the final decision.

#### GRADES AND DRAINAGE

Single track laid on heavy grades wears more rapidly than single track on the level. Similarly, track on ascending grades in double-track construction wears more rapidly than track on descending grades. This is largely due to the unusual tractive effort necessary which may be accompanied by spinning wheels on sanded track. Drainage on grades is not so important, but on level track it is of vital moment and will deter-



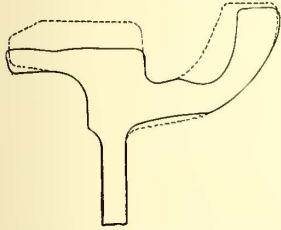
mine the life of track foundations. Manifestly, failure in the track foundation has an important bearing on the rail-renewal problem.

FACTORS AFFECTING THE RATE OF RAIL WEAR

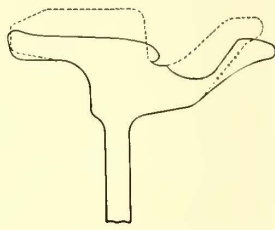
Obviously the density of traffic, both railway and vehicular, determines rate of rail-head wear. Closely related to these two are the type and weight of the rolling stock, whether single or double truck, light weight or heavy. The total weight of the car is not so im-

portant, but the weight per wheel is of moment, the rate of wear being directly proportional to the weight per wheel. The kind of wheels, whether rolled steel or chilled iron, as well as the wheel contour, determine the character of wear. When wheel flanges ride on the floors of the groove or tram, some engineers consider that the wear-life limit of the rail has been reached. Others go so far as to permit the wheel flanges to shear the lip off completely before the rail is considered worn out.

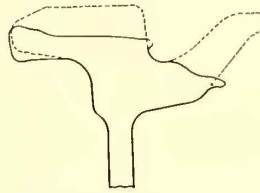
If the track is otherwise in serviceable condition, the



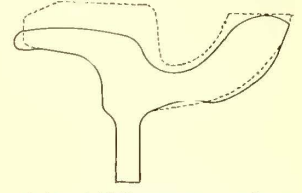
9-in. 145-lb. guard rail from curve in Chicago. Original section installed in 1908 and removed March, 1915. Head reduction 44.1 per cent.



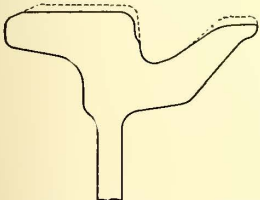
9-in. 129-lb. rail from curve in Chicago, original section installed in 1908 and removed March, 1915. Head reduction 44.5 per cent.



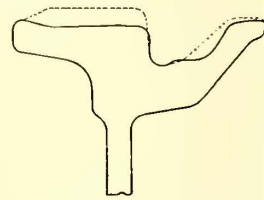
9-in. 129-lb. rail from curve in Chicago. Other end of rail shown in the cut at the left. Original section installed in 1908 and removed March, 1915. Head reduction 46.6 per cent.



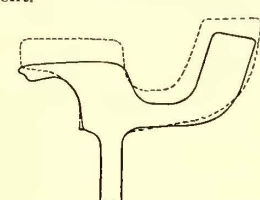
9-in. 145-lb. guard rail on curve in Chicago. Original section installed in 1908 and removed March, 1915. Head reduction 46.9 per cent.



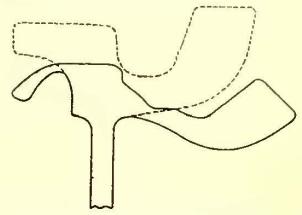
9-in. 129-lb. rail from tangent in Chicago. Original section installed in 1908. Templet taken March, 1915. Note vehicular wear on lip. Head reduction 12.8 per cent.



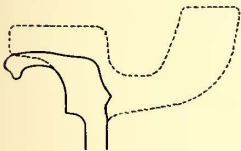
9-in. 129-lb. rail from tangent track in Chicago. Original section installed in 1908 and templet taken April, 1915. Note wear due to canted trucks. Head reduction 29.0 per cent.



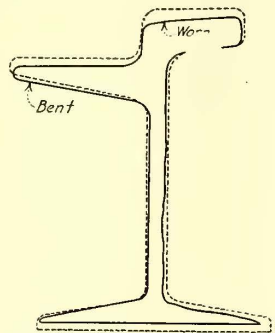
6-in. 97-lb. guard rail laid on a slight grade on a 100-ft. radius curve; 22 lb. per yard worn off or head reduced 56.0 per cent.



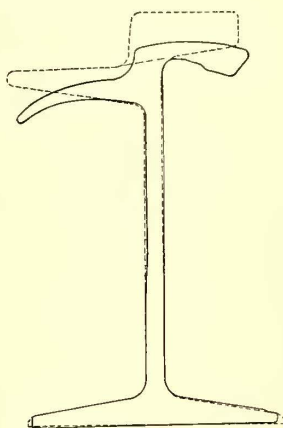
6-in. 97-lb. guard rail on curve; 0.0 grade; 23.7 lb. per yard worn off or head reduced 76.6 per cent.



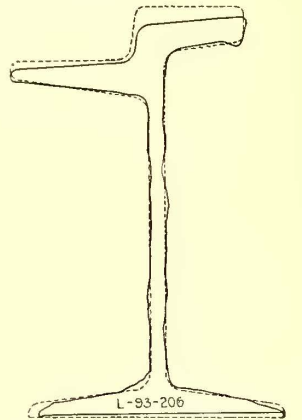
6-in. 97-lb. guard rail on a 60-ft. radius curve; 0.0 per cent grade; laid 1902, measured 1910. 49.4 lb. per yard worn off or head reduced 66.1 per cent.



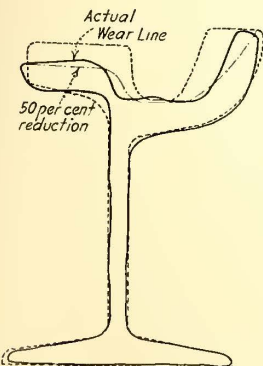
7-in. 80-lb. tram girder rail from Milwaukee laid in 1898 and removed in 1914. Note head and tram wear. Reduction due to corrosion, causing renewal. Head reduction 28.5 per cent.



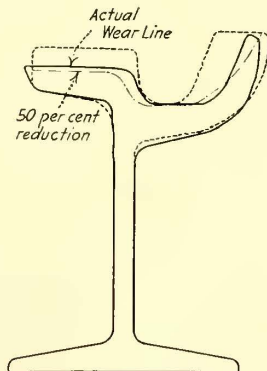
L.S.-93-206. 9-in. rail removed after twelve years of service. Joints showed same head reduction. Head reduction 49.3 per cent.



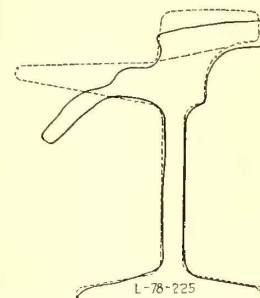
L.S.-90-206. Taken out of track in Toledo, Ohio. This rail was laid on a sand foundation twenty-one years ago. In good condition except reduction in web due to corrosion. Head reduction 38.2 per cent.



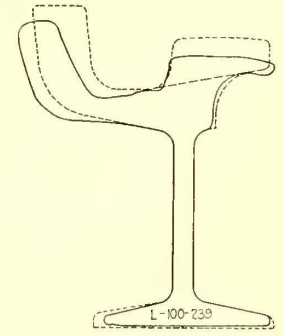
Inside guard rail L.S.-398—7 in. 108 lb. per yard. Head reduction 50.6 per cent.



L.S.-6-398, 7-in. 108-lb. rail. Same rail as shown in the cut at the left. Section taken by sawing rail from end. Head reduction 39.2 per cent.



L.S.-78-225. 6-in. rail removed from macadam street after fourteen years' service. Joint failure cause of removal. Head reduction 19.7 per cent.



L.S.-100-239, worn out guard rail taken from 40-ft. radius curve, which carried 150 cars daily for twenty-one years. Head reduction 40.7 per cent.

tremendous investment in the modern types of track as compared with the small investment in wheels, should dictate the turning down of the wheel flanges to eliminate them from the realm of limiting factors. From the standpoint of safety there is no objection to the practice where rolled-steel wheels are used, because their flanges do not chip, and when these wheels begin to become flange bearing, the deep flanges wear off so that the wheels are soon equally flange and tread-bearing. Experience in the past with chilled-iron wheels seems to indicate that it would not be good practice to allow them to ride on the flanges. However, a change in the shape of the wheel flange might permit this practice so that the mere fact that chilled-iron wheels were used would not make them a limiting factor in the rail-wear life. Even with chilled-iron wheels, the problem should be determined on a safety-of-operation basis rather than simply because the flanges are riding. In cases of this kind it might be economical even to change the shape of the wheel contour to permit the rail head to wear to its limit.

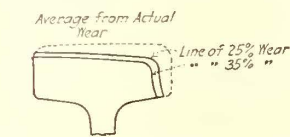
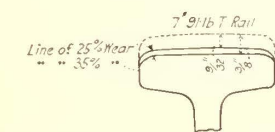
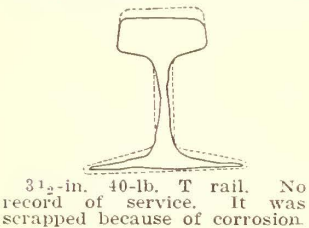
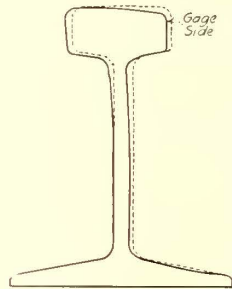
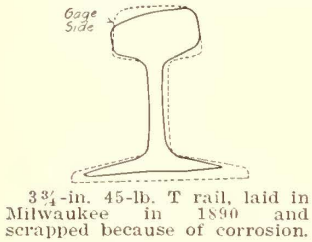
The rate of speed is of vital moment, and for track in paved streets it is safe to assume that the speeds are comparatively low. In other words, they are not comparable with open track on an elevated structure, nor with track on a private right-of-way. But as low

speeds reduce the stresses in the rail it appears reasonable to draw the conclusion that the limit of wear for rail in paved streets may exceed that for rail in open-track construction. Since conditions are not analogous, the practice on steam railroads, interurban railways or elevated railways should not be an index of rail renewal requirements in paved streets. Moreover, the large investment in the types of track construction used in paved streets is sufficient reason to induce the prudent engineer to make every effort to obtain long wear life.

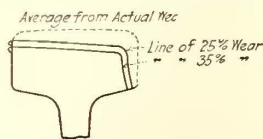
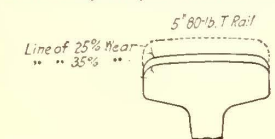
Rapid acceleration and braking increase the rate of rail wear. Equipment maintenance, particularly as regards the condition of the trucks and wheels, also affects the wear life of rails. The flexibility of the car springs and the ease of movement of the side bearings, so far as they affect the position of the trucks and wheels in relation to the rails, also affect the rate of wear. Wheel maintenance in particular is important, as well as the selection of wheel contours which insure a distribution of the load across the full width of the head. Where flanges are permitted to wear unusually deep, wheels may become flange riding long before they should. When flange riding occurs it results in wear in the groove and when the groove is worn through the wear-life limit of the rail should be considered as reached. It is, therefore, important that the limiting depth of the flange should be within reason. Some question has been raised concerning reduction in electrical contact on flange riding track, and this, too, is important in obtaining economical power consumption. On the other hand, the mere fact that the electrical contact is not good should not determine the life of the rail, but should dictate better wheel maintenance.

OTHER FACTORS AFFECTING RATE OF RAIL WEAR

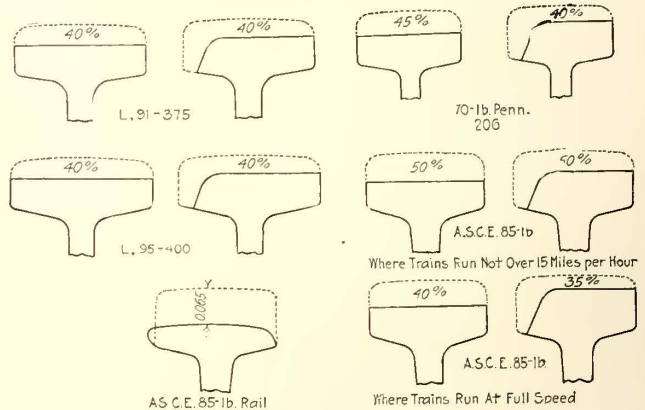
Numerous other elements have a minor bearing on the rate of rail wear, such as the cleanliness of the streets, the weather, the amount of snow and ice, and



7-in. 91-lb. T rail. L.S.—315. Left-hand section shows line of symmetrical wear; right-hand section shows actual wear; from Twin City Rapid Transit Company.

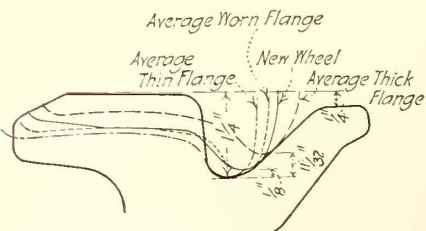


5-in. 80-lb. T rail. I.S.—8004. Left-hand section shows line of symmetrical wear; right-hand section shows actual wear; from Twin City Rapid Transit Company.

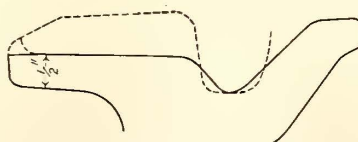


Allowable wear of T rails before renewal on the Boston Elevated Railway.

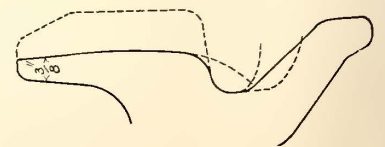
SECTIONS OF WORN RAILS FROM DIFFERENT ROADS, SHOWING HEAD REDUCTION (1/4 size)



Fully depreciated Chicago rail—on basis of flange bearing.



Fully depreciated Chicago rail—on basis of new wheel profile with flange riding in bottom of groove.



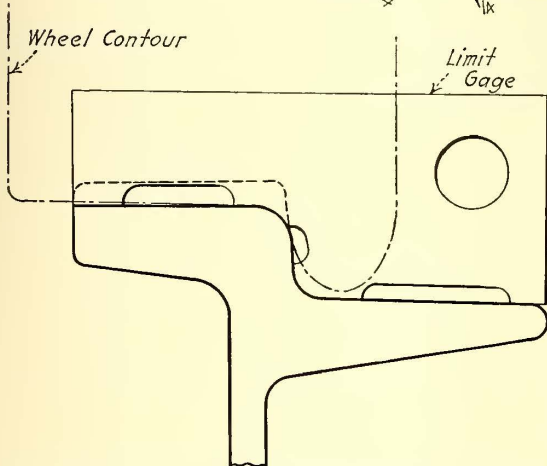
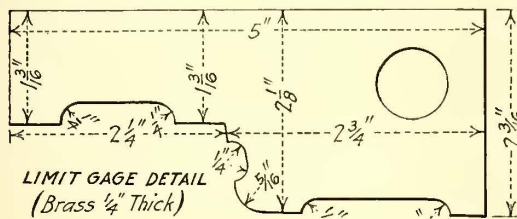
Fully depreciated Chicago rail—on basis of worn wheel profile with flange riding in bottom of groove.

SECTIONS OF FULLY DEPRECIATED CHICAGO RAIL (1/4 size)

street sprinkling. Lack of cleanliness causes a collection of grit on the rail which increases the rate of wear. Frequent alternation of wet and dry periods increases the rate of corrosion and produces slippery rails, making the use of sand necessary. Both the corrosion and use of sand increase the rate of wear on the rail head. During winter months the amount of snow and ice is also important, because in some cities it is necessary to use great quantities of salt which gives impetus to both the rate of corrosion and wear. The amount of snow and ice also increases the number of slipping and grinding wheels, although these are of minor importance in influencing the rate of wear.

MUNICIPAL REQUIREMENTS

In many cities railway companies are usually required to renew their track when changes in the grade or the line of streets are made. When changes like these kinds are contemplated the problem resolves itself into one of track economics, together with what character of construction future traffic will demand. These elements enter into most any rail-renewal problem, consequently



RAILWEAR ECONOMICS—LIMIT OF WEAR OF L. S. 95-297, ADOPTED BY INDIANAPOLIS TRACTION & TERMINAL COMPANY (1/2 size)

the decision must depend upon the engineer's previous experience, as well as his ability to anticipate traffic conditions. It seems reasonable to assume that he may make these determinations within safe limits, yet how well it is done depends largely on the human equation. It is believed that rail renewals in cases of this kind do not deserve as serious consideration as the character of foundation to be employed. With the more permanent types of foundations it is safe to assume that rail renewals may be made without disturbing the foundation. If the alignment or grade is changed a loss is entailed in the investment, because the original foundation cannot be used. In contrast with this the rail may be used in the new line or on the new grade or transferred to an entirely new location. These considerations also enter in changes from single to double track.

THE ECONOMICS OF RAIL RENEWAL

When pavement renewals become necessary or the foundations, ties or joints have failed, the question is

usually whether it is economical to use the old rails in the new work. This problem must largely be governed by local conditions and in specific instances. Before the economy may be determined, however, it is necessary to assume some wear-life limit. With a limit fixed the remaining life of the rail may be estimated readily by obtaining the average head reduction for the period the rail has been in service. With this information in hand the rate of wear per year may be ascertained and the remaining life estimated. When this has been done the condition of the joints, ties and the foundation should be carefully examined, as well as the extent of corrosion and the condition of any other part of the structure which may have a bearing on the remaining life of the rail. If the amount of corrosion indicates that it may limit rail life in advance of wear, the rate may be determined in a manner similar to that employed in calculating the rate of head wear.

If the foundation must be rebuilt or if the ties must be renewed, they increase the cost of the installation and may show that it would be uneconomical to use the old rail. The condition of the joints, whether good or in need of repairs or requiring that a permanent type be substituted for the mechanical joint, affects the economy of renewal. When the problem can be decided solely on the basis of economics, it resolves itself into one of balancing interest, depreciation and maintenance of the new rail against the old. The following factors must enter the problem to obtain the comparative annual cost between the old rail and the new:

- $R_2$  = Total cost of new rail, joints and fastenings in place in dollars.
- $L_2$  = Total estimated wear life of the new rail in years.
- $M_2$  = Annual maintenance cost of the new rail in dollars.
- $P$  = Annual interest and taxes on the new rail in per cent.
- $V_r$  = Remaining wear value of the old rail in dollars.
- $S$  = Scrap value of the old rail in dollars.
- $K$  = Cost of replacing the old rail in dollars.
- $T$  = Cost of tearing up and relaying the pavement, including labor and material, in dollars.
- $M_1$  = Annual cost of maintaining the old rail and fastenings in dollars.
- $L_1$  = Remaining wear life of old rail in years.
- $X$  = Money in dollars expended to prolong the life of rail which could not be charged to maintenance (betterments).
- $C_2$  = Annual cost of the new rail in dollars.
- $C_1$  = Annual cost of the old rail in dollars.

From the foregoing factors the annual cost if old rails are used would be:

$$\frac{V_r + K + T + X - S}{L_1} + M_1 = C_1.$$

The total annual cost if new rails are substituted for the old ones at the time repaving is done, is as follows:

$$\frac{V_r + R_2 - S}{L_2} + (R_2 - S)P + M_2 = C_2.$$

To determine the relation between the annual cost of a mile of new rail as compared with a mile of old at the different ages of the old in service, the following values per mile of single track have been given to the various items contained in the formula:

- $R_2$  = \$6000 (including rail and fastenings).
- $M_2$  = \$100.
- $P$  = 8 per cent.
- $V_r$  = \$2000.
- $S$  = \$1200.
- $K$  = \$2000.
- $T$  = \$1000.

For the different ages of rail  $V_r$  will naturally change. It was also assumed that the new rail was of the same section and of the same cost as the old rail. Although there may be some slight change in the scrap value at the different periods, it was allowed to remain the same in the calculations. The annual cost of maintaining the old rail, or  $M_1$ , was increased 50 per cent for the fourteenth year and 25 per cent for the twelve and one-half year period. After the ten-year period, it was also

tions now being laid in paved streets, as compared with the earlier types of construction, make more life from the new types necessary if they are economical. Hence, it should be possible to make rail renewals without disturbing the foundation.

4. Joint failures or cupped rail at joints, followed by destruction of the foundation beneath them, are the most important factors in limiting the life of rails. A high standard of construction and maintenance in this respect is certain to delay renewals due to these causes, and it is quite possible that defects of this kind may be made of secondary importance.

5. In districts with heavy vehicular traffic, pavement renewals rather than failures in the track, force engineers to consider the economy of rail renewals.

6. In districts where vehicular traffic is light, rail renewals are largely governed by foundation, tie or joint failures.

7. The large investment in track in paved streets as compared with the small investment in wheels makes rail renewals uneconomical simply because wheels are flange bearing, unless this condition actually makes operation unsafe.

8. The head cross-sectional areas available for wear in most high T-rails are greater than those of girder-grooved and girder-tram rails.

9. The present practice of making rail renewals on an arbitrary headwear limit basis is in general uneconomical, since the ultimate limit of head wear for most sections, both girder and high T-rails, is seldom, if ever, reached.

10. Ultimate permissible wear limits for the standard rail sections of the American Electric Railway Engineering Association should be arbitrarily fixed, if for no other reason than to simplify calculations of the economy of making renewals.

11. For girder-grooved sections, a 50 per cent head-reduction limit appears to be an entirely reasonable one to adopt, although it will be safe to allow more than this on some sections.

12. For shallow-head high T-rails it appears safe and reasonable arbitrarily to fix the wear limit at 50 per cent head reduction.

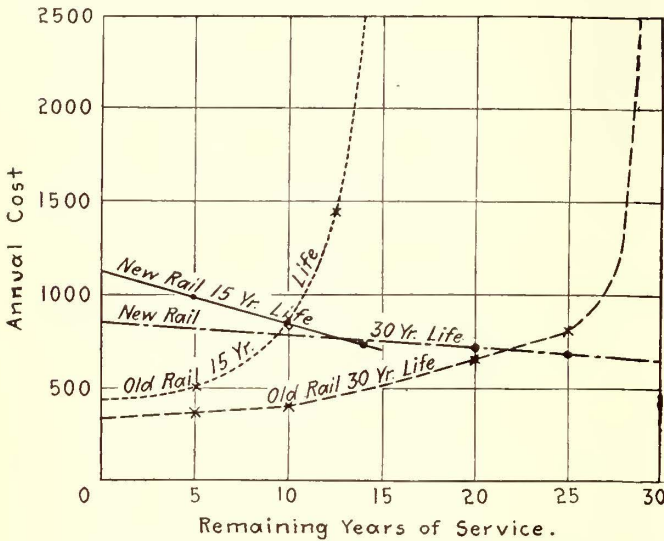
13. For the A. R. A. and A. S. C. E. rail sections an allowance of a 60 per cent head reduction is believed to be within safe limits.

14. Unless a rail renewal is required by ordinance the relative economy of using new rail or relaying the old rail should be carefully calculated when pavement renewals are made. With these data in hand engineers will have a strong argument for adhering strictly to the economics of the problem.

15. This study finally leads to the conclusion that the rate of rail wear varies with localities, with streets and even as between blocks. For appraisal purposes an average life may be determined for a given property, but this average should not be applied in depreciating track on any other property.

### Coupon Transfer at Exposition Grounds

In connection with the handling of travel to the Panama-Pacific Exposition the United Railroads of San Francisco built a loop terminal at Van Ness Avenue between Francisco and Bay Streets. Passengers who enter this terminal pay fare to a station collector and receive a transfer with a coupon attached. As the passenger proceeds he hands his transfer to a checker who tears off the coupon upon which both date and serial number are printed. This coupon is dropped into a box and serves later to check the cash receipts. The portion of the ticket returned to the passenger is the company's standard transfer form.



<b>30-Year Basis</b>		<b>15-Year Basis</b>	
$M_1 = \$100$ from 1 to 19 years	$M_1 = \$100$ from 0 to 12½ years		
$M_1 = \$125$ from 20 to 24 years	$M_1 = \$125$ at 12½ years		
$M_1 = \$150$ from 25 to 28 years	$M_1 = \$150$ at 14 years		
$M_1 = \$200$ from 29 to 30 years	$X = \$440$ at 10, 12½ and 14-year periods		
$X = \$450$ at the 20, 25 and 29-year periods.			

### RAILWEAR ECONOMICS—ECONOMY OF RAIL RENEWAL TESTED BY COMPARISON OF ANNUAL COST OF NEW AND OLD RAILS ON A FIFTEEN-YEAR AND A THIRTY-YEAR MAXIMUM WEAR-LIFE BASIS

assumed that new joints would be necessary on all the old rail. On the assumption that 60-ft. rails were used, an amount of \$440 was added to the cost per mile for joints. Similar assumptions also were made in determining the relation between the annual costs of new and old rail on a thirty-year basis. The results of these calculations for the different periods are indicated by the graphs shown in the accompanying diagram. No general deductions may be drawn from these curves since they apply only to the cases in hand. The method employed, however, is applicable to any case, and the terms of the formula are sufficiently general to determine the economy of making rail renewals under all conditions.

### CONCLUSIONS

In the foregoing discussion an endeavor has been made to consider every phase of the rail-renewal problem. As a result of this analysis the following conclusions seem warranted:

1. Rail renewals in straight track are seldom necessary because the head has been diminished by wear sufficiently to reduce the structural strength of the rail so that it will not carry cars safely. Light sections on which considerable wear has occurred, however, may be too weak structurally to be safe or economical under an increase in the weight of rolling stock.

2. Better chemical composition, the addition of extra metal where most wear occurs, improvements in the methods of manufacture, lighter cars and training of motormen in the proper method of acceleration and braking have tended to increase the wear life of rails.

3. The more substantial and expensive track founda-

## Skip-Stops in St. Louis

### The United Railways, in Its Application Before the Public Service Commission for Permission to Eliminate Car Stops, Replies to Criticisms of Proposed Plan

The brief that has been presented by the United Railways Company of St. Louis before the Public Service Commission of Missouri in connection with its recently-proposed skip-stop plan states that both in this country and abroad the endeavor has been, as territorial expansion in large cities has increased, to shorten the time of transportation for passengers. It then submits the plan, which is outlined in the following paragraphs, to the end that the whole people of the city of St. Louis may be better served, more quickly transported from their places of residence to their places of business, and vice versa.

About 7000 stops are now made in the operation of the street railway system in the city, and of these stops it is proposed to eliminate some 720. This will permit a saving of time that would be required in the slowing up, stopping and starting of cars at those points, and with the same general speed as is now maintained, it is estimated that from four minutes to five minutes will be saved on every line.

The selection of the stops to be eliminated has been made with reference to their present non-usage or the scarcity of passengers presenting themselves for passage, together with the minimum amount of additional walking distance to be imposed by virtue of the increased distance between stops. Stops are to be made in a systematic manner at alternate streets. At every point where cars stop, a red sign with "Cars stop here," or the equivalent, will be posted, and places where the cars do not stop will be indicated by a blue sign with appropriate letters.

Some idea of the immeasurable benefit that this plan will bring to those who ride upon street cars is obtained when it is considered that the United Railways Company now carries about 1,000,000 passengers per day. Assuming that 25 per cent or 250,000 of these passengers save five minutes per trip, a saving of 20,866 hours per day is made, and if the value of this saved time is estimated at the low rate of 10 cents per hour, the value of the time saved is \$2,086 per day, or \$625,980 for the 300 working days constituting the year.

To this proposal of the elimination of these 720 stops some twenty specific objections were lodged, covering twenty different stops. During the course of an early hearing a committee was appointed by all represented at the proceedings to make an inspection of the stops to whose omission specific objection was made and to report its findings to the Public Service Commission. In this report no general objection is lodged to the whole scheme but rather an approval of the plan. However, the particular stops could be retained if this is found desirable without affecting the whole plan materially.

In addition to the objections to particular non-stop points, there have been some half-dozen general objections to the scheme as presented in its entirety. These objections have come from a labor organization, an association known as the People's League, and one or two individual objectors, of whom one is not a resident of the city of St. Louis.

Criticism of the proposed plan can be classified as follows: (1) Some passengers would be required to walk further; (2) there will be a diminution in real estate values at the affected corners; (3) at the eliminated stopping points the speed will be too great, causing more accidents; (4) the company will get the prin-

cipal advantage of the plan by reason of its ability to take off cars.

As to the first criticism, it has been shown in evidence that the average increased walking distance is about 300 ft., and that this affects only the persons living in the immediate vicinity of the eliminated stops, a comparatively small number. At the rate of 4 m.p.h., which is the average walking rate, 300 ft. will be covered in less than one minute. There can be little hardship in this short walk, and those making the walk will participate in the saving of time due to the elimination. In all large cities where rapid transit obtains, the stations are from three to four blocks apart, this being four and five times the distance between stops in the present proposed plan.

As to the diminution of real estate values, owners of real estate at the different corners have no vested interest in the operation of street railway cars. Their interests are at all times subordinate to the interest of the general public in its transportation facilities. A real estate owner cannot oppose his interest to the interest of the majority of the people. Whether or not street cars will continue to be operated in front of his property is a matter of chance, not of right. But aside from this question the diminution of real estate values is merely a surmise prompted by an overcautious imagination, as there seems to be no real reason why real estate should diminish in value either as to business or as to residential locations.

As to excessive speed, the speed of the cars passing over the non-stop points will be no greater than at any of the other places along the route. The evidence shows that even now one-fourth of the cars passing certain points do not stop at that point either for the reception or discharge of passengers. Therefore, the same condition that obtains now in practice will be put into effect in a more systematic manner.

As to the claim that the company will reap some financial advantage, the complainants have attempted to show that since the time for making the trip will be reduced the company will thus be enabled to give the same service with fewer cars and that there will be a saving in power and in wear and tear upon the cars. If this is true, it is a very urgent reason why the plan should be adopted. No one is bettered by economic waste.

Of course, there is no disposition on the part of the United Railways Company to do anything which would decrease riding on its cars. Its only hope for success is to use such methods as will increase its patronage, which can only be done by appealing to the convenience, pleasure and necessity of its patrons. It considers that in eliminating the stops, it would be doing something to save time of the great majority of its customers. The convenience of the public is its first and only consideration. If this proposed elimination is put into effect the speed at the non-stop points will not be any greater than at present. The time that will be saved will be that consumed in making the proposed eliminated stops.

The following letter from Peter Witt, Commissioner of Street Railways for the city of Cleveland, to Richard McCulloch, president United Railways of St. Louis, was submitted to show the attitude of the people regarding skip-stops in the former community:

"Replying to your letter in reference to the car-stop elimination, I am inclosing several [popular ballot] cards, which will show you the method employed here to put this plan in effect. The votes on every line showed a majority for the change, ranging from three to one on the short lines, to eleven to one on the long lines. We eliminated 47 per cent of the stops. The average distance between stops is 800 ft. We cut the time per

half-trip from two to eleven minutes. The only trouble we met with was from the property owners whose interests were affected. The car riders themselves registered no kicks, and so successful has been the plan that I am positive when I say to you that were we to go back to the old way with the slow time, the kicks and complaints would be many."

Comment in the recent report to the city of Detroit by Barclay Parsons & Klapp regarding the elimination of stops was also cited as follows: "In the earlier days of horse-car service it was not unusual for passengers to expect the cars to stop midway, or even at irregular intervals, along the block to suit the convenience of each individual householder or storekeeper. As the distances became greater and the demand for more rapid service grew, the rule of stopping only at corners became necessary. \* \* \* It is now recognized that rapid transit conditions affect such a large proportion of the traveling public that the inconvenience of the few, in walking short distances or in changing cars to complete their trip, is not only warranted, but necessitated by the growing density of traffic on the highways of our large cities."

## Pennsylvania Overhead Line Crossing Specifications

This Subject Has Received the Exhaustive Attention of a Committee Appointed in November, 1914—The Specifications Are Divided Into Nine Sections

As reported by R. P. Stevens, president Mahoning & Shenango Railway & Light Company, to the Pennsylvania Street Railway Association at its May meeting, a joint committee representing the different classes of utilities in interest has prepared for adoption by the Public Service Commission of Pennsylvania, a set of specifications covering the construction at crossings of overhead lines of public utilities. Mr. Stevens was the chairman of the committee of the association on a uniform crossing agreement. The specifications are the work of a committee appointed as a result of a conference held on Nov. 16, 1914, at Harrisburg at the request of F. Herbert Snow, chief of the bureau of engineering of the Public Service Commission. As a result of the discussion at the meeting the following committee was appointed: S. M. Viele, Pennsylvania Railroad; D. B. Heilman, Philadelphia & Reading Railway; J. S. Jenks, West Penn Traction Company; R. P. Stevens, Mahoning & Shenango Railway & Light Company; R. E. Chetwood, Western Union Telegraph Company; J. F. Skirrow, Postal Telegraph-Cable Company; Nathan Hayward, Pennsylvania Bell Telephone Company; J. F. Stockwell, Keystone Telephone Company of Philadelphia; Thomas Sproule, Philadelphia Electric Company; G. E. Wendle, Lycoming Edison Company, and Paul Spencer, United Gas Improvement Company, chairman. Beginning Dec. 1, 1914, meetings were held weekly in Philadelphia until the specifications were completed. In the work the committee had the assistance of a number of other experts.

As stated by the committee, the specifications are intended to cover crossings of overhead conductors of any utility and the overhead conductors of any other utility, or the tracks and right-of-way of railroads. They are, as far as possible, complete for all types of conductors and cover definitely the general requirements at the points of crossings, without stating the type of construction in such specific details as to limit it to any particular method. In its work the committee took under consideration other similar specifications, including those adopted by the National Electric Light

Association in 1911, which specifications were, with certain revisions, later adopted by the American Electric Railway Association; the specifications recently adopted by the Idaho Public Service Commission; those of the Illinois Public Service Commission and the Oregon Railroad Commission; the act relating to electrical construction, of the State of Washington; the specifications of the Pennsylvania Railroad and of the Association of Railway Telegraph Superintendents; the regulations of the Swiss government in reference to electrical installations, and the specifications established as standard practice of the *Verbandes Deutscher Elektrotechniker*.

The new specifications, which, with appendices, cover 165 pages of the size of those used in the A. E. R. A. engineering manual, are divided into nine sections covering the following subjects: (1) Definitions and classifications; (2) construction of power lines up to 5000 volts on crossing communication circuits and power lines up to 15,000 volts when crossing other power lines, also communication lines crossing over communication lines; (3) construction of power lines of over 5000 volts, crossing over communication lines and of power lines of over 15,000 volts when crossing other power lines; (4) "collinear" construction, that is, construction of one line parallel with an existing line, but on separate supports, and so placed in reference to the other that one line will be wholly or in part over the other; (5) construction of communication-line crossings over railroads, based upon specifications of the Association of Railway Telegraph Superintendents; (6) crossings of power lines of all voltages over railroads; (7) construction of overhead lines where crossing under railroad bridges; (8) underground construction at railroad crossings, and (9) appendices containing sag tables and diagrams, wood-pole specifications, various diagrams of line construction details, a method of calculating the strength of double cross-arms, tables of allowable working unit stresses in line construction, details of a typical crossing of a power line over a railroad, and tables of minimum clearances and of wind and ice loads.

From what has been said it is apparent that the recommended specifications contain a wealth of data and that unusual attention has been paid to definitions. The latter is especially important in the case where the recommendations will be used in formulating commission orders.

### "The Best Country Bus Route"

The latest recruiting appeal to be issued by the London General Omnibus Company takes the form of a striking and original form of panel bill as illustrated.

This slip, the color scheme of which is a tasteful black, yellow and light blue, is now being brought prominently

**FOLLOW THE BUSES TO THE FRONT**

**THE BEST COUNTRY ROUTE  
OF THE YEAR FOR MEN**

**BY BUS TO THE TRENCHES START NOW**

RECRUITING PLACARD ON LONDON BUSES

before the notice of London's countless thousands by being displayed conspicuously on the "General" buses, with the result, it is hoped, of further stimulating recruiting and impressing the public at large with the great need there is for an adequate supply of men.

### Improving Station Surroundings

When Allen & Peck, Inc., took over the operation of the Annapolis Short Line in 1912 the new management found that the vicinity of the station was hardly in consonance with the fine Colonial atmosphere which makes Annapolis a pleasing reminder of the past. A number of tumble-down buildings not only obscured the view of the near-by Court of Appeals, but gave the approach to the station a most uninviting appearance. It was therefore decided that the rental from the shacks could well be dispensed with as a contribution to civic improvement. The structures were torn down and replaced with turf and flowers with the results illustrated.

Thus the opening of "Short Line Park" not only cleared away several old unsightly buildings but virtually placed the Short Line on one of the main streets of the city and within a block of the group of State buildings. The improvement was in line with the rehabilitation of the Short Line, which included all new passenger equipment consisting of center-entrance all-steel cars, and change in motive power from a.c. to d.c.



ANNAPOLIS SHORT LINE—SCENES LIKE THIS WERE NO ATTRACTION FOR TRAVELERS



ANNAPOLIS SHORT LINE—THE WORTHY FOREGROUND OF MARYLAND'S COURT OF APPEALS TO-DAY



ANNAPOLIS SHORT LINE—A FORMER VIEW OF MARYLAND'S COURT OF APPEALS



ANNAPOLIS SHORT LINE—AN ELECTRIC RAILWAY'S MITE TOWARD THE CITY BEAUTIFUL—VIEW LOOKING TOWARD THE ANNAPOLIS TERMINAL TO-DAY

ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 to 8, 1915

# American Association News

ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 TO 8, 1915

Excellent Progress Is Being Made on the Program for the Convention—Booklets on the Itineraries of Convention Tours Are Being Distributed by Mr. McConnaughy

## CONVENTION PROGRAM PROGRESS

While it is still too early to give details of the program excellent progress is being made. A decision has been tentatively made to hold the American Association meetings in the morning and those of the affiliated associations in the afternoon.

Acting on local advice the executive committee has decided to hold the meetings in the building of the Native Sons of the Golden West located at 414 Mason Street. This building is the center of the hotel district and is admirably adapted for convention purposes. The original intention was to hold sessions at Inside Inn.

## THE CONVENTION TOURS

As announced on the "Association News" page last week, the itineraries of the convention tours have been distributed. They are contained in attractive booklets appropriately bound in red and blue respectively, the colors corresponding with the titles of the special tour trains. The booklets contain the complete schedules and much interesting information concerning the points to be visited en route. Even photographs of the special trains are included. The "Red Special" booklet is issued with the imprint of the New York Central Lines and the "Blue Special" booklet with that of the Pennsylvania Railroad. The text of both booklets shows that the most scrupulous care has been exercised in providing for every detail of convenience and comfort of the tourists. Both booklets are beautifully illustrated and contain maps in colors. Both contain the schedule of the "White Special," the one-way train, which leaves Chicago on the evening of Oct. 1, reaching San Francisco on the morning of Oct. 4.

Supplementing his statement, quoted last week, H. G. McConnaughy, director of transportation, states that copies of the booklets will be sent to all those who ask for them, such having been already sent to company members of the American and Manufacturers' Associations and to those who requested copies in advance. He directs attention particularly to the arrangement of stops on these tours, which have been designed to minimize tediousness. In the cities through which the special trains will travel the American Association is planning, at the request of the local railway companies, a series of meetings and entertainments which will make the tours an important part of the convention. Mr. McConnaughy predicts that every member who makes this trip and attends the convention will return with new ambitions, new ideas and new knowledge sufficient to return the investment tenfold. He thinks that the opportunity to absorb the spirit of the West, to test its hospitality and to examine its engineering achievements alone are worth the cost. He waxed enthusiastic over the beauties of the expositions at San Francisco and San Diego, quoting Edwin Markham's description of the former as follows: "I have seen to-night the greatest revelation of beauty that was ever seen on earth. I say this, meaning it literally and with full regard for all that is known of ancient art and architecture, and all that the modern world has heretofore seen of glory and grandeur. I have seen beauty that will give the world new standards of art and a joy in loveliness never before reached. This is what I have seen—

the courts and buildings of the Panama-Pacific Exposition illuminated at night."

In closing Mr. McConnaughy directs attention to the notes under the heading "Resourcefulness," which appears on the front page of the *Brill Magazine* for June, raising the query as to the number of resourceful men that are in the railway association and implying an important connection between resourcefulness and attendance at the convention.

## ENGINEERING ASSOCIATION STANDARDS COMMITTEE

A largely attended meeting of this committee was held in New York on July 29 and 30 to review the work of the technical committees for the year. The members present were: H. H. Adams, Chicago, Ill., chairman; C. F. Bedwell, Newark, N. J.; C. H. Clark, Cleveland, Ohio; W. G. Gove, Brooklyn, N. Y.; J. H. Hanna, Washington, D. C.; C. S. Kimball, Washington, D. C.; F. R. Phillips, Pittsburgh, Pa.; A. S. Richey, Worcester, Mass.; Martin Schreiber, Newark, N. J., and J. W. Welsh, Pittsburgh, Pa. E. B. Katté was represented by H. A. Currie, New York, N. Y. There were also present by invitation R. C. Cram, Brooklyn, N. Y.; W. E. Johnson, Brooklyn, N. Y.; A. B. Stitzer, Philadelphia, Pa., and Frank Kingsley and H. H. Norris, *ELECTRIC RAILWAY JOURNAL*. Secretaries E. B. Burritt and C. W. Stocks also attended the sessions.

The committee considered in detail the recommendations of the technical committees in so far as they affect the association standards and a number of valuable reports were adopted for approval by the association. The material submitted to the committee showed that a remarkably fine year's work had been done and the engineering manual will be greatly enriched by the results.

## Street Railway for Canton, China, Proposed

The construction of a street railway system in Canton is being considered by the provincial authorities, reports Consul George E. Anderson, Hongkong, China, and plans have been drawn for a line connecting the stations of the Canton & Hankow Railway and the Kowloon-Canton Railway, running through a populous section of the city.

The proposed line is projected by General Lung, Military Governor of Kwangtung Province, in connection with Chinese capitalists in Hongkong, and the plans call for the construction of a little less than 6 miles of street railway along a route which will permit the use of a considerable portion of the old wall of Canton. It is proposed to construct the line by means of a company for which the provincial government will furnish half the funds.

Plans for the rolling stock are not yet complete, but the general idea seems to be to buy motors and steel parts of cars abroad, completing the cars in Canton or Hongkong, present high freight rates rendering the purchase of complete cars abroad at this time a matter of difficulty. It is thought that the line as projected can be started with an initial outlay of about \$100,000.



## COMMUNICATIONS

### Specifications for Gears and Pinions

THE METROPOLITAN WEST SIDE ELEVATED RAILWAY COMPANY

CHICAGO, ILL., July 26, 1915.

To the Editors:

I have been interested in the paper on "Railway Motor Gearing" read by W. L. Allen before the last meeting of the Central Electric Railway Association, an abstract of which was given in the *ELECTRIC RAILWAY JOURNAL* for June 26, page 1201, and in the further remarks by Mr. Allen in the issue of July 17, page 111.

On the Chicago Elevated Railroads very little trouble has been experienced from the breakage of gears, but pinions have caused considerable trouble. As a rule gears remain in service until the wear on the teeth makes their removal necessary. Pinions show widely varying results, some failing shortly after being placed in service and some giving very long life. As reliability of service and elimination of failures were far more important than the value of a few pinions we adopted the policy of installing new pinions at each general overhauling (approximately every 75,000 miles) whether the pinion removed showed any appreciable wear or not. Even this did not eliminate failures on the road, as some pinions failed before making the general overhauling mileage.

We believe that buying gears and pinions under specifications and testing each order will assist in working out a specification and in developing a material which will stand up under the requirements of heavy service. The specification will give us something to work toward. If the first specification does not prove satisfactory, changes can be made. The records of the chemical and physical characteristics of the material and method of treating different lots of pinions will enable the railway companies and the manufacturers to intelligently follow the problem until it is satisfactorily solved.

H. A. JOHNSON, Master Mechanic.

THE CAPITAL TRACTION COMPANY

WASHINGTON, D. C., July 28, 1915.

To the Editors:

I have read with interest W. H. Allen's paper on "Specification for Gears and Pinions" in the issue of the *ELECTRIC RAILWAY JOURNAL* for July 17.

In the last few years the untreated gears and pinions have to a large extent been superseded by two classes of gears and pinions which may be properly classified as "heat-treated" and "case-hardened." When the untreated material was in general use several of the larger companies had specifications for the purchase of gears and pinions, but, so far as I have been able to find out, none of the railway companies have specifications for either the heat-treated or case-hardened gears and pinions, although several companies are preparing specifications at this time.

This was one of the subjects assigned the equipment committee of the American Electric Railway Engineering Association, and a preliminary specification has been prepared to be presented at the convention in October. In the preparation of this specification the committee had the assistance of the manufacturers, and I am informed that they would welcome a reasonable specification. In preparing a specification at this time the question of treatment should be left to the manufacturer and the physical properties which the product is to have after treatment should be specified. The development of the high-grade gears and pinions has been so rapid that it is only reasonable to

expect that they will continue to improve and that a specification prepared at this time will have to be revised from time to time.

In my opinion there is no reason for not having specifications for gears and pinions, but some standard specification should be adopted that could be followed by all the manufacturers.

The purchase of gears and pinions to specification would increase the cost if the specification required the manufacturer to change his method. Care should therefore be taken to prepare a specification that would secure a satisfactory material and not impose any unnecessary hardship on the manufacturer.

The manufacturer would not be relieved by the specification from responsibility for breakage or poor wear, but wherever such did occur an investigation would locate the trouble. Although I am not a manufacturer, I must admit that the manufacturer is not responsible for all of the broken or badly-worn gears. The care of the equipment has much to do with the life of gears and pinions.

As this is a subject of considerable interest at this time, the equipment committee of the American Electric Railway Engineering Association would appreciate the assistance of the members in preparing a standard specification for gears and pinions that could be used by all the member companies. If a standard is adopted it will be an advantage to the manufacturer as well as to the purchaser, and if properly prepared its use should not increase the cost, but might, on the contrary, reduce it.

R. H. DALGLEISH, Engineer of Equipment.

### Cause of Thick and Thin Wheel Flanges

BUFFALO, LOCKPORT & ROCHESTER RAILWAY COMPANY

ROCHESTER, N. Y., July 20, 1915.

To the Editors:

In an article published in your issue of May 29, 1915, page 1037, over the signature of M. M. Lloyd of Des Moines, the statement is made that "the principal cause of thick and thin flange wear on rolled-steel wheels is the difference of the wearing quality of the metal in the wheels." In this connection it seems only fair to call to the attention of your readers the conclusions of last year's committee on equipment, along the same line of investigation.

On page 280 of the 1914 proceedings of the American Electric Railway Engineering Association, in the report of the committee on equipment, the committee states: "While the number of wheels included in the reports was not large enough to serve as a basis for any general conclusions, a surprising lack of positive evidence on this point was manifest and the figures seemed to show, so far as they showed anything, that there was not sufficient justification for a strong insistence on mating by carbon content." This conclusion was reached after the examination of records of a comparatively small number of wheels taken at random from among records of service of several thousand wheels of all manufactures. The complete lack of uniformity of performance of wheels of similar chemical composition led to the conclusion above quoted, and it would not be too much to say that any chemistry falling within the limits of the standard specifications of the association has been shown to give good service."

Mr. Lloyd's statement "That it is possible to delay wearing of sharp flanges by checking up the trucks for square and by taping the wheels to be sure that the diameter is exactly the same" seems to contain the real kernel of demonstrated truth in the matter.

The writer has personally known of a number of

cases where phenomenally large mileage was obtained by calipering the wheels without removing them from the car, and placing abrasive brakeshoes against the larger wheels. These experiments, while comparatively few in number, nevertheless seem to demonstrate very clearly that if the two wheels on one axle could be kept at exactly the same diameter throughout their life, and further assuming that trucks were in square and that track curvature was approximately the same in both directions, the wheels could be worn to the limit of wear groove without necessity of turning on account of sharp flanges.

The manufacturers of wheels have done a great deal to perfect their product and have shown a very open-minded policy in dealing with the American Electric Railway Engineering Association, as well as the individual users of wheels, and it would seem that in common justice to them the chemistry and method of manufacture of wheels should not be held responsible for results which are in practically all cases due to the mechanical practice of the user of the wheel.

JAMES P. BARNES, General Manager.

### 99.2 Per Cent of Westchester Trains Are on Time

The accompanying table shows the remarkable record for punctuality which the New York, Westchester & Boston Railway has maintained during the last twelve months ending June 30, 1915. These figures are based on the monthly reports submitted to the Public Service Commission of New York, Second District.

It will be seen from the table that the maximum percentage of trains on time for any month was 99.6 per cent in March, the minimum 98.4 per cent in April. The average punctuality for the twelve months was 99.2 per cent. The average lateness in minutes per train run varied from 0.23 minute in April to 0.04 minute in February and March.

It will be noticed that from 64 to 90 per cent of the delays are listed under the column headed "waiting for other railroads." This large proportion is due to delays

Month	Trains Run	Trains Late	Trains on Time	Per Cent on Time	Minutes Late	Av. Minutes Late per Train Run	Average Minutes Late per Delay	PRINCIPAL CAUSES OF DELAY, IN PER CENT				
								Equipment	Waiting, Other Divisions	Waiting for Other Railroads	Signals	Other Causes
July '14.	6,319	42	6,277	99.3	351	0.05	9	4	14	64	18	0
Aug. ....	6,300	88	6,212	98.6	1408	0.22	16	1	8	64	15	12
Sept. ....	6,113	35	6,078	99.4	370	0.06	10	5	8	86	0	3
Oct. ....	6,320	48	6,272	99.2	499	0.06	8	1	20	79	0	0
Nov. ....	6,114	48	6,049	98.9	666	0.11	10	1	10	79	0	10
Dec. ....	6,320	60	6,260	99.1	734	0.11	12	1	10	68	8	9
Jan., '15.	6,318	51	6,267	99.2	400	0.06	4	0	12	80	0	6
Feb. ....	5,706	28	5,678	99.5	234	0.04	8	0	11	83	0	3
Mar. ....	6,320	24	6,296	99.6	238	0.04	9	0	5	87	0	8
April. ....	6,109	97	6,012	98.4	1442	0.23	15	1	3	72	0	24
May. ....	6,315	49	6,266	99.2	694	0.11	14	0	8	90	0	2
June. ....	6,297	40	6,257	99.4	342	0.05	8	0	5	77	0	18
74,551		627	73,924	99.2 per cent for year.								

occasioned by the opening of a drawbridge over the Bronx River, where the trains of the New York, Westchester & Boston Railway run over the tracks of the New York, New Haven & Hartford Railroad, a condition over which the mechanical and operating departments naturally have no control.

The next most frequent special source of delays, classified as "waiting, other divisions," is due to delay in the interchange of passengers between local and express trains at East Third Street Station, Mount Vernon, where both classes of trains are regularly scheduled through the day to arrive at the same minute and wait for each other's arrival.

One of the chief causes for the excellent showing in punctuality on the New York, Westchester & Boston

Railway is ascribed to the policy maintained of scrupulously examining the defects in equipment or other sources of delay and their causes when they first occur in order to insure that a recurrence of the same kind of a delay will be prevented.

### Women Conductors in Glasgow

It is not often that this paper publishes a view of a group of conductors on a transportation system. The accompanying engraving, however, seems to be so interesting as to warrant its publication. A few months ago this paper described the experiment made in Glasgow with women conductors. At first two conductors



GROUP OF WOMEN CONDUCTORS, GLASGOW TRAMWAYS

were put in service, and the result with women has proved so satisfactory that the Corporation Tramways have employed a number of women to take the place of the men who are now at the front during the war. A group photograph of the women conductors employed on the system was taken some time ago, and it is reproduced herewith.

### Railway Power Rates in Chicago

On page 138 of the issue of the ELECTRIC RAILWAY JOURNAL for July 24 certain information regarding the operation of the contracts between the Chicago Surface Lines and the Commonwealth Edison Company were published. The prices for energy there quoted, for the years 1910 to 1913 inclusive, were the prices under the old contract. While these were the prices originally paid, the 1913 contract was retroactive and, as adjusted under the new contract, the rates actually paid were as follows: 1909, 0.711 cent; 1910, 0.720 cent; 1911, 0.713 cent; 1912, 0.725 cent, and 1913, 0.742 cent.

### Warning to Trespassers

Posters entitled, "Why the Public Should Keep Off the Railroad Tracks," are prominently displayed in the passenger stations of the Michigan Central Railroad. These posters take the form of maps of the railroad system upon which is indicated, by different colored spots, the location of each accident during the year. A key on the poster indicates that spots of one color show that the passengers were injured and spots of another color that the accidents were fatal. The four margins of the poster are taken up by photographs of the different types of trespassers on railroad rights-of-way, and the danger to which they subject themselves.

# 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.)*

## Some Experiences with Field Control

BY H. M. LLOYD, EQUIPMENT ENGINEER BRITISH COLUMBIA  
ELECTRIC RAILWAY, VANCOUVER, B. C.

The British Columbia Electric Railway has in operation field control on eleven passenger, three combination and seven express cars operated usually in two or three-car trains, and occasionally in five-car trains, including a couple of trailers. These cars are run almost exclusively on the 64-mile line between New Westminster and Chilliwack. The equipments per car comprise four Westinghouse No. 333-C2 115 to 125-hp. field-control motors geared 20:57. At present the trolley potential is 630 volts, fed from five substations about 12 miles apart, and the minimum voltage is sometimes 400 volts. It is intended, when traffic warrants the change, to raise the potential to 1200 volts.

The car equipment will be readily adapted for this increase in voltage by changing resistance and control connections.

The track over which these equipments operate has a maximum grade of 2.7 per cent and a maximum curvature of 10 deg., but a large part of the track is level and straight.

The running time between New Westminster and Chilliwack for passenger trains with about thirty stops is two hours and forty minutes and for milk trains about three hours. In operating over the line passenger train speed ranges from 20 m.p.h. on grades and curves to 50 m.p.h. or more on level tangents. The field control is used on the heavy grades and during acceleration periods.

In one test a 106-ton train, comprising two motor cars and one trailer, in regular service averaged 7.8 kw-hr. per mile with a maximum draft on the substations of not more than 1000 amp. On the other hand, a similar train of three motor cars with twelve 75-hp. motors of the same gear ratio but without field control required starting currents as high as 1200 amp. to make the same schedule.

The most marked advantage of field control was shown in ascending the 2.7 per cent grade. This grade is about 4 miles long and includes some sharp curves. With the full field the train under test made a speed of approximately 15 m.p.h. while drawing 720 amp. On changing over to the tap field the current jumped to 920 amp., with a consequent drop of line voltage. The resultant speed was only about 18 m.p.h. A heavily-loaded five-car excursion train with three motor cars will average about 10 to 12 m.p.h. up this grade on full field. Thus it is clear that field control increases the capacity of the line.

Another advantageous feature of field control for us is low speed running through rock cuts and around sharp curves. Here we run economically on tap field with the motors in series at about 18 m.p.h., whereas the old control for the same rate of speed would have involved continual cutting in and out and consequent resistance losses.

In starting trains with field control the acceleration is also much smoother than without it, the change from series tap field to parallel full field being accomplished

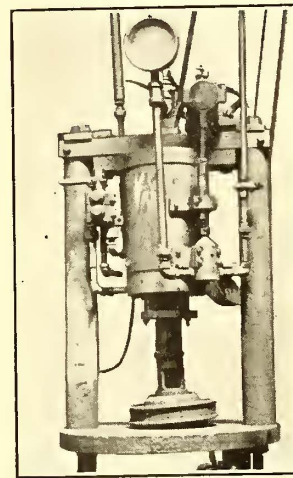
without jerking. The low starting speed is found especially useful on milk trains in running up to the milk stands to take on cans.

The maintenance cost of field-control motors and of multiple-unit control is also less than that of other motors because they are not subjected to the strain of excessive starting currents. For the same ton-miles operated the feeder losses and the strain on the substation equipment are correspondingly reduced.

## A Hydraulic Bearing-Broaching Machine

BY C. M. FEIST, MASTER MECHANIC SIOUX CITY (IOWA)  
SERVICE COMPANY

Increased bearing wear averaging approximately 25 per cent more than that for bearings that are simply turned, is obtained by the Sioux City Service Company's mechanical department through the use of a hydraulic broaching machine. While it was designed primarily



SIOUX CITY HYDRAULIC  
BROACHING MACHINE

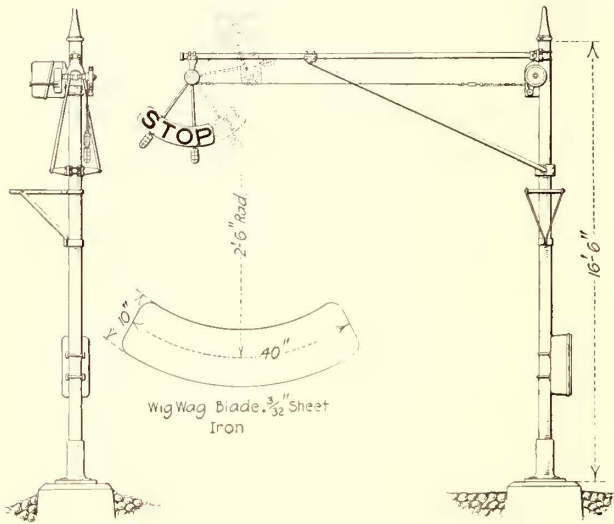
for this purpose, the machine is also used to press bearings into the solid-bearing type motor housings. After the bearing has been pressed in position a tapered broaching mandrel of the proper size is fitted to the plunger and forced into the bearing. All bearings are babbitted and machined in the usual manner, but in the latter process they are left approximately 1/64 in. under size. After the broaching mandrel has been forced through the bearing the babbitt is condensed so that the diameter is reduced to the correct size.

As shown in the accompanying illustration, the broaching machine comprises a substantially-built frame with a heavy circular bedplate upon which the bearings to be broached or pressed into housings are placed. A hollow plunger fitted to an old air-brake cylinder connected to the shop compressed-air system and the city water supply, furnishes the necessary pressure. City water pressure of 90 lb. per square inch may be obtained, but when more is necessary a small belt-driven hydraulic pump mounted on the upper part of the frame and connected to the cylinder is brought into operation. With this, pressures up to 30 tons or 40 tons are obtainable if required. A gage connected to the cylinder and mounted in plain view indicates what pressure is being used. After broaching or pressing has been accomplished, the plunger is raised to the normal position by cutting off the water supply and injecting air pressure beneath the piston head through a standard motorman's valve. This is a home-made machine which was not very expensive to build and has paid for itself many times over in improved bearings.

## A Home-Made Wigwag Signal

BY F. T. VANATTA, CHIEF ELECTRICIAN NORTHWESTERN PACIFIC RAILROAD, SAUSALITO, CAL.

Last year the writer designed a wigwag signal of the type illustrated, of which five have already been installed at crossings on the Northwestern Pacific Railroad. Unlike other wigwag signals, which wigwag only in case of danger, this one has three positions: First, normal clear; second, wigwag in top horizontal position for danger with the apparatus in perfect condition, and third, wigwag dropped permanently to danger if there is any defect in the control apparatus.



ASSEMBLY AND DETAIL OF BLADE OF WIGWAG SIGNAL FOR HIGHWAY CROSSING

There is, therefore, no danger of false clear indications. The sheet-iron stop shield is about 40 in. long and 10 in. wide, and carries for night use two 40-watt lamps in marine fixtures with red outer globes. These lamps burn only during the wigwag period. The mechanism which operates the banner and lights is of the automatic type furnished by the General Railway Signal Company, a short arm with an eccentric thereon having



AUTOMATIC WIGWAG CROSSING INSTALLED AT SAN ANSELMO, CAL.

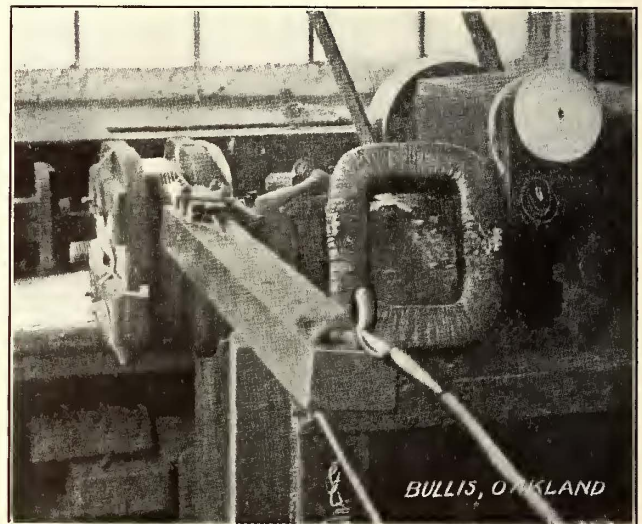
been added to secure the wigwag movement. This mechanism is operated from the regular track circuits such as are used for ordinary crossing-bell operation, or it may be operated by hand. For example, at Petaluma station, which is located between two signals, a train going one way sets the first signal automatically but must wait for the station master to set the signal at the

outgoing end. At night, however, when there is no station agent on duty these signals are automatic throughout in this operation.

## Rejuvenating Overloaded Motors

BY W. P. JACKSON, MASTER MECHANIC SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS

The San Francisco-Oakland Terminal Railways have 380 GE-70 motors in city service on two and four-motor equipments averaging about eight stops per mile on a 10-m.p.h. schedule. These motors are rated at 40 hp on 500 volts, and their mechanical construction and electrical characteristics compare very favorably with some of the more modern type. Up to about four years ago these motors were carrying about 13,000 lb. light with 22:64 gear ratio on 30-in. wheels. Owing to the addition of straight air-brake equipments and fenders, and to the lengthening and rebuilding of a number of cars, the average load on these motors was increased until operating temperatures of 80 to 90 deg. Cent. were not uncommon. Maintenance of armatures and field coils became a serious problem, especially on sixty-eight



WIRE IN PROCESS OF APPLICATION ON FIELD COILS; ALSO ONE COMPLETED FIELD COIL WITH HEATPROOF INSULATION

two-motor equipments on which the weight of body and equipment, exclusive of passengers, had been increased to 34,200 lb.

Thus it became a daily occurrence to have solder thrown off from commutators or bands. In fact, conditions became so acute that a radical change of some sort was imperative. Apparently three courses were open: To purchase new motors of larger capacity; to modify operating schedules to conform more nearly to the capacity of the motors in use; or to rehabilitate the motors themselves in such a manner that existing schedules could be met at a lower temperature in field and armature windings, and otherwise to make the motor as near heatproof as possible. The last course was taken, and for two years the work was carried on during the course of regular maintenance and as a charge against the same.

The bottom handhole plate on the commutator end and the top handhole plate on the pinion end were perforated as closely as possible with 1/2-in. holes. In this way free circulation of air was obtained through the interior of the motor case whether the car was running or standing still. The handhole plate on the pinion end

was provided with a sheet-metal guard over the perforations. While these motors are allowed to run open the year round, we have never had any cases of motor trouble due to the entry of water, street dirt or other foreign substances.

When armatures are rewound, the end windings are left as open as possible. The bands are soldered with pure tin, and the hoods are left off of both ends to allow free circulation of air around the coils and leads to the commutator. Delta tape is used as insulation under the bands on the core and end windings, while the face of the leads adjacent to the brushes receives several coats of a mixture of shellac and metallic brown. This mixture has given excellent results as a resistant to flashing and does not carbonize under high temperature. The same mixture is used as a coating on the bead ring and string band back of the commutator.

After the armatures have been in service from 60,000 to 75,000 miles they are removed during the course of motor overhauling, blown out thoroughly and otherwise cleaned up and placed in an oven for twelve hours at 100 deg. Cent. If the coils are loose under the bands, the armature is rebanded while hot and then dipped in black elastic baking varnish, allowing sufficient time for the varnish to penetrate thoroughly all parts of the winding. The armature is then drained to receive a further baking of twenty-four hours at 100 deg. Cent.

Field coils are wound with No. 3 Deltabeston wire heated in an oven at 100 deg. Cent. and dipped while hot in black elastic baking varnish. After draining and cooling a heatproof plastic composition is smoothed over the outside turns and the coil is served with a half lap layer of pure asbestos-woven tape, 20 mils thick. This tape has good mechanical strength and is drawn very tightly around the windings. The coil is then heated a second time to 100 deg. Cent. and dipped, following which it is served with one layer of Delta tape 20 mils thick and 1 in. wide.

Three screw terminals with copper conducting strips cast in are then fastened to the coil with asbestos twine, the terminals being insulated from the coils with two thicknesses of 20 mils Delta sheeting. The coil then receives a final wrapping of asbestos-woven tape, is heated for the third time, and after dipping is returned to the oven for a baking of forty-eight hours at 100 deg. Cent. All field coils receive the usual transformer tests for "shorts."

Not one of the coils made in the manner described has ever been removed from the motors, and they are standing up under conditions where an ordinary impregnated coil will not last sixty days. The cost of manufacture is \$20 each.

The field connections in the motor case are made with No. 4 flexible strand, soldered into terminals made of scrap No. 0000, solid feed wire turned to 1/4 in. diameter for the field terminal, with a hole drilled in the full-sized end for the lead wire.

As a further and not inconsiderable help to these motors we are gradually changing the gear ratio in the heavier cars from 22 : 64 to 19 : 67. The installation of armorized material has a tendency to hold up the maintenance figure on these motors to a certain extent.

During the year 1912 the monthly troubles on these rejuvenated motors averaged as follows:

Armatures, grounded .....	21
Armatures, open circuit .....	15
Fields, grounded .....	10
Fields, open circuit .....	5
Fields, weak .....	25
Maintenance per 1000 motor-miles.....	\$1.30

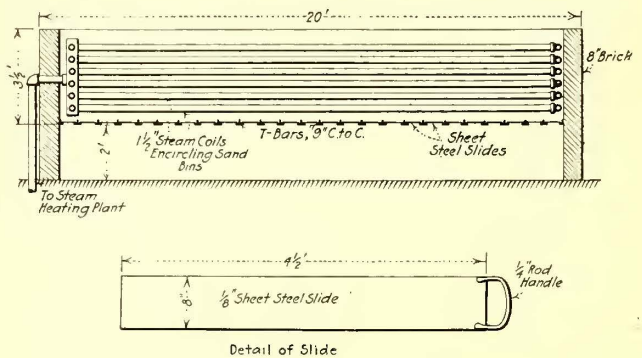
During the past fiscal year the monthly average of troubles has been:

Armatures, grounded .....	5
Armatures, open circuit .....	8
Field troubles (all kinds).....	10
Maintenance per 1000 motor-miles.....	\$0.96

The maintenance given includes gears, pinions, gear cases, armatures and axle bearings, suspension, and all parts of the motor proper. These 380 motors make an average of 1,476,000 motor-miles per month.

### Drying Sand in 7-Yd. Batches

Small-capacity sand dryers require more or less constant attention and, while they are entirely satisfactory at carhouses where labor is always available, where this condition does not prevail a man must be detailed to attend to the work. The Sioux City (Iowa) Service Company eliminated this objection in Carhouse C, where the running repair force was only sufficient to take care of the equipment by providing a sand dryer of large capacity when the building was constructed. Aside from its capacity this dryer is unique in several particulars. It is installed in a room set aside for the storage of wet and dry sand as well as the drying plant. This room is oblong in plan and one wall of the sand dryer serves as one side of the wet sand bin, while the other side of the dryer is open so that the dry sand may be cast into the storage space at the opposite end of the room. As indicated in the accompanying illus-



SIoux CITY 7-YD. SAND DRYER

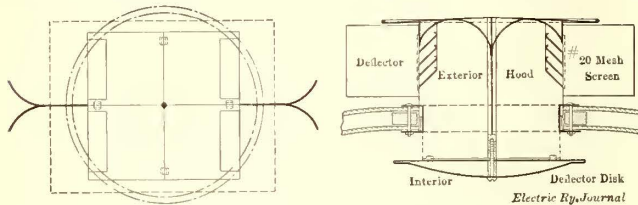
tration, the bin is formed of four 8-in. brick walls with concrete coping, and it is 20 ft. long by 4 1/2 ft. wide over all, and 3 1/2 ft. deep. The floor of the bin is 2 ft. above the building floor and is formed of T-bars, the legs of which support sheet-steel slides. The top of the dryer bin walls is only 5 1/2 ft. above the floor level, hence the wet sand may be readily cast into the dryer. One and one-half-inch steam pipe coils encircle the interior of the dryer and are connected to the building heating plant. Comparatively little sand is used during the summer months, hence steam heat is available when most dry sand is needed.

After the dryer bin has been filled with wet sand, holes are poked into the sand at frequent intervals with a broom handle. These hasten the drying process by permitting the escape of moisture. When the sand is dry the sheet-steel slides are withdrawn and the dry sand falls to the floor beneath the bin. From this point the sand is screened and cast into the dry-sand storage space. From the foregoing it will be seen that the work of casting sand into the bin is one process, and between that and the screening of the dry sand quite an interval may elapse, hence the dryer needs attention only when a 7-yd. batch is exhausted. This type of dryer has been very effective and the cost is relatively low when the dryer is installed at the time the building is constructed. Its principal advantage, however, is that it requires little attention and drying sand in it makes a fine rainy-day job for an outside man.

## Long Island Railroad Installs Double Ventilators

The accompanying cuts show in detail the system of ventilation used on the twenty new steel trail cars recently placed in operation on the Long Island Railroad, which were described in the *ELECTRIC RAILWAY JOURNAL* of July 24.

The ventilators, provided for these cars by the Automatic Ventilator Company, New York, N. Y., are of a new design, but embody the well-known "intake and exhaust" principle of this system. This device, known as type "E-B," is installed on the center line of an almost flat roof and consists of an exterior hood,



LONG ISLAND VENTILATORS—BOTTOM VIEW AND CROSS-SECTION

divided into four separate compartments, two exterior deflectors and an interior disk. When the car is in motion air is arrested by the exterior deflectors and directed into the two forward compartments (one on either side) of the hood and thence down to the interior disk, and is deflected outward and upward across the ceiling of the car, where it is sufficiently diffused to prevent a draught on the passengers. At the rear of the exterior deflectors is set up a partial vacuum caused by the rapid motion of the car, which induces a strong "exhaust" at the two rear ports of the hood and at the rear of the interior disk. Each ventilator provides two intakes and two exhausts and is therefore equal to two separate ventilators.

## Cleaning Air for Ventilating Generators and Transformers

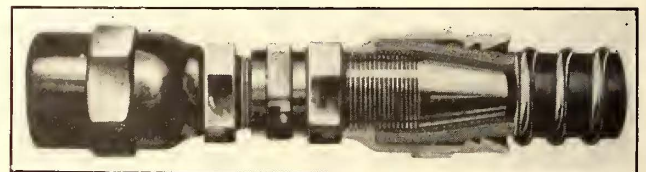
In the August issue of the *General Electric Review*, William Baum, electrical engineer General Electric Company, directs attention to the importance of cleansing and cooling the air used for the ventilation of turbo-generators and air-blast transformers. This is desirable because the accumulation of dirt means rapid deterioration and frequent cleaning. He considers the requirements of air filters to be as follows: Complete removal of suspended matter, minimum loss in pressure due to air passing through the clean and soiled filtering medium, minimum dimensions, simple construction with means for convenient removal and cleaning of the filtering medium, durable filtering medium which does not require too frequent removal and minimum fire risk. He discusses the available filters with respect to these requirements, describing typical filters of the wet-surface and dry-surface types. Air washers are also discussed with the statement that their prime object is to clean the air, the humidifying function being secondary. The cooling effect of the water is not appreciable. No insulation troubles have been experienced due to the effect of the saturated air upon generator windings. Some fifty-eight air washers have been installed in the United States for the ventilation of generators of an average size suitable for a 10,000-kw. generator. It appears that air washers are used for larger generators, dry-surface filters for small ones, and wet-surface filters for medium sizes. Air washers consist of the following

essential parts: spray chambers, spray nozzles and piping, eliminator or baffle plates, strainer, settling tank and water circulating system with pump. The difference in the various makes is principally in the design and arrangement of the nozzle. Mr. Baum describes a number of typical air washers and gives tables and curves of space required and of unit costs. The space requirements are as follows: Air washers, 0.17 cu. ft. per cubic foot per minute; dry-surface filters, 0.10 cu. ft. per cubic foot per minute, and wet-surface filters, 0.09 cu. ft. per cubic foot per minute. In sizes from 30,000 to 60,000 cu. ft. per minute capacity air washers and wet-surface filters average in first cost about 3 cents per cubic foot per minute, washers being slightly cheaper as the size increases. Dry-surface filters cost about 1½ cents per cubic foot per minute. In all types the unit cost increases rapidly with decrease in size.

The general conclusions are as follows: For generators up to about 5000-kw., dry-surface filters may be recommended on account of low first cost, and if the air is not too dirty, their application is of advantage in dry, cold climates. They require careful attention and handling. Wet-surface filters, which have been found successful in England, have not yet been introduced in this country. Their field of application is for generators above 5000-kw. in size. The tendency toward the installation of large turbo-generator units will undoubtedly increase the application of air washers or humidifiers in preference to other types of air-cleaning apparatus. In dry, hot localities the cooling effect of air washers is appreciable. Special precautions are necessary to prevent freezing in winter.

## Easily Applied Hose Coupling

An air, steam or water hose coupling, so designed as not to decrease the area of the hose connection, has recently been placed on the market by the National Hose Coupling Company, Chicago. It is furnished with a malleable-iron hose socket which fits over the hose and which is sufficiently corrugated on the inside to provide a positive grip when the hose is expanded inside it. A steel taper expander screws into the socket containing



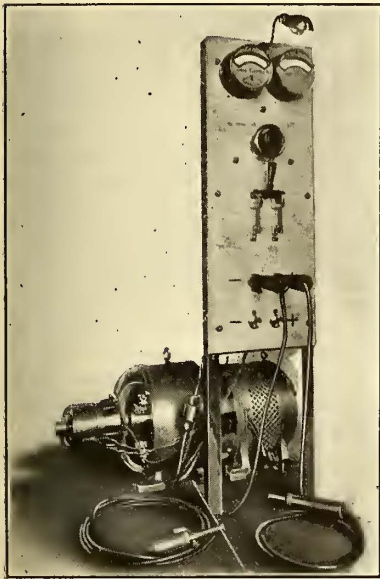
HOSE COUPLING WITH SECTION CUT AWAY TO SHOW CONSTRUCTION

the hose and the latter is thus forced outward and into position. The area of the opening in the expander is the same as that of the hose, so that no obstruction to the flow is introduced. Application of the hose connection requires only a few turns with an ordinary hand wrench, and this makes it especially advantageous for use in connection with air-brake hose. The coupling is being manufactured in all standard sizes.

Willy Lamot, Antwerp, Belgium, whose present address is Shardhighs, Halstead, England, reports the creation of an organization to introduce into Belgium as soon as the war is over all American products and manufactures and to employ as agents, representatives, etc., a number of Belgian manufacturers and business men who are prepared to give the necessary guarantees as agents and dealers.

## Compact Arc-Welding Outfit

An arc-welding outfit of the motor-generator type, which possesses to an unusual degree the qualities of compactness and lightness, has recently been brought out by the Lincoln Electric Company, Cleveland, Ohio. It has been designed with the view of establishing distinctive features in economy of power consumption,



COMPLETE ARC WELDING OUTFIT

simplicity of operation and reliability of service. These features are obtained largely by the fact that the motor-generator is so designed as to generate at all times exactly the voltage required by the arc and in addition, give a current which is practically constant. In consequence, there is no need for resistance in the circuit to cut down the voltage, and the size and weight of the machine is reduced to the minimum necessary for the work in hand. Regulation is effected by special windings in the generator and by a simplified method of control which is easily grasped in a very short time by any reasonably intelligent operator. This is considered to be of utmost importance as most autogenous welding is done by men who are neither electricians nor mechanics, and since labor is a great factor in the cost of welding the machine ought to be so simple that it is not necessary to have a highly skilled man to do the work.

The Lincoln arc welder has been designed to stand long, heavy duty and to carry overloads without damage to the machine, as emergency service is frequently demanded in arc-welding plants. Every motor-generator is operated in the factory before shipment for five hours under a continuous make-and-break test in which the make and break at the rated output of 150 amp. occurs at least fifteen times per minute, and under this test the temperature rise is guaranteed not to exceed 40 deg. C. in the windings and 55 deg. C. at the commutator. Naturally, this conservative method of rating and the severe service test insures a liberal margin of safety in operation, both under normal and abnormal operating conditions.

Owing to the fact that no power is wasted in resistance banks the demand for current is small, and in ordinary service the Lincoln welder can be operated on any power line large enough to carry a 10-hp. motor. This permits the installation of the outfit at almost any point in a shop where there is a power line, and if desired the machine may be made portable and connected wherever the exigencies of the work demand it. In operation the machine is thoroughly flexible, and any number of them may be operated individually or in parallel. In fact, an operator can, without the services of an electrician, connect three 150-amp. plants in parallel to get 450 amp. for heavy carbon electrode work, and can then individualize the plants within a few minutes' time.

Aside from providing the feature of portability the

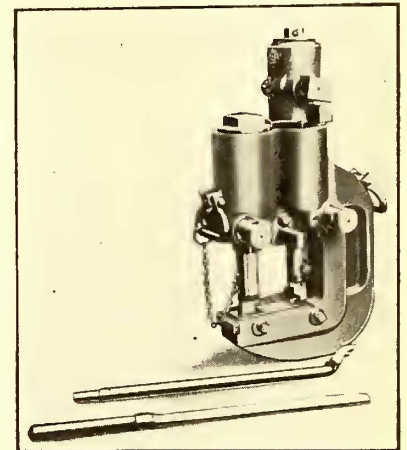
small size of each plant limits the expenditure of money invested in welding equipment to a proper basis in proportion to the amount of work that is actually done. Where there is sufficient work to require more than one operator a separate unit is installed. In large railway shops where the time that is allowed to do work is limited and an accident to the welding plant would hold up the rest of the organization, the installation of individual welders serves as a form of insurance against the loss that would be inevitable in case a total shut-down occurred.

## Hydraulic Punch for Track Spike Slots

A new hydraulic punch for cutting out at one setting two slots or notches for spikes in flanges of railroad or conductor rails has been brought out by the Watson-Stillman Company, Aldene, N. J. The advantages of this tool are that two holes can be punched at one operation on opposite sides of the rail in exact alignment, thus saving much of the time usually consumed in laying out centers and changing the punch from one side of the rail to the other. The machine makes an efficient tool for use by unskilled labor.

From the accompanying illustration it will be seen that one punch is attached to a chain. This punch is removed and the tool is placed against the rail. The loose punch is then inserted in place and the punches are then run down to the rail by pinions, meshing into racks on the rams. A few strokes of the pump lever completes the operation, which takes less than two minutes and but little effort. The punches are pulled back by a rack and pinion movement.

The punch is built compactly and is so designed that the greatest strength is obtained with the least weight. Consequently, it may be easily and quickly handled when time is a factor. The working parts are readily accessible for cleaning and the punches and dies are removable, thus providing for sharpening and renewal.



VIEW OF TRACK SPIKE SLOT PUNCH

## Silica-Graphite Paint for Steam Boilers

A practice that is gaining recognition in power plants is the use of graphite paint for the inner surface of steam boiler drums. This is said to afford protection against pitting. For a number of years the manufacturers of the paint have coated the steam drums of five B. & W. boilers developing 1800 hp., and as a result the drums are in almost perfect condition. In another plant equipped with B. & W. boilers developing 8400 hp. the interiors of the drums were scalded, painted both above and below the water line and allowed to dry for forty-eight hours. This treatment was repeated every ten months, and not only was pitting stopped, but where it had previously taken six men seven days to clean the drums of one boiler, two men now clean them in a day. This latter experience is quoted from a letter of the chief engineer of the New York Life Insurance Company, in a recent issue of *Graphite*.

## Electric Railway Legal Decisions

### CHARTERS, ORDINANCES, FRANCHISES

#### Idaho.—Regulation of Utilities—Duplication of Electrical Plants.

All property devoted to public use is held subject to the power of the State to regulate or control its use in order to secure the general safety, health and public welfare of the people, and when a corporation is clothed with rights, powers and franchises to serve the public, it becomes in law subject to governmental regulation and control.

Under the State's police power the Legislature has authority to authorize the utilities commission to determine whether a duplication of an electrical plant is required in a town or city for the convenience and necessity of the inhabitants. (*Idaho Power & Light Co. v. Bloomquist et al.*, State Public Utilities, 141 Pacific Rep., 1084.)

#### Kentucky.—Definition of Interstate Commerce—Reasonable and Unreasonable Municipal Regulation.

The traffic carried on by a Kentucky street railway corporation in connection with an Ohio corporation operating on the Ohio side of the Ohio River, in transporting passengers upon continuous and connecting tracks and across an interstate bridge between points in Covington, Ky., and Cincinnati, Ohio, by means of continuous trips and a single fare, and under practically the same management, is interstate commerce.

The absence of federal regulation does not justify the city of Covington, Ky., in regulating the interstate business of a street railway company principally engaged in transporting passengers from that city to Cincinnati, Ohio, by restricting the number of passengers which the company may admit to its cars to not more than one-third in excess of the seating capacity, except on certain holidays, and by requiring the company to operate sufficient cars reasonably to accommodate the public within the limits of such restriction, where compliance with such regulations will require about one-half more than the present number of cars operated by the company and more cars than can be operated in Cincinnati within the present franchise rights and privileges held by the company or controlled by it in that city.

Municipal regulation of a street railway company, principally engaged in interstate commerce, with reference to passengers riding on car platforms unless the same are provided with suitable rails or barriers, and with reference to the cleanliness, ventilation and fumigation of the cars, does not infringe upon the federal authority over such commerce—at least, until such federal authority is exerted.

A municipal ordinance providing that the temperature of the cars of a street railway company which is principally engaged in interstate commerce shall never be permitted to be below 50 deg. Fahr. must be deemed to be invalid as unreasonable, where the undisputed testimony shows that it is impossible in the operation of the cars to keep them uniformly up to this temperature, owing to the opening and closing of doors, and other interferences that make it impracticable. (*South Covington & Cincinnati St. Railway Co. v. City of Covington*, 35 Supreme Court Rep., 158.)

#### Massachusetts.—Crossings of Transmission Lines Over Highways—Abolition of Grade Crossings.

Where a railroad right-of-way crosses a public highway the land is subject to both easements, each to be exercised reasonably with reference to the other, and under such circumstances electric wires may be carried over the tracks in a proper way without liability to the railroad company.

Where grade crossings are abolished in accordance with Stat. 1906, Chap. 463, Part 1, Secs. 29-45, the two conflicting easements of the railroad company and of the public in the street are separated, and an electric company authorized to string its poles and wires in the street cannot place its poles over railroad tracks which have been elevated above the street. (*N. Y. C. & H. R. R. v. Central Massachusetts Electric Co.*, 106 Northeastern Rep., 566.)

#### Minnesota.—Ordinance Requiring Additional Line.

Under the reserved authority of the city to order the construction of new lines of street railway, the city may direct whether a new line shall be a single or double track line, and

defendant possesses under its franchise no vested right or option to determine the character of the line in this respect. (*State ex rel. City of St. Paul v. St. Paul City Ry. Co.*, 149 Northwestern Rep., 195.)

#### Missouri.—Eminent Domain by Electric Railway—Value of Property for Station Purposes.

An electric railway incorporated under the steam railroad act (Rev. Stat. 1899, Secs. 1034-1174) is entitled to condemn land for railroad purposes, and, if it is an interurban railroad, it has equal right conferred by Laws 1907, page 174.

Where condemnation of land for railroad freight and passenger depot purposes was part of a general scheme previously inaugurated for the construction and operation of the railroad in accordance with a lay-out and plat adopted prior to the construction of railroad buildings on adjoining property, the owners of the property sought to be condemned were not entitled to have any increase in value of their property by reason of the improvement of the adjoining property considered in determining the value of their property for railroad purposes. (*St. Louis Electric Terminal Ry. Co. v. MacAdaras et al.*, 166 Southwestern Rep., 307.)

#### Nebraska.—Permission Required to Discontinue Service.

When a company has obtained a franchise from the city to construct and operate its railways on certain streets of the city and has constructed its tracks and is operating its cars thereon pursuant to such franchise right, it will be enjoined from removing such lines or withholding its cars from such service without first obtaining authority from the State Railway Commission so to do. (*H. Herpolsheimer Co. et al. (Wolfe et al., Interveners) v. Lincoln Traction Co.*, 147 Northwestern Rep., 206.)

#### New York.—Certiorari to Review Assessments—Testing Excessiveness of Assessment.

On certiorari to review the assessment of a street railway company's special franchise for taxation, where the State board of tax commissioners in its return stated that it availed itself of all tests of value within its reach and all information bearing upon such value and adopted no certain or fixed rule or method; that it would be impossible to state more definitely the mental operation which prompted it in arriving at the valuation fixed or to state which of the different elements, theories or methods considered most influenced the minds of the individual members, or to what extent each test was used, but that the valuation was finally fixed and agreed upon as the combined judgment of the board, irrespective of the individual methods of arriving at it, it was not error to permit the railroad company to show that the assessment was excessive under the net earnings rule, on the theory that as the board was not bound to adopt that rule, error was not proved by showing excessiveness under that rule, since the assessments were not conclusive but were subject to review, and the courts cannot review the undisclosed and concededly indescribable methods followed by the State board. (*People ex rel. Third Ave. Ry. Co. v. State Board of Tax Commissioners (City of New York, Intervener)*; *People ex rel. Wallace et al. v. Same*; *People ex rel. Kingsbridge Ry. Co. v. Same*, 106 Northeastern Rep., 325.)

#### New York.—Rights of Transfer Passenger to Travel by Most Direct Route.

A passenger on a street railway car is entitled to be carried to his destination by the most direct route, hence, where he was accepted on a short service car, which necessitated a transfer to a through car, the company cannot require him to transfer to a parallel line further over, except for some most cogent reason, and a mere statement that such requirement was to avoid congestion and for the convenience of passengers is no reason. (*Goodman v. New York Rys. Co.*, 150 New York Sup., 702.)

#### New York.—Transfers Required Between Two Allied Companies.

Public Service Commission Law (Consol. Laws, Chap. 48) Sec. 49, Sub. 7, provides that every street service railroad corporation entering into a contract with another such corporation, as provided in Sec. 78 of the Railroad Law (Laws 1890, Chap. 565, as amended by Laws 1905, Chap. 695), shall carry between any two points on the railroads any passenger desiring to make a continuous trip for a single fare, and such corporation shall, without extra charge, give to each passenger paying a single fare a transfer entitling



the passenger to one continuous trip to any point of any railroad embraced in such contract, and for every refusal to comply with the subdivision the corporation shall forfeit \$50 to the aggrieved party. Railroad Law, Sec. 78, provides that any railroad corporation may contract with another for the use of their respective routes and that such contracts shall be executed by the contracting corporations under their seals, and, if it be a lease of any such road and for a longer period than one year, it shall not be binding unless approved by the votes of stockholders owning at least two-thirds of the stock of the corporation. Held, that where two street railroad corporations, though separate corporate entities, had the same office, officers and directors, and used and equipped cars interchangeably, paid operating expenses from the gross receipts of both, and were for all practical purposes one line, a passenger on one road could require a transfer to the other without extra charge, and could recover the statutory penalties for refusal to issue such transfer, notwithstanding there was no written contract between the corporations for the lease of one of the lines and though the arrangement between the companies was purely informal. (*Catalano v. International Ry. Co.*, 145 New York Sup., 1005.)

**New York.**—Temporary Injunction Restraining Construction of Elevated Railway.

The reconstruction of an elevated railway, so as to destroy to a greater extent than before an abutting owner's easements of light, air and access, would be enjoined on a preliminary motion, where there was no material disputed question of fact, instead of awaiting the trial of the action, pending which the structure would probably be completed. (*Rothschild v. Interborough Rapid Transit Co. et al*, 147 New York Sup., 1040.)

#### LIABILITY FOR NEGLIGENCE

**Connecticut.**—Injuries to Alighting Passenger from Car Overhang.

Plaintiff, having assumed a position, when she alighted from a car, which was apparently free from danger and without knowledge of the actual danger from the overhang of the car as it rounded the curve at such point, was not guilty of contributory negligence as a matter of law. (*White v. Connecticut Co.*, 92 Atlantic Rep., 411.)

**Illinois.**—Liability to Employee Riding on Pass.

A provision on the back of a free transportation ticket furnished to a street car employee releasing the company from all liability for personal injuries, was void, where the relation of carrier and passenger existed between the company and the employee. (*Klinck v. Chicago City Ry. Co.*, 104 Northeastern Rep., 669.)

**Indiana.**—Master and Servant; Injury to Motorman—Construction Work.

In an action by a servant for personal injuries caused by his having an unsafe place to work, the burden is on the servant to show that the master had knowledge, actual or constructive, of the dangerous condition long enough before the accident to have repaired it or to have given the servant timely warning of its condition.

A motorman operating a car drawing a plow on an uncompleted track on which no passenger or freight trains had been run was engaged in construction and assumed all risks incident to the service. (*Egan v. Louisville & S. I. Traction Co.*, 103 Northeastern Rep., 1100.)

**Indiana.**—Liability to Employee Riding on a Pass.

Where a street railway regularly furnished its servants with passes to and from their work, a stipulation in such passes exempting the company from liability for injuries caused by its negligence is unenforceable, being contrary to public policy, the issuance of the passes being one of the considerations for the employment. (*Indianapolis Traction & Terminal Co. v. Isgrig*, 104 Northeastern Rep., 60.)

**Kentucky.**—Degree of Care Required to Prevent Injury to Property.

A street railway is bound to use extraordinary care only for the protection of its passengers, and, where its car left the tracks and injured adjacent property, it was not negligent if it used ordinary care to discover obstructions which caused the accident. (*Kentucky Traction & Terminal Co. v. Bain* (two cases), 170 Southwestern Rep., 499.)

**Massachusetts.**—Negligence May Be Imputed to Child Nine Years Old.

Plaintiff, a boy of nine years, was injured while crossing behind a street car by being struck by another car on the opposite track. He was familiar with the locality, and although alone there was nothing to distract him from caring for himself. There was no evidence that he listened for an approaching car, and though he testified that he looked twice in the direction from which the car approached and did not see it, there was no evidence to show that he could not see the car which struck him from the place where he looked. Held, that plaintiff was guilty of contributory negligence as a matter of law. (*McManus v. Boston Elevated Ry.*, 103 Northeastern Rep., 284.)

**Massachusetts.**—Duty to Inspect Car Equipment.

The plaintiff was injured, while a passenger, by the breaking of a bolt in the back of a seat against which she was leaning. The bolt had a break which was invisible when it was in place, but it could have readily been removed for inspection. The cars had been in use for five years, and there was no evidence that the bolt had been inspected during that time, although it was an important bolt and in a position which subjected it to strains. Held, that the question of defendant's negligence was one for the jury, and that it was error to direct a verdict in its favor. (*Murphy v. Milford, A. & W. St. Ry. Co.*, (two cases), 210 Federal Rep., 138.)

**Massachusetts.**—Injury to Passenger from Person Not in Employ of Company.

Where a passenger, who entered a closed subway car through its front vestibule, put her hand back of her on the jamb of the door to save herself from being thrown forward when the car started and someone not in the service of the carrier shut the door on her thumb, the carrier was not liable, where it was not the custom or duty of its servants to close the door. (*Tracy v. Boston Elevated Ry. Co.*, 105 Northeastern Rep., 351.)

**Massachusetts.**—Car Passing Stationary Car.

The operation of a car on one track on approaching a stationary car on another, in violation of the rule requiring the slowing down of a car and the sounding of the gong when passing a stationary car, is negligence. (*Emery v. Boston Elevated Ry. Co.*, 105 Northeastern Rep., 889.)

**Missouri.**—Responsibility for Panic Following Controller Explosion.

The explosion of a car controller is prima facie evidence of negligence, and imposes on the company the burden of showing that the explosion was due to unavoidable accident. The death of a passenger pushed from the rear platform by other passengers in their haste to leave the car after such an explosion was the natural consequence of it, the test of liability being whether there was an appearance of imminent danger that reasonably should have been anticipated as too terrifying for passengers to face without alarm. (*Agnew v. Metropolitan St. Ry. Co.*, 165 Southwestern Rep., 1110.)

**Missouri.**—Boarding Moving Elevated Car.

One who attempted at an elevated station to board a moving car, the gates of which were being closed, is guilty of contributory negligence as a matter of law, where the step of the car was within a few feet of the end of the platform, at which point the company maintained a sign warning the public against boarding moving cars. (*Speaks v. Metropolitan St. Ry. Co.*, 166 Southwestern Rep., 864.)

**Nebraska.**—Injury to Passenger Riding on Steps.

A person standing on the steps of a moving street car, being unable to secure a seat or standing room within, is presumed to be there with the consent of the servants in charge of the train. (*Kadner v. Omaha & C. B. St. Ry. Co.*, 151 Northwestern Rep., 169.)

**New Jersey.**—Injury to Pedestrian at Corner from Car Overhang.

In view of the well-known fact that in rounding a curve the rear end of a street car will swing beyond the track and overlap the street to a greater extent than the front, the motorman is justified in presuming that an adult person standing in the street near the track, who is apparently able to see, hear and move, having notice of the approach of the car and of the existence of the curve in the track, will draw back far enough from it to avoid being struck by the rear of

the car as it swings around the curve in the usual and expected manner, and under such circumstances it is not negligent operation on the part of the motorman to continue the progress of the car without warning such person of the possible danger of collision with the rear of the car, because of the swing, if he remains in the same position. (Miller et al. v. Public Service Corporation of New Jersey, 92 Atlantic Rep., 343.)

**New York.—Injury to Boy Who Climbed on Bumper.**

Plaintiff, with five other boys, climbed on the rear bumper of defendant's trolley car and claimed that he intended to pay his fare. After the car had gone a few hundred feet the conductor came toward the boys, called to them to get off and made threatening gestures but was too far away to cause serious apprehension. Plaintiff and his companions sprang from the car, landing on their feet, when plaintiff ran onto the opposite track without looking for a car and was struck by a car going in the opposite direction. Held, that the facts were insufficient to raise an inference of actionable negligence on the part of the conductor in forcing plaintiff from the car by threats of personal violence. (Luter v. Union Ry. Co. of New York, 145 New York Sup., 893.)

**New York.—Application of Sand and Brakes on Rainy Day.**

An error of judgment by a motorman as to the time when he must apply sand and brakes on a rainy day, to avoid collision, is not negligence as a matter of law. (Koster v. Coney Island & B. R. Co., 151 New York Sup., 56.)

**New York.—Third-Rail a Nuisance on Highway.**

Where an electric third-rail used by a railroad to furnish motive power projected into a highway crossing unnecessarily, it was a nuisance, and the railroad was liable for an injury occasioned thereby. (Bloss v. Oneida Ry. Co., 147 New York Sup., 728.)

**Ohio.—Traffic Agreements—Personal Injuries.**

When one company makes an agreement with another company, under authority granted by Sec. 3443—17, Rev. Stat., for the joint use of its tracks, it is liable for injuries caused by the actionable negligence of its licensee thereon. The statute does not provide exemption from such liability, and as against the public it will not be implied. (Quigley v. Toledo Rys. & Light Co., 105 Northeastern Rep., 185.)

**Oregon.—Injuries to Persons on Track.**

Where there is evidence that a railroad acquiesced in the use of a bridge as a footway by the public, an instruction requiring of the railroad only the lowest degree of care for the protection of a person on the bridge was error. (Doyle v. Portland Ry., Lt. & Pr. Co., 143 Pacific Rep., 624.)

**Oregon.—Measure of Damages for Death Under Employers' Liability Act.**

The measure of recovery for death under Employers' Liability Act (Laws 1911, page 17) Sec. 4, giving a right of action for death caused by a violation of the act, is the pecuniary loss sustained, and the jury may not consider as element of damages deprivation of comfort, society, support and protection. (Fisher v. Portland Ry., Light & Power Co. et al., 145 Pacific Rep., 277.)

**Oregon.—Violation of Fender Ordinance Negligence Per Se.**

The operation of street cars not equipped with a fender as required by a valid city ordinance, from which an injury to a child upon the track resulted, was negligence per se. (Rudolph v. Portland Ry., Light & Power Co., 144 Pacific Rep., 93.)

**Pennsylvania.—Master and Servant—Breakage of Coupling.**

Where, in a street railway brakeman's action for injuries from falling between two freight cars being shifted by defendant's motor, it appeared that the cause of the accident was a jar due to the sudden application of power by the motorman causing the coupling to part, and there was no evidence that the coupling was out of repair or defective or different from those in ordinary use, a nonsuit was properly entered on the ground that the proximate cause of the accident was the act of plaintiff's fellow servant in the management of the motor. (Cover v. Conestoga Traction Co., 92 Atlantic Rep., 495.)

**Pennsylvania.—Injury to Passenger on Running Board.**

Since, in an action for the death of a passenger from collision with the shafts of a passing vehicle while he was standing on the running board of a crowded summer trolley car,

the accident being due to the sudden and unexpected shying of the horse, there was no presumption of negligence on the part of the defendant railway company, the burden was on plaintiff to prove actual negligence. (Kurts v. Philadelphia Rapid Transit Co., 90 Atlantic Rep., 525.)

**South Carolina.—Power of Headlight Proper Question for Jury.**

Evidence that a proper street car headlight would throw light on the track 200 yards ahead of the car, and that the headlight on the car by which decedent was killed only threw a light from 35 to 50 ft., made it a question for the jury whether the street car company was guilty of wanton negligence in not having a proper headlight. (Kirkland v. Augusta-Aiken Ry. & El. Corp., 81 Southeastern Rep., 306.)

**Texas.—Injuries to Persons on Tracks.**

Where an intoxicated man negligently stepped in front of an approaching street car, his would-be rescuer stands in the same position as the intoxicated man, and the negligence of the latter is attributed to the rescuer, so that no recovery can be had against the street car company, though its servants were also guilty of negligence. (Scates v. Rapid Transit Ry. Co., 171 Southwestern Rep., 503.)

**Utah.—Conductor's Assent to Passenger Alighting from Moving car.**

Where a passenger on a street car, which he thought would follow one route, upon discovering that it had turned off, requested a transfer from the conductor so that he could catch a car following, and the conductor said that he could get off as the car was moving slowly, the passenger's attempt to alight in accordance with the suggestion of the conductor is not contributory negligence as a matter of law (quoting Paul v. Railroad, 30 Utah, 30, 83 Pac. 564). (Gaines v. Ogden Rapid Transit Co., 141 Pacific Rep., 110.)

**Washington.—Company Not Liable for Injury to Employee Riding on Pass.**

Even though an employee of a common carrier was promised free transportation as part of her compensation, yet where, on applying therefor, she was required to and did sign an application stating that the pass issued was a mere gratuity and based on no consideration, she thereby waived, as she had a right to do, the benefit of her prior contract for free carriage, and hence would be a mere gratuitous passenger for whose injuries caused by negligence the carrier was not liable. (Hageman v. Puget Sound Electric Ry., 141 Pacific Rep., 1028.)

**Washington.—Injury to Infirm Passenger from Sudden Start.**

Where an infirm passenger walking on crutches entered a street car it was the duty of the conductor not to direct the starting of the car until the passenger had secured a seat. (Rice v. Puget Sound Traction, Light & Power Co., 141 Pacific Rep., 191.)

**Wisconsin.—Injuries to Passenger from Car Overhang.**

Plaintiff having often boarded street cars before they rounded a corner where she desired to board a car, approached the usual stopping place without notice of an ordinance requiring the car not to stop until it had turned the corner. The motorman signaled her to go to the far corner, which she started to do. The car was then approaching a curve at about 3 m.p.h., and the speed was increased to 6 m.p.h. before the car got around the curve, which was on a grade, and, as it did so, plaintiff was struck by the outswing of the car. Held, that there was no evidence of actionable negligence on the part of the carrier. (Kuhn v. Milwaukee Electric Ry. & Light Co., 149 Northwestern Rep., 220.)

**Washington.—Duty of Pedestrian at Street Crossing.**

While one about to cross a street railway track is not under an absolute duty to stop, look and listen, he cannot, with knowledge that a street car is approaching, step heedlessly in front of it, under the assumption that it will not overtake him.

Though a street car may have been operated at an excessive speed, the company is not liable for injuries to plaintiff from being struck by the car, unless the excessive speed was the proximate cause of the injury. (Beeman v. Puget Sound Traction, Light & Power Co., 139 Pacific Rep., 1088.)

# News of Electric Railways

## BOARD APPROVES DETROIT CONTRACT

Terms of Contract Published by Board of Street Railway Commissioners—Procedure Outlined for Fixing Price and Transferring Railway to City

The board of street railway commissioners of Detroit on Wednesday made public the text of the contract which it has approved for the purchase of the lines of the Detroit United Railway within the one-fare zone. Publication was also made of the amendment to the city charter which must be passed by three-fifths of the voting electorate before the contract can be carried out by the city. The contract will be submitted to the stockholders of the railway on Aug. 2. If they accept the contract, as officials of the company will recommend to them, the street railway commissioners will take steps to have the Common Council name a date for the submission of the purchase question to the electors. It is understood that the election, if one is called, will be held about the middle of September.

The contract provides that the price of the lines within the one-fare zone shall be fixed by the Circuit Court of Wayne County, sitting as a Court of Chancery. The right of appeal to the State Supreme Court is reserved for both parties under an agreement that the decision of the latter tribunal shall be final and binding upon both.

It further provides that the property shall be delivered to the city on a specific date to be fixed by the circuit judges, which shall be decided within thirty days after suit has been started to fix the price. This provision allows the city to take possession of the lines within sixty days after the election, inasmuch as the suit must be started within thirty days after election.

The contract provides that the city shall accept the property subject to, and shall pay, the existing mortgages upon the property delivered to the extent of the price fixed by the court, and the balance of the mortgage debt, if any, shall be discharged on maturity by the railway. If the price exceeds the mortgage debts, the excess shall constitute a lien on the property. The city shall be obligated for the existing mortgages only to the amount of 2 per cent of the assessed valuation of the city (about \$11,000,000). The amount, not to exceed the prescribed 2 per cent, shall be fixed in the decree and shall consist of at least \$1,000,000, falling due on June 1, 1916, and of a portion of the first consolidated mortgage falling due on Jan. 1, 1932. All of the purchase price in excess of the amount assumed as a personal obligation by the city shall be secured by a lien due on or before Jan. 1, 1932. Payment of this sum shall be provided for from a sinking fund to be set aside from the earnings of the lines. Interest on the mortgage indebtedness which the city assumes is also to be paid from earnings.

Provision is made that in order to bind all the mortgage bondholders to the terms of the contract, the trustees of the mortgages shall be made party to the suit. The railway agrees that they shall all enter their appearances in the suit "in order that all persons interested may be before the court, all interests protected and a perfect title passed."

Accompanying the contract and charter amendment, the commissioners issued a statement explaining from their point of view what the contract really contained. They urge that the people trust the Circuit Court judges to give justice to both parties, and indicate their idea of what the city can accomplish through municipal ownership in the following language:

"The whole plan of the commission is to pay for the entire property and its extensions out of earnings, but this involves a longer time than sixteen years. If no extensions were necessary, the profits would pay the purchase price and operating charges at the present rates of fare by 1932, but as extensions and improvements are necessary to a large extent, a longer term will probably be necessary, and in the meantime two methods of procuring the necessary additional capital have been provided by the charter amendment. (Pledge credit of city up to \$11,000,000, and pledge earnings of lines.)

"It is the confident belief of the members of the commis-

sion that outside of a part of the \$1,000,000 due on June 1, 1916, it will never be necessary to call on the city to issue any of its own bonds to meet payments, but the earnings of the railway, plus the borrowing power based upon the pledge of future earnings, will take care of all future payments."

## COMPLAINT FILED AGAINST CITY

Puget Sound Traction, Light & Power Company Alleges Policy of Harassments Is Being Pursued by the Municipality of Seattle

The Puget Sound Traction, Light & Power Company, Seattle, Wash., on July 23 filed a complaint against the city of Seattle with the State Public Service Commission, alleging that the municipality has entered into a campaign of harassments against the company. In filing the complaint the company asks that a date for a hearing be fixed, and that an order be entered declaring the provisions in its franchises requiring payment for bridges, paving, filling and maintenance of streets, and the payment of a percentage of the gross receipts of its railway system, discriminatory and void.

The company sets forth that in accepting its franchises it was with the understanding that the corporation should not be harassed by the city of Seattle. Instead of following that policy, the city has entered into competition in the light and power field and in the operation of street railway lines, and has adopted a program of harassments, causing the company to lose large sums of money in defending itself against demands made in conflict with the terms of its franchises. One specific instance cited is the fact that the City Council passed an ordinance requiring the sale of twenty-five tickets for \$1, or six for 25 cents, in conflict with the franchises, and that before the court nullified the ordinance the requirement cost the company approximately \$60,000 in loss of revenues.

The complaint also cites the fact that paving improvements planned by the city will cost the traction company \$223,000 in paving that portion occupied by tracks, and that the 2 per cent of the gross earnings paid into the city yearly amounts to about \$70,000. The petition prays that the company be relieved of these burdens. The complaint further refers to the passage of a bill requiring the company to build a line on East Union Street, where it had no franchise, and the effort made to convict officials of the company in criminal proceedings for failure to build such a line.

The entry of the jitney bus as a common carrier competitor is further cause for complaint. It is stated that the city, in the autumn of 1914, without lawful authority, issued licenses to more than 500 jitney buses to operate as common carriers along lines of the street railway. The company asserts that its loss of revenues from Nov. 1 to April 1 has amounted to from \$45,000 to \$60,000.

Reference is also made to the practice of the city lighting department in making excessive charges for street lighting, paid by the general public, in order that rates may be reduced to private and small consumers. This excess charge, it is said, amounts to \$80,000 per year. In other words, the city charges itself for street lighting \$80,000 a year more than what the same service could be obtained for from the complainant.

## P. R. T. OUTLINES OBJECTIONS

Philadelphia's application for a certificate of public convenience, the next step toward building the Broad Street subway and the Frankford elevated, was argued on July 26 in Harrisburg before the Pennsylvania Public Service Commission. Appearing in opposition to granting the certificate were E. A. Ballard, chief counsel Philadelphia Rapid Transit Company; Ruby R. Vale, counsel for D. E. Dallam, whose suit for an injunction was described in the ELECTRIC RAILWAY JOURNAL of July 24; and Charles L. Fluck, of the Northwest Business Men's Association. City Solicitor Ryan was present on behalf of the municipality, and A. Merritt Taylor, Director of City Transit, was the sole witness heard.

All parties will submit briefs, which must be on file within ten days from July 30.

After Director Taylor had offered testimony that the city was legally qualified and financially capable of building the lines in question, Mr. Ballard announced the arguments that the company will submit in an effort to hold up construction of those lines. The company's brief will cover these points:

1. That by the act of March 23, 1866, the city of Philadelphia is prohibited from constructing a railroad on or along Broad Street.

2. That by the act of March 26, 1873, which virtually formed a contract between the State of Pennsylvania and the Thirteenth and Fifteenth Streets line, it was set forth that no other line should be built along Broad Street. According to Mr. Ballard, the Supreme Court has decided that this contract cannot be abrogated except by condemnation proceedings, and such proceedings have not been instituted.

3. That the contract of 1907, section 3, provides that Councils shall determine the routes and other conditions under which railway lines shall be built, and that the Philadelphia Rapid Transit Company shall have ninety days' option on the right of building necessary lines.

#### MERALCO INCOME FOUND ADEQUATE

##### Commission Reports on Financial Ability and Service of Manila Electric Railroad & Light Corporation— Fenders, Brakes and Training Suitable

The Board of Public Utility Commissioners at Manila, P. I., recently handed down a full decision covering various points raised in the investigation of the Manila Electric Railroad & Light Corporation. The company's contention that under existing rates its revenues from transportation are not sufficient to provide for the adequate maintenance and depreciation of the property used in the service, the safeguarding of the investment therein and a reasonable return thereon, is not sustained. The commission expresses its belief that the city of Manila is paying such a return on the investment as would entitle it to a thoroughly adequate and up-to-date service.

In rendering its final decision, the board took into consideration the full financial statement of the cost of the property operated as of Dec. 31, 1913. This was obtained from the holding company incorporated in New Jersey. The total investment shown by it on that date was 10,630,283 pesos, as compared to 11,107,300 pesos, the valuation set by Manager Duffy a year ago for the local holdings. Several items on this statement were not allowed, however, and the final estimate of the capital investment made by the board was between 7,500,000 and 8,000,000 pesos.

In its decision the board took up numerous points in connection with the street car service in Manila, complained of by the Philippine Chamber of Commerce. In conclusion it required the company to use vacuum cleaners on its cars during the dry season, to prohibit expectorating in the cars and the placing of the feet on seats by passengers, to brace all its open cars both longitudinally and transversely, to treat the roofs of all cars with waterproof preparation before the setting in of the rainy season, to provide all car windows with clutches, to prohibit passengers from riding on the sideboards or side steps of the open or closed cars, and to prohibit all overcrowding of passengers either on the front or rear platforms of open or closed cars.

The attention of the board had been called to street railway accidents which had occurred in Manila, with the charge that these were caused by defective brakes, improper training of motormen and inadequate inspection of rolling equipment. In answer to these complaints the company had asserted that the street railway accidents in Manila were comparatively infrequent; that the motormen were subject to physical examination and were duly instructed before being allowed to take charge of cars; that all cars and equipment were inspected once in every forty-eight hours; that owing to the fact that there were no rains and the rails were always dry and clean and the cars not heavy, the brake equipment was adequate, and that each

car having its own motors was equipped with fenders which were approved by the municipal board in accordance with the company's franchise.

In connection with these points the commission decided mostly in favor of the company. It stated that it was not satisfied that the fenders at present in use were unsafe or inadequate. Until some type was offered which could be employed in the narrow streets of Manila with more decided advantage, the defendant company would not be obliged to make any change. Moreover, in the light of local conditions, the commission was unable to find that the present brake equipment was inadequate and unsafe. In view of the results of the investigation of the company's personnel, the commission found that the employees were adequately trained for the operation of the cars.

#### ULTIMATUM IN DES MOINES

The Harris Trust Company, Chicago, which controls the Des Moines (Iowa) City Railway, has delivered an ultimatum to the Des Moines Council, through the Des Moines Chamber of Commerce, in regard to the local franchise situation, which has been hanging fire for several months. The amount of capitalization has been the question which all former attempts at a franchise agreement have failed to solve. The company, reducing its capitalization from \$5,400,000 to \$5,000,000 in an effort to meet the issue, has been unable to appease Mayor Hanna, who demands a figure of less than \$5,000,000. A committee of the Chamber of Commerce, trying to mediate the differences between the City Council and the company, recently went to Chicago and sought to have the capitalization figure reduced from \$5,000,000. The substance of a letter in reply to this effort follows:

1. The Des Moines City Railway will not consider or discuss any further reduction of capitalization, which means that it will not continue the negotiations unless a capitalization of \$5,000,000 is recognized.

2. Unless a settlement of the franchise is secured, the company will fight its receivership through with the purpose of attempting to override the decision of the State Supreme Court and secure a decision in the Federal Court that the franchise voided by the State Court is perpetual.

3. The owners of the system are tired of being pushed by the city hall officials and now regret the \$1,000,000 spent in improvements since the dispute started. If the company had obeyed the order of the Supreme Court and torn up its tracks, the City Council thus would have been forced by public sentiment to a settlement as the result of public inconvenience.

The company is still willing to try for a franchise if a basis of agreement can be reached, but at present negotiations are at a standstill while members of the Council and the Chamber of Commerce committee are on vacations.

#### RHODE ISLAND ARBITRATION BEGUN

Arbitration proceedings were begun on July 26 at Providence, R. I., between the Rhode Island Company and its employees to fix wages and hours of labor. James H. Vahey, Boston, Mass., represented the employees' union, and James M. Swift, Fall River, Mass., appeared as counsel for the company. President A. E. Potter was the principal witness.

Mr. Potter stated, in answer to inquiries, that his salary is \$12,000 per year. Upon consultation, it was agreed that a list of the salaries of various other officials should be filed confidentially with the arbitration board, in order to avoid the effects of publicity. Mr. Potter said that the company in conference proposed an increase to the employees, the offer being a guarantee of six hours per day at 25 cents per hour minimum, with 0.5 cent increase if the revenue increased, and a further increase of 1 cent if the revenue increased further. This was in place of arbitration, and was made particularly for the benefit of the spare men, as far as hours of labor were concerned. The regular men outnumber the spare men by about two to one. The present wage scale is from 23 cents to 28.5 cents per hour. Mr. Potter said that the 0.5 cent increase offered was contingent upon an increase of 2 per cent in the gross earnings of the coming year, the adjustment being made quarterly. He

said that it was impossible to eliminate finances from consideration in discussing wages.

Mr. Potter felt that the men are getting a living wage, and that an increase is not necessary as the men are living reasonably well. He could not see how the men deserve an increase when those on other roads are getting less and could be employed for less. During the strike the company did not try to get these men. None were advertised for, and the company took only those that came along and applied for work. Mr. Potter said that if fares could be increased he would like to see the employees get higher wages. The company has 1000 cars representing an investment of \$5,000,000; 400 miles of track representing \$15,000,000; a \$5,000,000 power plant and a tunnel worth \$1,000,000. The physical characteristics of the system were briefly reviewed, and Mr. Potter said that more than half of the men have worked over four years for the company. He considered platform work unskilled labor, comparing the motorman to a truck driver and the conductor to a clerk.

Recalled to the stand on the second day, Mr. Potter said that in his opinion the fact that the men receive free transportation and overtime compensation offsets the time required to work up conductor's day cards. On the entire system from thirty to forty accident reports are usually made out, covering minor troubles as well as serious difficulties. Some of the men find suburban runs more difficult than those in Providence. The witness did not feel that the work in Providence is more difficult than that in other places. He thought that in Springfield, Mass., and Pawtucket, R. I., the work was more difficult. Counsel for the union initiated a line of questions relative to the comparative cost of living in Providence and elsewhere, but on objection of counsel for the company this topic was withdrawn before the board ruled, on the ground that it would unduly lengthen the proceedings. Relative to the quality of work done in the shops, Mr. Potter said that in the opinion of some of the foremen the work has been done less well since the organization of the union.

#### HASTY BUT LEGAL ACTION IN TORONTO

Chairman D. M. McIntyre of the Ontario Railway & Municipal Board has issued his judgment upon the Toronto Railway's application for an order compelling the city to relay the tracks on Yonge Street. The judgment, which is in favor of the city, is, in effect, that the purchase of the Toronto & York Radial Railway's tracks and equipment by the Toronto Railway did not give the company the legal right to operate the section of line referred to, and that while the company has franchise rights on the street it can exercise them only by complying with the terms of the general agreement—by submitting plans to the city engineer, etc., for a new line or extension.

The appeal to the board arose out of the action of the city on June 26 in tearing up 1320 ft. of track south of Farnham Avenue, immediately after the Toronto & York Radial Railway franchise for that part of Yonge Street expired. The Toronto Railway, which had a few hours before purchased the track and overhead equipment, intending to give a service on that section, appealed at once to the board for an order restraining the city from proceeding further and for an order compelling the city to relay the tracks, claiming that since the Toronto & York Radial Railway franchise had expired the Toronto Railway automatically came into possession of rights on the stretch.

Counsel for the city denied the jurisdiction of the Ontario Railway & Municipal Board to deal with the matter, and held that in any case the city was within its rights in removing the tracks. The only way the company could operate there was by submitting plans for tracks, etc., to the city engineer in the regular way. The board, after asserting its jurisdiction, proceeded in the judgment to deal with the claim of the company that it acquired a franchise right on the section of Yonge Street referred to when the Toronto & York Radial Railway franchise expired. This claim, which was not argued by the city, the board finds to be a just one, but by referring to the terms of the agreement between the company and the city the board takes the position that while the franchise right exists and the company owns the tracks and overhead equipment, it

cannot make the track a part of its system. The portion of Yonge Street dealt with must be regarded as the proposed site for an extension of the company's railway, which brings it under the conditions respecting such extensions. In the judgment Chairman McIntyre took a thrust at the city for causing inconvenience to the public by tearing up the tracks. Referring to the number of complaints received from residents and ratepayers of the district, Mr. McIntyre pointed out that the city acted within its strict legal rights and that the board was obliged to determine the issue solely upon that basis. He added: "If the city authorities have caused discomfort and loss to citizens by destroying, needlessly and in haste, property which might under some interim arrangement have continued to serve the transportation requirements of a portion of the community, the citizens must carry their complaint to the city authorities."

#### DEADLOCK ON TOLEDO DRAFT APPROVAL

Until late in the afternoon of July 29 the franchise committee and representatives of the Toledo Railways & Light Company, Toledo, Ohio, discussed the question of whether the committee should recommend the tentative draft of the franchise to Council and whether that body will take action on it or simply file it for reference to the voters at a referendum election. It was not possible, however, to reach any agreement, and the meeting was finally adjourned until the afternoon of Aug. 3.

At the conference on July 28 a deadlock between the committee and Henry L. Doherty developed on this point. Mr. Doherty said the negotiations would be of no avail if Council did not take some action on the tentative draft before it is sent to the people. He continued:

"I would rather go to the people with Council's rejection and say this administration has failed to do its plain duty than have Council sit back and take no action whatever. This draft is according to your views and you frankly state that it protects the people. They are entitled to know the result of your work and to ask you whether the draft is a good one or not."

Member F. M. Dotson said that he believed the report to be made to Council would accomplish the purpose of a recommendation, and that the Council members believed the proposed franchise would provide for "a well-operated system, good service, minimum rates and a workable plan for obtaining municipal ownership." Mr. Doherty replied that if the committee would say that in so many words to Council, it would be all he would ask. Mr. Dotson, however, would not agree to that, and insisted that Council could only receive and file the report. He argued that if Council accepts and files the draft, the act would show that it is satisfied. Mr. Doherty asserted, however, that such a course would mean dodging the issue and that all he wanted was for Council to declare itself one way or the other. If the draft is not recommended, then some other course can be taken to get it to the voters. "We do not want to be placed in a position where Council, after accepting the report, can go out and fight the franchise," said Mr. Doherty.

#### N. Y. CONTRACTS LET AND APPROVED

A contract for the installation of tracks on the New Utrecht Avenue elevated railroad in Brooklyn has been awarded by the commission to Ward & Tully, Inc., the lowest bidders, for \$71,355. The work must be completed within five months after the delivery of the contract. The New Utrecht Avenue line is a three-track elevated railroad, extending from Thirty-eighth Street, Brooklyn, over the route of the so-called West End line of the Brooklyn Rapid Transit Company to Coney Island. It will be operated by the New York Consolidated Railroad Company as a branch of the Fourth Avenue subway.

The commission has approved the plans and form of contract for the supply of special work for the new rapid transit system in Queens and will open bids on Aug. 18. The special work consists largely of frogs and switches and will be used upon the new elevated railroad from the Queensboro Bridge to Corona, on the junction section on the Queensboro Bridge Plaza, for the new elevated railroad from the Queensboro Bridge to Astoria, and for the extension of the Queensboro subway from its present terminus

at Jackson and Van Alst Avenues, Long Island City, through Davis Street and Ely Avenue to the Queensboro Bridge Plaza.

The commission has approved plans and form of contract, submitted by the New York Municipal Railway Corporation, for the erection of steel, construction of tracks, etc., on the Broadway elevated railroad in Brooklyn between Myrtle Avenue and Aberdeen Street, in connection with the third-tracking of that line. The commission also approved the company's plans and form of contract for the supply of structural steel for widening and strengthening the Myrtle Avenue elevated railroad from Willoughby Avenue to Wyckoff Avenue for the third-tracking of that line. The company must submit both contracts to public bidding.

**Agreement with Employees Extended in Toronto.**—The agreement that existed between the Toronto (Ont.) Railway and the 2100 members of the company's employees' union for the last three years has been extended for another two years.

**Electrical Prosperity Week Indorsed.**—The Electrical Supply Jobbers' Association has passed a series of resolutions indorsing "Electrical Prosperity Week" and giving its whole-hearted support and co-operation to the movement. This week occurs Nov. 29-Dec. 4, 1915.

**New Line Opened in Washington.**—On July 28 the Washington Railway & Electric Company, Washington, D. C., put into operation a direct line between the northwest suburbs of the city and the government buildings on Fourteenth Street, south of the Mall. The line was established as a connecting link on the Fourteenth Street line between G Street and E Street, thus making the third north and south line to intersect Pennsylvania Avenue between the Peace Monument and the Treasury Building. On account of the cut off, several changes were made in the route of other lines.

**Market Street Injunction Stayed in San Francisco.**—The injunction issued to prevent the operation of San Francisco (Cal.) Municipal Railway cars over the outer tracks on lower Market Street, noted in the ELECTRIC RAILWAY JOURNAL of July 10, was stayed indefinitely on July 20 by a decision handed down by Judge Troutt of the Superior Court. In granting the city's petition Judge Troutt supplemented his written opinion with the statement that he intended the stay to be effective until the United Railroads of San Francisco could get a ruling from the Supreme Court as to his right to intervene in the injunction proceedings.

**Injunction Issued in Montreal Franchise Case.**—Justice Lafontaine in Practice Court on July 20 ruled that an interlocutory injunction should be issued to restrain the Board of Control and the City Council from further dealing with the Montreal (Que.) Tramways franchise renewal question, until such time as the Court shall have been afforded an opportunity to enter upon deliberations as to the merits of the allegations and counter-allegations arising from the board adopting, on the vote of Mayor Martin and Controllers E. N. Herbert and Thomas Cote, Controller Herbert's proposal of a thirty-year franchise agreement with the company.

**New Pavement the Issue in East Cleveland.**—The Cleveland (Ohio) Railway has notified the village of East Cleveland that it will not lay the new pavement between its tracks on Euclid Avenue through the town unless it is assured of a renewal of its franchise in 1921. The company, however, wants to make the fare 5 cents and the village has demurred. It has notified the company that the pavement will be laid, and the company held for the expense. The village asserts that the company has no franchise for a short stretch of its St. Clair Avenue line, and, if it does not do the paving on Euclid Avenue, the St. Clair Avenue cars will be stopped until the bill is paid. This would necessitate some arrangement to take care of the passengers on that line, which is the only one reaching Euclid Beach at the present time.

**Trolley Pole Agreement Reached in Springfield.**—An agreement has been reached between the city planning commission of Springfield, Mass., and the Springfield Street

Railway relative to arrangements for the removal of trolley poles in the heart of the business district between State Street and the Union Station. The company has consented to meet the cost of substituting span suspensions with attachments to abutting buildings for the existing poles, the estimated outlay being about \$5,000. About forty property owners are to be visited by the commission, and to each will be submitted a form of agreement which gives the company virtually a license to attach span wires but nothing in the way of an easement. If the owners consent, the City Council will be asked to grant the company the right to string span wires over the sidewalks, and the Massachusetts Public Service Commission will pass upon the plan.

**Public Utility Committee Drafts Report.**—The completed draft of the amendment proposed by the committee on public utilities of the Constitutional Convention was made public on July 24. The proposed article will permit the Legislature to limit the courts' powers of review, a prerogative the Legislature already possesses under the present constitution. The other principal provisions are as follows: (1) The public service commissioners shall be constitutional officers. (2) The terms are fixed constitutionally at five years. (3) The commissioners may be removed only by majority vote of the Senate upon "recommendation of the Governor stating grounds upon which such removal is recommended." (4) Each commission shall have the jurisdiction, powers and duties it now has, but nothing shall prevent the Legislature from enacting laws changing such jurisdiction, powers and duties; except that the Legislature shall not enact any law prescribing rates or standards of service until after it has received from one of the commissions a report thereon or until after the expiration of a prescribed period.

**Board of Estimate Favors Tube Plan.**—The Board of Estimate and Apportionment of New York City on July 21 unanimously adopted a resolution, introduced by President McAneny of the Borough of Manhattan, to notify the Public Service Commission for the First District of New York that in its opinion a tunnel should be substituted for the bridge plan for the connection of the new subway system with the Borough of Queens under the East River at Fifty-ninth Street. It was also stated that the board was prepared to supply the necessary funds for the tunnel work. The total estimated cost for the tunnel plan would be \$4,740,000 as compared to \$2,340,000 for the bridge connection. The board was assured by contractors that the tunnel could be completed within thirty months after the delivery of the contract, which would be about the time it would take to complete the unfinished sections of the new system. The Public Service Commission has withdrawn its objections to the tunnel plan and adopted a new route, No. 61, which will be a two-tracked subway under the East River from Fifth Avenue to the Queensboro Bridge Plaza.

## PROGRAM OF ASSOCIATION MEETING

### Railway Signal Association

The Signal Appliance Association has issued Bulletin No. 10. This submits information regarding the arrangements for the forthcoming convention of the Railway Signal Association, which will be held in Salt Lake City, Utah, on Sept. 14-16. The bulletin states that there will be no official exhibits at the convention, although informal exhibitions of devices at the meeting place will be encouraged. Arrangements have been concluded for a special train from Chicago, leaving at 11.55 p. m. Saturday, Sept. 11, over the Chicago & Northwestern Railway. The train will stop at Omaha, Ogden and Cheyenne to pick up passengers from connecting lines. It will arrive at Salt Lake City on Monday, Sept. 13, at 6.10 p. m. No special trains have been provided for the return trip.

The headquarters of the convention will be at the Hotel Utah in Salt Lake City, and reservations for rooms are to be made by members and guests direct with the management of the hotel. No formal program for the committee reports has been arranged at the present time, but Secretary Rosenberg of the Railway Signal Association will issue a complete statement on the first day of the convention. The annual banquet of the association will be held on the evening of Wednesday, Sept. 15.

# Financial and Corporate

## ANNUAL REPORTS

### Brooklyn Rapid Transit Company

The comparative statement of income, profit and loss of the Brooklyn (N. Y.) Rapid Transit Company for the years ended June 30, 1914 and 1915, follows:

	1915	1914	Per Cent
Revenue from operation:			
Transportation .....	\$26,096,265	\$25,246,452	+ 3.37
Miscellaneous .....	331,421	311,797	+ 6.29
<b>Total .....</b>	<b>\$26,427,686</b>	<b>\$25,558,249</b>	<b>+ 3.40</b>
Operating expenses:			
Maintenance of way and structures.....	\$2,391,814	\$2,021,647	+18.31
Maintenance of equipment....	2,401,841	2,315,990	+ 3.71
Operation of power plant.....	1,553,177	1,463,283	+ 6.14
Operation of cars—trainmen's wages .....	4,787,574	4,520,022	+ 5.92
Operation of cars—other expenses .....	1,744,690	1,696,132	+ 2.86
Damages .....	607,700	543,885	+11.73
Legal expense in connection with damages .....	261,153	219,758	+18.84
General law expenses .....	53,406	65,097	-17.96
Other general expenses.....	819,754	822,856	- 0.38
Freight and mail expenses....	338,414	325,054	+ 4.11
American Railway Traffic Company—expenses .....	854	823	+ 3.76
<b>Total .....</b>	<b>\$14,960,381</b>	<b>\$13,994,552</b>	<b>+ 6.90</b>
Net revenue from operation.....	\$11,467,305	\$11,563,697	- 0.83
Income from other sources....	438,715	451,771	- 2.89
<b>Total .....</b>	<b>\$11,906,020</b>	<b>\$12,015,468</b>	<b>- 0.91</b>
Deductions:			
Taxes .....	\$1,700,035	\$1,752,879	- 3.01
Interest and rentals (net)....	4,693,424	4,946,884	- 5.12
<b>Total .....</b>	<b>\$6,393,459</b>	<b>\$6,699,763</b>	<b>- 4.57</b>
Net income .....	\$5,512,561	\$5,315,705	+ 3.70

The net income shows an increase of \$196,856 or 3.7 per cent over the preceding year, and in addition the system's reserves for depreciation were credited with \$256,384 as compared to a debit in the preceding year of \$53,191. The figures for the current fiscal year include the operations of the Coney Island & Brooklyn Railroad for the entire year, whereas for the preceding year those operations were included for only six months. The accumulated surplus on June 30, 1915, after making sundry adjustments to the profit and loss account, and after the payment of dividends at the rate of 6 per cent per annum on the entire amount of capital stock outstanding during the year, namely, \$74,520,000, was \$10,621,966, an increase of \$889,377 over the surplus on June 30, 1914.

The report calls attention to the fact that, excluding for comparison the newly acquired Coney Island & Brooklyn Railroad lines, the passenger earnings of the system failed for the first time in the history of the company to show a substantial increase over the passenger earnings of the preceding year. Instead there was a decrease, which is attributed to two main causes: (1) The general depression in business and industry affecting Brooklyn as well as other portions of the country, reflected in a large number of men and women out of work and a tendency toward economy in expenditures. (2) The very liberal increase in transfer facilities which went into effect on June 1, 1914, under order of the Public Service Commission, whereby the total number of transfer points on surface railroads in the system was increased from 721 to 1008. The first year of operation under this order shows an increase of 10,552,274 transfer passengers carried, and a decrease of 2,141,700 cash passengers. This situation presented not merely a loss in revenue but occasioned an increase in expense by reason of the increased service required for the transportation of the large number of additional transfer passengers. Of the total increase of 6.9 per cent in operating expenses, nearly half, or \$456,018.38, was due to charges to maintenance of way and structures and equipment, and \$267,551.52 to trainmen's wages.

The report reviews the progress of work on rapid transit lines under contracts with the city, and expresses the opinion that owing to delays in letting contracts for construc-

tion the enlarged system will not be completed and ready for operation on Jan. 1, 1917, as expected. A synopsis of the company's rapid transit work shows that four tracks in the Centre Street loop have been completed; the Thirty-eighth Street construction substantially progressed; the four-track Sea Beach line completed and placed in operation; two tracks of the Fourth Avenue subway between Chambers Street and Sixty-fifth Street equipped and operation thereover begun; Broadway and Myrtle Avenue connection and the Lutheran Cemetery line completed; all of the Liberty Avenue elevated extension completed except the stations; first section of the Jamaica Avenue elevated extension begun; third-tracking of the elevated lines progressed; 300 new subway cars ordered, 160 of which have been delivered; comprehensive contract for signal equipment for rapid transit lines entered into and numerous additions to power plant supplied. The total expenditures for rapid transit work by the New York Municipal Railway Corporation to June 30, 1915, were \$30,010,860. The pooling of earnings with the city, which began on Aug. 4, 1913, shows a deficit to June 30, 1915, in meeting the company's preferentials of \$545,413, and a deficit in meeting the city's interest and sinking fund of \$714,722.

Among the items of maintenance, additions and improvements on other than rapid transit lines, were the relaying of 83,930 ft. of surface track; overhauling and repairing of an additional 96,072 ft. of surface track; the installation of 154 pieces of special work; the laying of 146,578 sq. yd. of improved pavement; the renewal of 51,658 lin. ft. of track on elevated lines; the painting of 22,593 lin. ft. of elevated structure; the building of 140,508 lin. ft. of footwalk on elevated structure, and the installation of 16,789 ties on elevated track and 39,630 lin. ft. of timber guard rail.

During the year the company expended in the maintenance and improvement of the club rooms for employees, in support of the pension system, in medical inspection service and in sickness and death gratuities in cases not reached by the employee's benefit association, the sum of \$78,742. The system of compulsory medical inspection accomplished during the past year a reduction in the amount of time lost by the operating employees on account of sickness of 13,485 days (or nearly 18 per cent) over the time lost in the year ended June 30, 1914. The milder winter of 1915 accounted for about 7000 days of the total reduction. Making due allowance for this, however, there still remains a saving of upwards of 6000 days' work for the year, or a reduction of 8.6 per cent over the sickness record of the year ended June 30, 1914. The system was also accompanied by a reduction of 24 per cent in the number of days' work lost by operating employees on account of illness.

On account of the high rate of insurance fixed by the New York Fire Insurance Exchange two years ago the company was obliged to insure its risks with London Lloyds, where a much lower rate was obtainable. Last year the local exchange offered a rate lower than Lloyds, and about 20 points lower than the rates fixed in the preceding year, so that the insurance was placed for three years with domestic companies at an average rate of 0.25387, which has since been reduced to 0.23358. The company's insurance reserve fund has reached \$787,439, an increase of \$188,242 during the year.

### Liverpool Corporation Tramways

The report of the Liverpool (England) Corporation Tramways for the year ended Dec. 31, 1914, shows that the total revenue for the year amounted to £722,307, operating costs (including rental of leased lines) £473,678, and gross profit £248,629. The gross profit was apportioned as follows: Interest, £50,082; sinking fund and repayment of loans, £63,726; reserve, renewal and depreciation account, £34,821, and contribution in aid of the general rate, £100,000. The net profit for the year amounted to £134,821, a decrease of £19,341 as compared with 1913.

The following figures may prove interesting in connection with the financial position of the tramway since it came into the hands of the city: The total sum set apart for sinking fund and redemption of debt up to Dec. 31, 1914, amounted to £1,177,949; reserve, renewal and depreciation,

£800,623; contribution in relief of rates, £572,898. In addition, the sum paid by the tramways since 1897 in rates and taxes amounts to £401,383.

The number of passengers carried, miles run and traffic receipts for 1914, compared with 1913, are as follows:

	1914.	1913.	Increase.
Passengers.....	145,656,374	144,085,927	1.1%
Receipts.....	£684,626	£677,881	0.9%
Mileage.....	13,657,888	13,442,605	1.6%

From the above figures it will be seen that there was an increase in the traffic receipts of £6,145, notwithstanding the fact that the country was under war conditions for nearly five months. The receipts from Jan. 1 to Aug. 1 showed a progressive increase equivalent to 4 per cent. The average earnings per car mile for the year 1914 amounted to 12.02d, as against 12.10d for 1913, a decrease of 0.08d. This decrease was due to the issuing of one and three-quarter millions of free passes to members of His Majesty's forces.

#### APPEAL TAKEN FOR BOND ISSUE

##### Washington Railway & Electric Company Wants Court to Remove Valuation Restriction Imposed by Commission

The Washington Railway & Electric Company, Washington, D. C., on July 20 appealed to the Supreme Court of the District of Columbia to set aside a ruling by the Public Utilities Commission which declined to approve a bond issue of \$341,000 requested by the railway. The company a few months ago asked for a total issue of \$694,000 in bonds, but the commission would allow only \$353,000 to be issued at that time or until the commission had completed its valuation of the company's property. Previous references to this case were made in the *ELECTRIC RAILWAY JOURNAL* of Jan. 23 and April 3.

Eight different reasons are set forth in the company's petition to substantiate its claim that the failure or refusal of the commission to approve the bonds is illegal. It has no assurances when, if ever, the valuation will be completed by the commission. The commission makes a distinction between issues of bonds for capital charges sought voluntarily by the company and those made under express direction of Congress, issues of the latter class always having been approved.

There is no question, says the company, as to the legitimacy of the charges or of the fact of actual expenditure. It is asserted that the law does not contemplate the completion of valuation before action by the commission on its application. The commission is not required to have before it the relation which the value of the property bears to outstanding stocks and bonds before approving the issue. Ascertainment of valuations cannot lawfully enter into or affect the question of the legitimacy of the capital expenditures for which issuance of bonds is desired.

The question of present capitalization is not drawn into controversy, the company contends, by the application for approval of bonds. Even if it were, the company shows that all of its outstanding stocks and bonds were issued and applied under the act of June 5, 1900, and before the creation of the Public Utilities Commission, and that the commission cannot lawfully affect or disturb the existing capitalization fixed with the express sanction of Congress.

The company explains that between Jan. 1, 1909, and Nov. 30, 1914, it expended for additional equipment and extensions the sum of \$457,849. It asserts that it is entitled to have its requested issue of \$694,000 of bonds approved and asks the court to set aside so much of the order of the commission as denied the right of the full issue.

#### BRISTOL TRAMWAY SALE NEGOTIATIONS

Some time ago the option committee of the Bristol Corporation and the representatives of the Bristol (England) Tramways met to see if any arrangement could be arrived at between the two sides with regard to the future of the tramway undertaking. The company broke off negotiations and the corporation has now reopened the matter endeavoring to find out from the tramways company whether some arrangement cannot be arrived at so as to secure the full development of the transit facilities in order

to meet not only the present but the future requirements of the city and surrounding districts. The corporation lays down various conditions which it would like to see fulfilled, and asks if, in the event of the corporation undertaking not to exercise its option of purchasing the tramways, the company will make an offer to enter into an agreement based on these conditions. In the meantime, however, the Bristol Tramways Company is applying for powers to extend its business. It desires not only to continue in the tramway business but to carry on the business of motor-car manufacturers, motor-car engine manufacturers, and repairers and dealers in motor-cars and their parts. It also desires power to include the manufacture of airships and aeroplanes, and, quite naturally at present, power to manufacture ammunition, arms and the like. The company has orders for armed motor-cars, and it desires to do everything necessary to complete them, putting in the guns, etc. Being a large generator of electricity, the company also desires power to supply electricity to other firms, and in other smaller ways to extend its business.

**Boston (Mass.) Elevated Railway.**—The directors of the Boston Elevated Railway have declared a dividend of 1½ per cent, payable on Aug. 16 to stockholders of record on Aug. 5. During the year ended June 30 the company paid 5½ per cent in dividends, the dividend for the last quarter being 1 per cent. Through Boston bankers the company has sold an additional \$1,000,000 of 5 per cent gold debenture bonds dated 1912 and due on Dec. 1, 1942, for 95.68 and interest, to yield 5.3 per cent. As mentioned in the *ELECTRIC RAILWAY JOURNAL* of June 19 in connection with the award of the bonds to the syndicate, this sale makes \$5,000,000 of the issue outstanding.

**Federal Light & Traction Company, New York, N. Y.**—The voting trustees for the capital stock of the Federal Light & Traction Company gave notice this week that the voting trust agreement would expire by limitation on July 29 and that on and after that date the voting trust certificates might be surrendered and exchanged for proper certificates for the common stock of the company. All holders were required to surrender their certificates on and after the date mentioned to the National City Bank of New York, depository.

**Fort Wayne & Springfield Railway, Decatur, Ind.**—The Fort Wayne & Springfield Railway will be offered for sale on Aug. 12. Each bidder must deposit a certified check for \$5,000 and must enter into a contract to pay the balance of the purchase price within sixty days. This will be the fifth time the property has been offered for sale, there being no bidders three different times. In connection with the last sale, held on May 4, the bidder forfeited the \$1,000 deposit then made. Various petitions carrying extensions of the time and asking that the \$1,000 be protected were taken into court, but the court finally fixed upon Aug. 12 as the final date for the sale. On July 17 F. A. Dolph filed a petition asking that the line be sold to him for \$130,000 and agreed to post the guarantee then. Upon objection Mr. Dolph withdrew the offer. Previous references were made in the *ELECTRIC RAILWAY JOURNAL* of March 13, May 22 and June 19.

**Jacksonville (Fla.) Traction Company.**—A quarterly dividend of three-fourths of 1 per cent has been declared on the 6 per cent cumulative preferred stock of the Jacksonville Traction Company, payable on Aug. 2 to holders of record of July 23. Previous payments of 1½ per cent were paid quarterly.

**Montreal (Que.) Tramways.**—The new issue of \$1,000,000 of common stock for the Montreal Tramways, noted in the *ELECTRIC RAILWAY JOURNAL* of July 24, will be allotted pro rata to the holders of the \$3,000,000 of stock now outstanding; that is, one share of new will go to the holder of every three shares of old. The proceeds of the issue will be used for the general purposes of the company.

**New York (N. Y.) Municipal Railway Corporation.**—The Public Service Commission for the First District of New York has approved an agreement between the New York Consolidated Railroad and the Nassau Electric Railroad, by which the former leases for 999 years the terminal of the latter company at Coney Island. The consideration is



the payment of \$247,000, which the commission has authorized the New York Municipal Railway Corporation to charge against the cost of construction under the dual system contracts. In accordance with the agreement between the Consolidated Company and the Nassau Electric Company, the city and the New York Municipal Railway Corporation will agree to a modification of the dual system contract whereby the city will obtain a right-of-way for two tracks into the Coney Island terminal between Avenue Y and Surf Avenue for the use of the trains to be operated over the New Utrecht Avenue elevated railroad. The Sea Beach Railroad has already obtained the right-of-way into the terminal for its trains, so that by the new agreements trains to Coney Island through the Fourth Avenue subway, whether operated over the Sea Beach line or over the New Utrecht Avenue line, will both enter the same terminal at Coney Island.

**Pacific Gas & Electric Company, San Francisco, Cal.**—The Pacific Gas & Electric Company has filed an application with the California Railroad Commission for authority to buy all the capital stock of the West Sacramento Electric Company from G. F. Detrick and H. W. Furlong for \$30,000. The West Sacramento Electric Company operates in Yolo County. It has a capital stock of \$100,000, divided into 1000 shares. The stock is in the hands of the Mercantile Trust Company of San Francisco in escrow. The Pacific Gas & Electric Company obtained options from Messrs. Detrick and Furlong on all of it some weeks ago. This company already owns and operates the electric railway lines in the neighborhood of the territory owned and served by the West Sacramento Electric Company.

**Puebla Tramway, Light & Power Company, Puebla, Mexico.**—The holders of the \$4,229,200 of first mortgage thirty-year 5 per cent bonds of the Puebla Tramway, Light & Power Company were to vote on July 30 in London on a modification of the trust deed to make the interest on these bonds for five years from Jan. 1, 1915, payable only in the event of sufficient net earnings after providing each year for \$3,000,000 of prior lien 5 per cent bonds. Any part of such interest remaining unpaid at the expiration of the five years would be satisfied, if required, by the issuance at par of 5 per cent cumulative income warrants payable only out of profits. No dividends would be paid on the common stock until the whole of income warrants had been redeemed. Provision is also contemplated for cancelling the operation of the sinking fund for five years from Jan. 1, 1916, and for extending the date of maturity of the bonds for five years from Jan. 1, 1937. The management of the company states that the average rate of exchange for last year was less than half of the par exchange or under 1s. per peso, with the result that the earnings in sterling realized little more than the amount necessary to meet the interest on the prior lien bonds alone. The company does not expect that its earnings will for some time realize in sterling the amount sufficient to pay the interest on its first mortgage bonds.

**St. Louis, Lakewood & Grand Park Railway, St. Louis, Mo.**—Under an execution entered on a judgment recently given in favor of a former superintendent for salary, a levy has been made on two of the three cars of the St. Louis, Lakewood & Grand Park Railway.

**Washington (D. C.) Interurban Railway.**—Chief Justice Covington on July 20 authorized the sale of the Washington Interurban Railway. The trustees, J. W. Yerkes and Guy T. Scott, are to conduct the sale in accordance with the decree of the United States District Court in Maryland, where a foreclosure decree was recently entered.

**Washington-Oregon Corporation, Vancouver, Wash.**—The property of the Washington-Oregon Corporation, both real and personal, was advertised to be sold under sheriff's sale on July 3 to satisfy a mortgage of more than \$1,000,000, but the sale was adjourned indefinitely. Attorney Langhorn asserted that one reason for the postponement was the uncertainty existing as the result of certain franchise activities for the use of county roads being carried on by H. D. Fleischhauer, formerly manager for the Washington-Oregon Corporation. The county commissioners have been asked to refuse this grant and have decided to hold off temporarily, but until this matter is settled a stop is

placed upon the intentions of the bondholders, who are prepared to buy in the property.

**West End Street Railway, Boston, Mass.**—The West End Street Railway has sold to F. S. Moseley & Company, Boston, an issue of \$4,743,000 of one, two and three-year notes bearing 5 per cent interest. The notes are equally divided between the three maturities, making \$1,581,000 of each. It is understood that they were sold at a premium. Several bids, naming longer maturing notes or long-term bonds, were received, but these were rejected, as it was felt it was not advisable to load up with long-term bonds, carrying a large interest rate, which would have to be sold at a heavy discount.

DIVIDENDS DECLARED

- Bangor Railway & Electric Company, Bangor, Me., quarterly, one-half of 1 per cent, common.
- Bristol & Plainville Tramway, Bristol, Conn., 2 per cent.
- Connecticut Railway & Lighting Company, New Haven, Conn., quarterly, 1 per cent, preferred and common.
- Cumberland County Power & Light Company, Portland, Me., quarterly, 1½ per cent, preferred.
- East St. Louis & Suburban Company, East St. Louis, Ill., quarterly, three-fourths of 1 per cent, preferred.
- Illinois Traction System, Peoria, Ill., quarterly, three-fourths of 1 per cent, common.
- Jacksonville (Fla.) Traction Company, quarterly, 75 cents, preferred.
- Monongahela Valley Traction Company, Fairmont, W. Va., 2½ per cent, preferred.
- Tampa (Fla.) Electric Company, quarterly, 2½ per cent.
- United Power & Transportation Company, Camden, N. J., \$1.34.

ELECTRIC RAILWAY MONTHLY EARNINGS

ATLANTIC SHORE RAILWAY, KENNEBUNK, ME.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m.,	June, '15	\$28,455	\$29,883	†\$1,428	\$653	†\$2,081
1 "	" '14	29,863	24,075	5,788	680	5,108
BATON ROUGE (LA.) ELECTRIC COMPANY						
1m.,	May, '15	\$14,961	*\$8,761	\$6,200	\$2,166	\$4,034
1 "	" '14	14,964	*9,650	5,314	2,109	3,205
12 "	" '15	181,149	*111,446	69,703	25,127	44,576
12 "	" '14	172,632	*112,603	60,029	25,291	34,738
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1m.,	May, '15	\$9,473	*\$8,484	\$989	\$1,134	†\$145
1 "	" '14	10,999	*9,936	1,063	1,082	†19
12 "	" '15	120,004	*99,754	20,250	13,425	6,825
12 "	" '14	122,375	*102,318	20,057	12,899	7,158
CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.						
1m.,	May, '15	\$26,611	*\$16,410	\$10,201	\$6,724	\$3,477
1 "	" '14	29,486	*16,095	13,391	6,438	6,953
12 "	" '15	340,034	*207,966	132,068	78,432	53,636
12 "	" '14	374,594	*207,657	166,937	74,916	92,021
COLUMBUS (GA.) ELECTRIC COMPANY						
1m.,	May, '15	\$56,471	*\$27,395	\$29,076	\$28,578	\$498
1 "	" '14	54,086	*25,475	28,611	24,781	3,830
12 "	" '15	694,332	*311,858	382,474	343,840	38,634
12 "	" '14	641,478	*280,681	360,797	296,720	64,077
DALLAS (TEX.) ELECTRIC COMPANY						
1m.,	May, '15	\$134,612	*\$86,273	\$48,339	\$33,394	\$14,945
1 "	" '14	184,844	*105,648	79,196	27,493	51,703
12 "	" '15	2,012,647	*1,163,449	849,198	402,896	446,302
12 "	" '14	2,270,243	*1,336,740	933,503	314,938	618,565
EASTERN TEXAS TRACTION COMPANY, BEAUMONT, TEX.						
1m.,	May, '15	\$58,141	*\$31,897	\$26,244	\$8,713	\$17,531
1 "	" '14	55,084	*32,836	22,248	8,377	13,871
12 "	" '15	672,184	*388,167	284,017	104,205	179,812
12 "	" '14	571,267	*362,682	208,585	94,679	†138,775
EL PASO (TEX.) ELECTRIC COMPANY						
1m.,	May, '15	\$71,624	*\$42,642	\$28,982	\$4,187	\$24,795
1 "	" '14	83,286	*47,521	35,765	4,201	31,564
12 "	" '15	1,004,535	*550,173	454,362	50,337	404,025
12 "	" '14	951,588	*521,694	429,894	51,284	†383,622
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.						
1m.,	May, '15	\$169,249	*\$101,054	\$68,195	\$36,059	\$32,136
1 "	" '14	210,528	*112,367	98,161	35,669	62,492
12 "	" '15	2,242,178	*1,245,329	996,849	435,353	561,496
12 "	" '14	2,442,273	*1,376,513	1,065,760	433,155	632,605
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
1m.,	June, '15	\$768,699	\$490,359	\$278,340	\$132,696	†\$147,663
1 "	" '14	790,334	\$470,892	\$319,442	\$129,607	†189,835
6 "	" '15	4,589,809	3,035,016	1,554,793	800,914	†768,607
6 "	" '14	4,513,204	2,859,475	1,653,729	680,790	†877,288

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

# Traffic and Transportation

## LOS ANGELES JITNEYS DECLINING

Strict Regulation Causes Reduction in Craze—First Driver in Pasadena Quits—Interurban Bus Question Put Before Commission

Since July 12 regulation of the jitney traffic in Los Angeles, Cal., has been on a firm and solid foundation, requiring substantial bond or insurance against personal and property damage and proof that the driver meets a certain standard of competency. It is too early to state fully what the effect will be, but hundreds of jitney drivers have quit, because unable either to pay the cost of securing bonds or to pass the reasonable examinations now conducted by the police traffic officials for old and new operators alike.

The ordinance upon which the present regulation is founded is No. 31,877, mentioned in the *ELECTRIC RAILWAY JOURNAL* of March 6. This contained a requirement for a \$5,000 bond. The jitney men's association secured an injunction against its enforcement which remained in effect until after the municipal election last June. Then the injunction was dissolved by Judge Hewitt without any written opinion, and the ordinance became effective on July 1. An amendment, ordinance No. 32,518, was passed by the Council, to become effective on July 20, replacing the requirement of a \$5,000 bond by that of bond or insurance (the insurance option being new) in the amount of \$5,000 for injury or death of one person, \$10,000 for injury or death of more than one person and \$1,000 for damage done to the property of others. This insurance or bond must be approved by the police commission. The jitney-men's association has some arrangement with the Pacific Casualty Company whereby protection that is said to satisfy the ordinance is obtained by its members for \$24 down and \$8 a month. The \$24 pays for the first two months, thus making the cost of the protection \$104 a year.

Immediately after July 1 there was a great reduction in the number of jitneys on the streets. In the palmy days of the jitney craze the largest number counted in service in a day ran fairly close to 800, and in the middle of June a traffic count showed about 425 jitneys in service. After the first week in July there were less than 250 jitneys actually running. During the interval between July 1 and July 20, the police commission permitted operation by those complying with the ordinance in its original \$5,000 requirement, and leniency was shown even in the enforcement of this. On July 12, 306 drivers had filed applications with bonds, and on that day officers were instructed to arrest all who were operating without bonds.

The police traffic department is holding examinations under the ordinance. Applicants are required by a written examination to show a knowledge of rules and orders governing traffic and to pass a road test in which they are accompanied by one of the officers competent to judge their driving. There have been more than 400 applicants examined, of whom about fifty, according to unofficial reports, failed. A great many of these were weeded out by sheer illiteracy or ignorance of the English language. On July 16 the department examined sixty-five applicants, including a few held over from the preceding week. The rate at which new applications have been coming in has been declining, but it is difficult to tell when they will stop. Those who have passed the written tests have usually also passed the road tests, as most of them are men who have been operating jitneys.

The police are not troubled much by attempts to evade the ordinance. The drivers know better, and their association, after the defeat of its efforts to eliminate the bond provision, is now urging peaceable compliance with the law. One driver on the first day of the new regime was taken in for a heart to heart talk with the traffic officers after he had been operating a few hours with a little slotted box tacked up under a sign saying that his vehicle was not a jitney bus, but inviting riders to leave a donation. He promised to quit. The jitneys continue to suffer from overcrowding. It is expected that there may be some regulation of this feature, which many think will result in a wholesale quitting of the service or higher fares.

The question whether the bond requirement applies to buses in interurban traffic entering the city has been taken into court in an action by the proprietors of the "Little Landers" stage, M. Spencer and S. W. Parmenter, which will also involve other features of the ordinance. The whole question of regulation of interurban bus traffic is becoming of increasing importance, as the number of vehicles so engaged is now fairly large. These buses take only the cream of the traffic. An example is the forty cars that run from Santa Ana to the beach on Sunday, but give no service on week days when traffic is light. This subject will be put before the California Railroad Commission under an application filed on July 12 by the Western Association of Short Line Steam Railroads, requesting a determination whether buses in interurban traffic are common carriers and as such subject to the laws, ordinances, rules and regulations governing common carriers. Electric railways will undoubtedly be represented at the hearings. Up to this time the only regulation of interurban buses of interest has been that by the city of Venice, which passed an ordinance permitting the trustees at their discretion to permit buses engaged in interurban traffic to enter the city on payment of a license fee of \$100 a year. The trustees have not yet seen the necessity for issuing licenses to them. At first drivers attempted to evade the effect of this by driving to the next beach point, Ocean Park, but the number so doing has been gradually diminishing.

Some light on the troublesome question of jitney receipts is given by the retirement of C. W. Home, the first man to start a jitney bus in Pasadena, who was widely advertised in early newspaper articles as an example of success in the business. He says a good deal of his early traffic was from novelty seekers among people not accustomed to riding in automobiles. Now many people are getting tired of jitneys. He stated to a reporter: "I started in business on April 20, 1914, operating between the business portion of Pasadena and Lamanda Park. For a while I needed five cars to take care of the business, but now I cannot make a living at it."

## JITNEY CONTROL REFUSED IN INDIANA

Commission Decides It Has No Jurisdiction Under Utility Act—Railway in Kokomo Establishes Bus Lines with Schedules and Transfers on Non-Car Streets

The Public Service Commission of Indiana entered an order on July 24 dismissing the petition of the Terre Haute, Indianapolis & Eastern Traction Company, which sought to bring all jitney buses in the State under the control of the commission, as noted in the *ELECTRIC RAILWAY JOURNAL* of July 17. The commission stated that it had no jurisdiction under the public utility law of 1913.

A hearing was held on July 22, at which officials of the principal street and interurban railways of Indiana appeared before the commission and joined in the petition of the Terre Haute, Indianapolis & Eastern Traction Company. John T. Beasley, attorney, appeared for that company and reviewed the petition and the progress of jitney operations up to this time. Mr. Beasley explained that the petitioners did not contemplate in any way that the jitneys should be wiped out as a competitive factor in the transportation problem, but that regulation on the same basis as the electric roads was all that was desired. He said that if in the development and advancement of this age, new and better methods of transportation are found, the commission should not be called upon to stand between one competing system and another, but it is the province of the State that the competition should be fair.

Mr. Beasley stated that while the Indiana utilities law specifies certain classes of utilities, among which the jitneys do not appear, the law refers frequently to "every public utility," "all public utilities" and "any public utility," and therefore, he argued, it was undoubtedly the intent of the legislature that the commission should have power over such a competitive agent of the traction companies as the jitney buses. Mr. Beasley quoted from decisions of other states to prove his contention that where such an act as the Indiana public utility commission law specifically refers to certain types of utilities it does not exclude from its provisions thereby others of a similar type. Commissioner

Clark asked Mr. Beasley what the commission might do in the premises, assuming that it had jurisdiction. Mr. Beasley said that it might issue an order citing all jitney bus owners to appear by counsel before the commission to formulate some method of licensing the jitneys. Commissioner Clark then expressed his opinion that the electric railway companies had the right to go into court asking restraining orders against the competing jitneys, thus getting the question judicially settled.

Ferdinand Winter, general counsel for the Terre Haute, Indianapolis & Eastern Traction Company, argued that the State has deemed it wise to prevent utilities from earning more than a fair return on an investment, and because of this the State should protect the utility from unfair competition of jitney buses, so that it might earn this amount.

After the decision the Indiana Railways & Light Company, operating the local lines in Kokomo, Ind., announced that it would establish two lines of jitney buses which will operate in portions of the city not now served by street cars. A regular schedule will be maintained and transfers will be given to the street cars, so that passengers may go to any part of the city for a 5-cent fare.

#### MOTOR BUSES FOR BALTIMORE

W. A. House, president United Railways & Electric Company, Baltimore, Md., stated on July 22 that his company was interested in the Baltimore Transit Company, which will place a number of motor buses in service on the streets of Baltimore. Mr. House said that the railway's interest in the establishment of this service is due to its desire to see a bona-fide effort made to ascertain whether or not that method of transportation is a desirable supplement to the present methods, and that its future action would depend on this demonstration. He added: "It has been shown by the experience with that type of vehicle elsewhere that, as now operated, they cannot be made to pay, and except where operated on a 10-cent fare they have gradually disappeared from the transportation field. It has not yet been demonstrated, however, whether or not they can be operated successfully as supplementary to street railway traffic. We are extremely doubtful as to whether they can, but we shall find out as a result of this experiment."

The Baltimore *Sun* states that the Baltimore Transit Company has an authorized capital of \$100,000 and that it is having more than a score of buses made for it by The J. G. Brill Company, Philadelphia. William H. McKee, Philadelphia, is now in Baltimore as the general manager of Baltimore Transit Company.

#### JITNEY ORDINANCES RECENTLY PASSED

##### Wichita, Melrose, Ashtabula, San Diego, Leavenworth and Bridgeport Assume Regulation of Jitneys—Supplementary Ordinance in Dallas for "Rent" Cars

The city of Wichita, Kan., on July 15 passed a jitney ordinance to take effect after Aug. 1. The feature of this ordinance is the inducement offered to keep jitneys off streets occupied by car lines. No one operating a jitney may solicit or receive passengers on car streets (though they may travel on such streets) unless the owner shall pay an additional license fee of \$300 a year for five-passenger vehicles, \$350 a year for vehicles carrying from five to ten passengers and \$400 a year for vehicles carrying more than ten passengers. All other streets may be traversed at will, provided the operators designate the route to be traversed and publish in some public manner the time of departure from the designated terminal corner for all jitneys. The regular city license for jitneys payable annually is \$25 for a five-passenger car, \$35 for a ten-passenger car and \$50 for more than a ten-passenger car. No jitney will be allowed to carry more passengers than the license designates, and only one passenger may ride on the front seat.

Melrose, Mass., has adopted a jitney ordinance, the feature of which is that under no consideration shall the seating capacity of the car as planned by the maker be overtaxed. In applying for a license the applicant is required to show proof of the seating capacity of his automobile as given by the maker, pay a fee of \$1 for a license and file an indemnity bond of \$5,000.

In an effort to escape compliance with the jitney ordi-

nance of Dallas, Tex., which was enforced on July 19, providing for a license fee of \$75, members of the jitney union made preparations to take down their street signs and operate their cars as before, but under the guise of rent automobiles at the license of \$10 provided for rent cars. This evasion was thwarted by the city officials through the creation of another ordinance which prohibits the solicitation of patronage by operators of automobiles for hire other than a motor bus as "motor bus" is defined in the jitney ordinance. The new ordinance stipulates that an operator of an automobile for hire shall be considered as soliciting patronage if he shall announce by voice, sign, writing, color scheme, symbol or advertisement, other than the license number plate, that such automobile is used for transporting passengers for hire. This emergency ordinance compelled compliance with the jitney ordinance, and the day following its enforcement there was no attempt to operate. Efforts to have this ordinance declared unconstitutional failed.

The jitney ordinance in Ashtabula, Ohio, was declared valid on July 12 by Common Pleas Judge A. C. Reynolds. Every point on which the ordinance was attacked by jitney operators was decided in favor of the city. This decision ends a long struggle in Ashtabula. The first ordinance passed by the Council was declared invalid by an acting police judge. On June 7 another ordinance was presented in Council which passed under suspension of rules and became effective on June 15. This also was declared invalid by the police judge, after which the jitney drivers had full sway until this decision by Judge Reynolds. The court decided that the requiring of a license fee of \$25 was a proper exercise of the police power and the license itself was neither excessive nor unreasonable. The bonds of \$3,000 for less than nine-passenger cars and \$5,000 for nine-passenger cars were declared to be within the authority of the city in protecting the public and injured persons. The court held that the operation of the jitney is itself a legitimate business, but that unless it was controlled irresponsible persons would engage in it to the danger of passengers and pedestrians.

After one ordinance had been declared unconstitutional as the result of injunctions secured by the jitney drivers, Mayor Tapps of San Diego, Cal., on July 2 approved a second ordinance passed by the Common Council. This ordinance provides for an application for an auto-bus permit by the owners or lessees of cars, the application to state the routes to be followed, the fare, the schedules, the transfer points, the type of vehicle, the seating capacity and the like. The car owner or lessee must file a bond or insurance policy of \$10,000 to cover accident and damage settlements and pay a license fee of \$10 for each jitney seating five or less passengers, \$15 for one seating more than five and less than eight passengers, \$25 for one seating more than seven and less than sixteen passengers, and \$40 for one seating more than sixteen passengers. Jitney operators must submit to an examination and pay a license fee of \$1. No licenses to operate will be granted to any persons under eighteen years of age. The jitneys are prohibited from running off the prescribed routes, cutting schedules, raising the rates of fare and refusing firemen and police free transportation. Violations are punishable by a fine of not more than \$100 or imprisonment for not more than three months, or both.

The Leavenworth (Kan.) city commissioners on July 20 passed a jitney ordinance requiring a license of \$100 a year and a bond of \$10,000. The jitneys must run on a regular schedule and a fixed route.

An ordinance for the regulation and licensing of jitneys went into effect in Bridgeport, Conn., on July 1. This ordinance provides that each jitney shall be licensed by the superintendent of police, the fee being \$10 for the original license and \$10 for each renewal for vehicles and 50 cents for drivers. The superintendent of police is empowered to require a demonstration by each applicant for a driver's license. No riding is allowed on the steps, hoods or doors of the jitneys and not more than three passengers above the actual seating capacity may be carried at any time. A violation of any provision of the ordinance is punishable by a fine of not more than \$100. It is provided that the ordinance does not apply to any motor vehicle whose minimum charge is more than 10 cents.

### JITNEY JOTTINGS

#### Jitneys in Kansas City Meet Rebuff—Memphis Railway Asks Injunction—Bristol Company Buys Buses for Jitney Service

The jitney situation in Kansas City, Mo., became acute last week, when the White Star line of buses raised its fare to 10 cents and discovered that the people would not pay this amount. They maintained this rate for a few days and then suddenly restored the 5-cent fare. After the failure of the Kansas City Jitney Transportation Company, noted in the *ELECTRIC RAILWAY JOURNAL* of July 24, plans for a coalition of jitney forces, abandoned several weeks ago because of lack of support, were taken up and met with hearty response. The Rapid Transit line got 100 adherents in a few days. This company had already leased a lot 50 ft. x 115 ft., at 1318 Walnut Street, erected a tent and arranged gasoline stations and small facilities for parking cars. It is now the plan to erect a building, with docks extending the long way of the lot, the cars to pass along one dock inward and out by way of the other. The ingoing and outgoing cars will be separated by a low curbing, the docks being on the outside of the runways. There will be plenty of seats on the docks, and outside the north and south walls will be concessions.

The Memphis (Tenn.) Street Railway on July 17 filed a bill in chancery to enjoin every jitney owner now operating in Memphis. It is asserted that the jitney drivers are operating without having given bonds as required by the recent Legislative act, without license, permit or franchise, and are using the streets without lawful authority, control or regulation of any kind. Jitney corporations and owners to the number of 316 are made defendants. The alleged infringement on the franchise rights of the railway is said to be causing the company a daily loss of \$750 to \$1,000.

The United States Circuit Court at Memphis on July 17 denied an injunction sought to void on constitutional grounds the Tennessee statute requiring jitney operators to furnish an indemnifying bond. It was held that the Tennessee act was not violative of the fourteenth amendment of the federal constitution. The opinion is contrary to the decision of Judge Pittman of the State Court, whose ruling was that the act was unconstitutional on account of being class legislation. An appeal from Judge Pittman's decision is pending. Aside from the moral effect on the appealed case, the federal decision simply confines the case to State litigation.

The Bristol (Tenn.) Traction Company has put a 1915 Buick jitney bus in service to supplement its railway lines and is reported to have purchased other automobiles to enter the service. Half a dozen cars have been bought and put into service by the local jitney company, which is composed of business men. The routes have been definitely laid out and the cars are operated on a schedule.

Claiming that jitney competition has seriously affected its business, the Charleston (W. Va.) Interurban Railroad has asked the Public Service Commission to allow it to discontinue traffic on two of its lines, one of them an interurban.

Judge Robert G. Street of the Fifty-sixth District Court at Galveston, Tex., on July 14 denied the petition of the Texas City-Galveston automobile line for an injunction to restrain the city officials of Galveston from enforcing a regulatory ordinance requiring bus licenses and an indemnity bond on each bus to the sum of \$10,000. Judge Street held that in the enforcement of the ordinance there was no violation of any vested rights of the petitioners for using the streets and alleys of Galveston, and that they were subject to the ordinance notwithstanding the fact that they did not operate between points within the city.

The Philadelphia Jitney Association on July 22 unanimously voted against the six-for-a-quarter strip tickets which were recently adopted by the Auto Service Association, the South Philadelphia Jitney Owners' Association and the West Philadelphia Jitney Association, as noted in the *ELECTRIC RAILWAY JOURNAL* of July 24. As a result of this decision the tickets will be good on only about two-thirds of the jitney lines of Philadelphia. The Philadelphia Jitney Association also passed a resolution that no jitney driver could belong to both it and the Auto Service Association, which will cause 300 men to desert one of them.

The Des Moines ordinance for the regulation of jitney buses was declared valid this week in the District Court. The Court holds that the city has a right to regulate the operation of jitneys and to require an indemnity bond as the ordinance provides. The only portions of the ordinance held invalid are the sections requiring that jitneys take on or discharge passengers within 2 ft. of the curb and that they be halted behind street cars or other jitneys taking on or discharging passengers. The section of the present ordinance requiring bonds is also faulty, because it does not insure a proper bond. This defect of the ordinance will be remedied by the city at once. Recent investigations show that the number of jitneys being operated in the city has fallen below thirty.

#### I. C. C. DECIDES TRAFFIC CASE

#### Commission Specifies Basis of Haul Division and Prorating of Joint Rates for Insull Lines Between Louisville and Indianapolis

After a long controversy between the Board of Trade of Louisville, Ky., and the three Insull lines which together make up the route from Louisville to Indianapolis, the Interstate Commerce Commission on July 23 handed down an order apportioning between the three roads the rates to be charged on shipments of freight north from Louisville. The contentions also involved the matter of adequate terminal facilities in Louisville, and the commission directed in favor of the Board of Trade.

The commission's order provides that the through rate between Louisville and Indianapolis shall be divided into three parts, the haul being from Louisville to Seymour, from Seymour to Sellersburg and from Sellersburg to Indianapolis. As between these parts, the joint rates shall be prorated on a mileage basis, with a minimum division of 20 per cent to the Indiana Public Service Company, a like minimum division to the Indianapolis & Louisville Traction Company, and a like minimum division in the aggregate to the Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company for their services south of Sellersburg. The last-named two lines, however, shall have an arbitrary allowance before prorating, on account of Ohio River bridge conditions and terminal conditions, of 1 cent per 100 lb. on less-than-carload shipments, and one-half of 1 cent per 100 lb. on carload traffic, this arbitrary allowance to be included in the minimum 20 per cent division and not to be added to it. By the ruling the basis of divisions and minima shall also govern the apportionment of joint rates applying between Louisville and points on the Indianapolis & Louisville Traction Company line.

This finding means a great deal to the Louisville shippers and is expected to result in an increased volume of freight to the railway companies. Heretofore Louisville shippers have been unable to bill shipments through north of Seymour, although shippers in and north of Indianapolis were able to bill through to Louisville and electric railway points beyond. Traffic by electric railway north of Seymour meant many changes and many bills for the three lines were unable to agree on a division of the rates. As a result the traffic was virtually little or nothing. The basis of division is now specified, and the Louisville Board of Trade will take up with lines north of Indianapolis the matter of through rates from Louisville, heretofore made impossible by reason of the deadlock south. No difficulties are expected in working out these schedules, and through rates would open up a wide and rich territory to Louisville, reaching from Chicago through Toledo, Detroit, around to Cincinnati.

**Interurban and Steam Lines Running Excursions.**—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., is running popular excursions to St. Louis in connection with the Toledo, St. Louis & Western (Clover Leaf) Railroad. The business is handled via Bluffton, Ind.

**Holding Cars for Transfer Passengers.**—The cars of the Louisville (Ky.) Railway are being held at intersecting points until it is certain that there are no passengers wishing to transfer from cars on the cross lines. There was some disposition at first to complain about delays through

such waiting, but this kind of service now has the full support of the people who ride on the cars. Visitors to the city write letters to the local papers expressing their approval of this practice and speaking of the distinction it gives the service. It has not been found that waits of this kind slow up the traffic appreciably.

**June Accidents in New York City.**—The engineers of the Public Service Commission for the First District of New York have completed the tabulation and classification of all accidents reported by railroad and street railway companies in the district for June. They show a total of twenty-three persons killed, which is exactly the number killed in June of last year. Of these fatalities eight occurred on the surface lines, eight on subway and elevated lines, six on railroad trunk lines, and one on railroad terminal lines. The total number of accidents decreased from 6466 in June, 1914, to 6148 in June, 1915.

**Joplin & Pittsburgh Line to Develop Carload Freight.**—The appointment of a traffic manager, J. D. Cornell, by the Joplin & Pittsburgh Railway, noted in the issue of July 24, prefaces active efforts for carload business. Heretofore the line has done considerable freight business, but mostly in broken carloads, handled by the baggage or freight cars of the company. Through rates and divisions are being arranged on all commodities from Kansas City, the Missouri River and defined territory to all points on the Joplin & Pittsburgh Railway. It is expected that preliminary details, such as agreements with steam roads, publication of rates and approval by the commission, will be completed so that the extended business can begin to flow by Sept. 1.

**Petition for Extension of Fare Limits Refused.**—The Massachusetts Public Service Commission has refused to grant a petition of the Selectmen of Rockland for the extension of transfer privileges on the Bay State Street Railway within the town. The general grant noted in the *ELECTRIC RAILWAY JOURNAL* of July 24 had reference to the consent of the company to extend the privileges of an existing 7-cent workman's ticket, good at certain hours only, between Rockland and Brockton to all parts of Brockton. This offer was made by the company pending a decision upon the application which it expects to make for a general revision of fares as a result of the recent arbitration award. In refusing to grant a general free transfer in Rockland, the commission pointed out that passengers boarding a car in any part of Rockland would be able to ride to Brockton or vice versa for 10 cents.

**An Investigating Committee Satisfied.**—Representatives of the transportation committee of the Louisville Commercial Club recently called on Walter Foreman, superintendent of the Louisville & Northern Railway & Lighting Company and the New Albany (Ind.) city lines, to take up a protest made at a recent club meeting about poor freight and express service between New Albany and Louisville. Mr. Foreman satisfied the committee that other circumstances than the delivery system were responsible for delays complained of, and incidentally disclosed the elaborate preparations that had been made to give Louisville merchants a first-class service with the towns across the river. The freight cars of the Louisville & Northern line and those of the Louisville & Southern Indiana Traction Company operate as frequently as the volume of traffic justifies and this service would be increased if the demand for it developed sufficiently. It was possible, in fact unavoidable, Mr. Foreman stated, that bulky freight shipments which were not delivered until after 5 p. m. would not reach the other side until the next morning, but freight in packages of less than 100 lb. was normally delivered in New Albany in forty-five minutes, and similarly in Jeffersonville, while equally quick service is given in Seymour, Columbus, etc., on small freight from Louisville. The cars for a large part of the day are run on a fifteen-minute schedule, while except at night the service is never slower than half hourly. The motor trucks of the company make collections and deliveries in the business section of Louisville, from the river to Broadway and from Shelby to Fifteenth Street; and collections and deliveries are made to all points of the Indiana cities across the Ohio River. After hearing these facts, the committee recommended a larger use of the service available.

## Personal Mention

**Mr. T. J. Collins** has been appointed assistant superintendent of the Eastern Pennsylvania Railways, Pottsville, Pa.

**Mr. C. D. Willoughby** has been elected vice-president of the Mobile Light & Railroad Company, Mobile, Ala., to succeed Mr. J. H. Whiting.

**Mr. E. S. Gillette**, formerly assistant engineer of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has been appointed electrical engineer to take up part of the duties made vacant by the resignation of Mr. E. F. Gould, noted elsewhere in this column. Mr. Gillette will have charge of the shop, power house, substation and line departments.

**Mr. J. Dunhill**, secretary of the Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col., has been elected treasurer of the company to succeed Mr. L. C. Gerry. Mr. J. B. Marsh has been elected secretary of the company to succeed Mr. Dunhill.

**Mr. E. R. Peacock** has been appointed president of the Barcelona Traction, Light & Power Company, Ltd., Barcelona, Spain, to succeed the late Mr. F. S. Pearson. Mr. Peacock will have charge of the financial arrangements of the company.

**Mr. C. F. W. Wetterer** of Stone & Webster, with headquarters at Boston, is now assisting Mr. C. F. Wallace, now at Dallas, Tex., in charge of the Stone & Webster interests there. Mr. Wetterer was formerly secretary to Mr. M. H. Phinney of Stone & Webster.

**Mr. J. J. Callahan**, formerly superintendent Montreal & Southern Counties Railway, Montreal, Que., was on July 15 named operating manager of the London & Port Stanley Railway, London, Ont., which is now being run by hydro-power by the city of London.

**Mr. H. S. Cooper**, who has been the energetic secretary of the Southwestern Electrical & Gas Association for the last three years, has opened an office as consulting and advisory engineer at Dallas, Tex. This makes no change in his office as secretary of the association. In his new work Mr. Cooper will specialize on the construction, operation, and maintenance of electric railways, lighting, gas, and waterworks properties, not only in engineering cases but in matters of public policy. He has been very actively connected with work of this kind for the last twenty years or more, first in Schenectady, N. Y., then in Ithaca, N. Y., and later in Galveston, and he has been conspicuously successful in rehabilitating poorly-paying properties and in putting them on a sound financial basis.

**Mr. E. F. Gould** has resigned his position as assistant general manager and mechanical and electrical engineer of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., to become consulting engineer in the Cleveland office to act in a supervisory capacity over all the properties in which Mandelbaum, Wolf & Lang are interested. Mr. Gould has been with the Aurora, Elgin & Chicago Railroad since 1903, first as a mechanical and electrical engineer and later as assistant general manager and engineer. He designed and built all additions and improvements to plant and equipment and paid special attention to power economies. Prior to 1903 he spent four years in the railway engineering department of the General Electric Company at Schenectady. For the last few years Mr. Gould has been consulting engineer for the Western Ohio Railroad, Lima, Ohio, one of the properties owned by Mandelbaum, Wolf & Lang.

### OBITUARY

**Samuel E. Vincent**, author of the Connecticut public utilities commission act, died at his residence in Bridgeport, Conn., on July 19.

**J. Frank Chapman**, who was general manager Thousand Islands Railway and Oshawa (Ont.) Railway, died at his home in Gananoque, Ont., on July 19 at the age of fifty-two. When seventeen years of age he entered the employ of the Thousand Islands Railway as junior clerk, from which position he rose to be chief executive. He was president of the Canadian Freight Association for one year.

## Construction News

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

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

### RECENT INCORPORATIONS

**Corpus Christi Traction Company, Corpus Christi, Tex.**—Incorporated in Texas to construct an interurban railway in and out of Corpus Christi north, west and south. Capital stock, \$100,000. Incorporators: J. S. Caswell, San Diego; J. R. Hopkins, W. G. Blake, Orlan P. Metcalf, Gordon Boone and W. E. Pope, all of Corpus Christi, and Arthur McEvoy, New York City. [July 17, '15.]

### FRANCHISES

\***Los Angeles, Cal.**—P. D. Cornelius has received a twenty-one-year franchise from the Council to construct an electric railway on Brooklyn Avenue, Evergreen Avenue and Wash Avenue, Los Angeles.

**Los Angeles, Cal.**—The Pacific Electric Railway has received a franchise from the Council to construct an extension of its lines across the Shoe String Strip.

**San José, Cal.**—The Council of San José has passed a resolution to grant a franchise for the construction of a line on Alum Rock Avenue requested by the San José Railroads. Bids for the franchise will be received by the Board of Supervising Engineers until Sept. 7, 1915.

\***Clearwater, Fla.**—E. W. Parker, Tampa, and associates have received a franchise to construct an electric railway in Clearwater and vicinity.

\***Baltimore, Md.**—The Idlewyde Park Railway has received a franchise from the Council to lay tracks on Register Avenue from the York Road to Idlewyde Park. This railway will connect with the tracks of the Towson and Catonsville division of the United Railways & Electric Company.

**Springfield, Mass.**—The Springfield Street Railway has received a franchise from the Council to construct a railway from East Springfield to Chicopee.

**Buffalo, N. Y.**—The Council of Buffalo has adopted a report granting a franchise to the International Railway to lay a special track on Michigan Avenue and Ohio Street, subject to the consent of the Lackawanna Railroad.

**Utica, N. Y.**—The New York State Railways will ask the Council for a franchise to extend its Elm Street line eastward on James Street, Utica.

**Wilkes-Barre, Pa.**—The Wilkes-Barre Railway has received a franchise from the Council to lay tracks on East North Street between North Main Street and North Pennsylvania Avenue. This track will be used by the Parsons, East End and Miner's Mills cars for temporary service during the construction of a new sewer on North Pennsylvania Avenue.

### TRACK AND ROADWAY

**Columbus, Ark.**—Work has been resumed on the proposed electric railway between Columbus and Washington, Ark., after having been suspended last fall on account of financial conditions. It is expected that the roadbed will be ready for the ties and rails inside of six weeks. Rufus S. Stout, Pine Bluff, is interested. [May 1, '15.]

**Connecticut Company, New Haven, Conn.**—This company has agreed to pay \$1,250 toward the construction of a new bridge over Sumner Creek, Hartford, and work will be begun at once. The bridge will be 65 ft. long and 32 ft. wide, with a roadway of 26 ft. and 6 ft. for pedestrians. A temporary bridge will be constructed for use while the new bridge is being built.

**Washington Railway & Electric Company, Washington, D. C.**—Work has been begun by this company improving its tracks in Anacostia and placing its power underground.

**Clearwater, Fla.**—Work will soon be begun on the proposed electric line from Brooksville to St. Petersburg, via Clearwater. Construction will be begun at Brooksville and will extend southward. It is expected that the line will be completed as far as Clearwater by Nov. 1. James Murphy, St. Petersburg, is interested. [Nov. 7, '14.]

**Lewiston-Clarkston Transit Company, Lewiston, Idaho.**—Announcement has been made that this company plans to extend its lines in Lewiston about 1 mile and its lines in Clarkston about 1 mile at an estimated cost of from \$75,000 to \$100,000. Preliminary surveys have been made.

**La Salle County Electric Railroad, Chicago, Ill.**—Plans for the construction of this company's line have been submitted to the Public Utilities Commission of Illinois. The contemplated road will connect Ottawa and Mendota. [July 17, '15.]

\***Peoria, Ill.**—Peoria financiers are interested in a proposition to construct an electric railway from Peoria to Galesburg. The route will probably be via Peoria and Farmington, to connect with the Illinois Central Electric Railway extending south from Galesburg into Fulton County.

**Peoria (Ill.) Railway.**—Material has been received and work will be begun at once by this company relaying its tracks on Second Avenue from Franklin Street to State Street, Peoria.

**Tri-City Railway Company of Illinois, Rock Island, Ill.**—This company expects to have its new Fourth Street line in operation within the next thirty days. The rails being used are of the heaviest type.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company is considering the construction of a line to Spencer Park, Logansport.

**Indianapolis Traction & Terminal Company, Indianapolis, Ind.**—This company will lay an additional track on Indiana Avenue, Indianapolis, from West Street to Blake Street.

**Lafayette & Northwestern Railway, Lafayette, Ind.**—The people of Rensselaer, Ind., voted down a proposition to give a 2 per cent subsidy, amounting to \$60,000, for the construction of this company's line through Rensselaer. [April 3, '15.]

**Louisville & Southern Indiana Traction Company, New Albany, Ind.**—In connection with the improvement of Market Street from the Chicago, Indianapolis & Louisville Railway to Vincennes Street this company will replace its T-rails with girder rails.

**Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa.**—Homer Loring, president of this company, announces his relinquishment of stock control of the Crooked Creek Railroad between Lehigh and Webster City. He says he has given up the idea of electrifying the line, although he has not abandoned the project for an electric line from Fort Dodge to Webster City. The contract for new \$70,000 terminal buildings at Fort Dodge has been awarded and work is now in progress. Work has been begun on a new \$50,000 warehouse at Fort Dodge.

**Ottumwa Railway & Light Company, Ottumwa, Iowa.**—A petition will soon be presented to this company by the residents of Ottumwa for the extension of its Court Hill line north about 1½ miles.

**Hutchinson (Kan.) Interurban Railway.**—Plans are being made by this company to use steel ties in the construction of its track on South Main Street and Second Avenue East. The base of the right-of-way under the pavement will be of concrete. Under each rail, extending lengthwise of the street, will be a section of reinforced concrete on which the steel ties will rest.

**Lowell & Fitchburg Street Railway, Ayer, Mass.**—This company has asked the Public Service Commission of Boston for its approval of the extension of its tracks on Main Street and West Main Street, Ayer, across the Boston & Maine Railroad tracks to connect with the Ayer terminus of the Shirley-Ayer line of the Fitchburg & Leominster Street Railway.

**Bay State Street Railway, Boston, Mass.**—This company has completed the work of laying new double track on its line on Lakeview Avenue, Dracut.

**Boston (Mass.) Elevated Railway.**—Work has been begun by this company laying new tracks on Washington Street, Brookline.

**Worcester (Mass.) Consolidated Street Railway.**—This company has completed the work of relocating its tracks in Wood Square, Marlboro.

**Detroit (Mich.) United Railway.**—Work will be begun at once by this company on the construction of an extension into the Fourth Ward. The line will connect the west side with other car lines in the city.

**Fallon (Nev.) Electric Railway.**—Work has been resumed by this company on the construction of its line from Fallon to Sand Springs, 30 miles. The roadbed is completed as far as the heavy grading, cuts and fills are concerned, and work at present will be confined to trimming up the grade to get ready for the laying of ties and tracks. It is expected that track-laying will be begun within the next sixty days. Mayor E. S. Berney and Dr. C. A. Hascall are interested. [Dec. 19, '14.]

**\*Landing, N. J.**—Decision to build a new electric line from Landing to Lake Hopatcong and thence through Fort Morris to Netcong was reached on July 20 at a meeting in Pittsburgh of officials of the Morris County Traction Company. While this new railroad will be virtually under the management of the Morris County Traction Company it was decided for financial purposes to form a separate company, the name of which has not been selected. It is proposed to pay 5 per cent of the gross income to the municipalities through which the new line will pass. Roxbury Township has already granted the franchise from Landing through Port Morris, but the question has not yet come up before the Netcong officials.

**\*Salem, N. J.**—Plans are being considered to construct an electric railway from Salem to Pennsgrove. Among those interested are Arthur B. Smith, Harry G. Hart, Isaac C. Smashey, James S. Wheeler and Wesley F. Sinnickson.

**New York, N. Y.**—Bids were opened on July 27 by the Public Service Commission of the First District of New York for the construction of Section 3 of Routes No. 4 and 36. This section begins at Thirty-eighth Street, New York, and runs north under Broadway to Forty-second Street, where it crosses under the line of the existing subway and continues north through Seventh Avenue to Fifty-first Street. The lowest bid was that of Holbrook, Cabot & Rollins Corporation for \$3,741,000. Bids were also opened for the construction of Section 3 of Route No. 12, which runs under Eastern Parkway, Brooklyn, from Nostrand Avenue to Buffalo Avenue. The lowest bid was that of Rodgers & Hagerty, Inc., for \$2,170,000. The Broadway subway is to be operated by the New York Consolidated Railway under contract between the city and the New York Municipal Railway Corporation. The Eastern Parkway subway will be operated by the Interborough Rapid Transit Company as an extension of the existing subway. Bids were also opened for the supply of 2200 tons to 3000 tons of manganese rails to be used on the new subway and elevated lines to be owned by the city, for which the lowest bid was that of Manganese Steel Rail Company, \$263,591.

**Niagara River & Eastern Railway, Niagara Falls, N. Y.**—Briefs were filed by this company on July 20 with the Public Service Commission for the Second District of New York, supporting its petition for permission to build a double track fast freight and passenger line from Lockport to Niagara Falls to connect with the Buffalo, Lockport & Rochester Railway and the International Railway. Connected with this plan is the proposition to double track the Buffalo, Lockport & Rochester Railway. [April 10, '15.]

**Goldsboro Electric Railway, Goldsboro, N. C.**—This company reports that it expects to build 1 mile of new track in Goldsboro.

**Cleveland (Ohio) Railway.**—Peter Witt, street railway commissioner of Cleveland, stated on July 21 that the Buckeye Road line will be extended from East 116th Street to East 130th Street and the Woodland Avenue line from East 122d Street to East 130th Street. Work will be completed by Dec. 1.

**Cleveland, Akron & Canton Terminal Railway, Cleveland, Ohio.**—Engineers will begin work within the next few days along the route of this company's proposed subway under East Fifty-fifth Street, preparing plans, specifications, and estimates covering the construction of the subway, freight stations, docks, and water front development. The Foundation Company of New York and the Osborne Engineering Company have received the contract. O. C. Barber, Barberton, president. [July 24, '15.]

**Lehigh Valley Transit Company, Allentown, Pa.**—Plans are being made by this company to lay a second track along Broad Street, West Bethlehem, near Twelfth Avenue.

**Schuylkill Electric Railway, Pottsville, Pa.**—The contract for the grading and laying of track on this company's line over Broad Mountain has been awarded to the Trexler Contracting Company, Reading. The railway will connect Pottsville, Frackville, and Shenandoah, and will form a complete line between Pottsville and Shamokin. The rails to be used will be of the heaviest type.

**\*Alexandria, Tenn.**—The voters of Alexandria and the rest of DeKalb County will vote on Aug. 12 on a \$150,000 bond issue as its contribution to an electric railway that is projected to run through DeKalb County and Wilson County. The Nashville, Chattanooga & St. Louis Railway plans to electrify its road from Nashville to Lebanon, to connect with the extension which is planned to run from Lebanon via Watertown, Alexandria, Liberty, and Dwelltown to Smithville.

**Northern Texas Traction Company, Fort Worth, Tex.**—This company plans to extend its Summit Avenue line for more than half a mile beyond the present terminus, Willing Street and Folsom Avenue. The line will extend west on Folsom Avenue to Gordon Street and south on Gordon Street to the old belt line tracks. About 2500 ft. of the extension will be beyond the city limits.

**Wheeling (W. Va.) Traction Company.**—This company is placing new ties and rails on Eoff Street, Wheeling, between Twenty-seventh Street and Twenty-ninth Street, and laying new brick between the tracks.

**Waupaca Electric Light & Railway Company, Waupaca, Wis.**—A report from this company states that it expects to install a small signal equipment some time before fall.

#### SHOPS AND BUILDINGS

**Illinois Traction System, Peoria, Ill.**—The Public Utilities Commission of Illinois has approved the plans for a joint station to be built by this company and the Chicago & Eastern Illinois Railroad at Glover, Ill.

**Arkansas Valley Interurban Railway, Wichita, Kan.**—This company has purchased the property opposite the railway junction at Burrton for its new interurban station.

**Electric Short Line, Minneapolis, Minn.**—Bids will be opened shortly by this company for the construction of a new passenger station at Seventh Street, Holden Street, and Third Avenue N., Minneapolis.

**New York State Railways, Rochester, N. Y.**—Plans have been completed and work will soon be begun by this company on the construction of a new terminal at Glen Haven.

**Goldsboro Electric Railway, Goldsboro, N. C.**—A report from this company states that it has awarded a contract to Glisson & Sons for the construction of a new carhouse in Goldsboro.

**Oregon Electric Railway, Portland, Ore.**—Among the improvements contemplated by this company is the construction of an extension to its freight sheds in Eugene which will almost double their capacity, and a warehouse 50 ft. x 100 ft. at Harrisburg.

#### POWER HOUSES AND SUBSTATIONS

**Manchester Traction, Light & Power Company, Manchester, N. H.**—J. H. Mendell Company has begun work on the construction of this company's Brook Street substation and on the auxiliary steam power plant at Kelley's Falls. Construction will soon be begun on its substation at Garvin's Falls. The Brook Street substation will be 145 ft. x 100 ft. and 64 ft. high. The generators will have a capacity of about 3500 kw. The Garvin's Falls substation will be 42 ft. x 70 ft. The Kelley's Falls plant will be 144 ft. x 44 ft. and 75 ft. high, and will be added to the recently completed substation, forming an L. This plant will generate 10,000 hp. All the buildings will be of brick and cement construction. It is expected that the cost of these improvements will be about \$300,000.

**Union Light, Heat & Power Company, Fargo, N. D.**—This company has placed an order through H. M. Bylesby, Chicago, for two 1875-kva., 2300-volt, 3600 r.p.m. turbo-generator units. The apparatus has been ordered from the Westinghouse Electric & Manufacturing Company.

# Manufactures and Supplies

## ROLLING STOCK

**Humboldt Transit Company, Eureka, Cal.**, is remodeling its cars for pay-as-you-enter service.

**San Francisco Municipal Railway, San Francisco, Cal.**, has received sealed bids for furnishing and delivering a work car.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**, is considering the purchase of some new observation cars for interurban use.

**Corpus Christi & Ward's Island Railway, Corpus Christi, Tex.**, a new line which is under construction between Corpus Christi and Ward's Island, is contemplating storage battery service and is figuring on a 25-ton storage battery locomotive to handle the movement of truck farming products in that section, the locomotive to be capable of handling 100,000 lb. in weight at a speed of 15 m.p.h. on level track.

**Richmond & City Point Transportation Company, Richmond, Va.**, J. C. Robertson, has made arrangements with the Tidewater & Western Railroad for passenger operation over the latter's line in connection with the Virginia Railway, Light & Power Company to operate storage battery service to Bermuda Hundreds and thence by ferry to Dupont City, Va., the population of which latter city has increased from 18 inhabitants to 17,000 since the Dupont powder plant was built there.

**Public Service Railway, Newark, N. J.**, has begun work in its shops on the construction of a closed car for city service. The length over bumpers will be 50 ft. 10 in., or 5 ft. longer than the standard cars now in service. Body length will be 36 ft. 6 in. Other details will be as follows: steel underframe, steel sides up to belt rail, tee-iron carlins, no bulkheads, longitudinal seats, compromise-type roof, with Agasote roofing and no inside lining, Standard Steel trucks, Westinghouse motors and Westinghouse HL control.

**Maryland & Pennsylvania Railroad, Baltimore, Md.**, a steam road, has leased a storage battery car of the Railway Storage Battery Car Company, New York, N. Y., for trial operation under its regular passenger 75-minute schedule between Belair and Baltimore, 26.3 miles. The car will make three round trips per day, hauling a 30-ton trailer. The average grade on the line is 2.19 per cent, the maximum 5 per cent; there are also a great number of curves. If this car meets the requirements of service this railroad contemplates storage battery operation for the entire passenger service between Belair and Baltimore by equipping the line with five more cars.

## TRADE NOTES

**Curtain Supply Company, Chicago, Ill.**, has received orders to equip with its curtain fixtures and rollers the new cars recently ordered by the Corpus Christi & Interurban Railway, New York & Queens County Railway and Norton & Taunton Railway.

**Esterline Company, Indianapolis, Ind.**, has received orders for "Golden Glow" headlights for the following electric railways: Metropolitan Street Railway, Kansas City, Mo., twenty SM-95 headlights; Beaumont (Tex.) Traction Company, fourteen SM-95 headlights; Binghamton (N. Y.) Railway, fourteen SM-95 headlights; Georgia Railway & Power Company, twenty-four SR-95 headlights, and New York & Queens County Railway, twelve SE-95 headlights.

**Block Folding Step Company, Louisville, Ky.**, which proposes to manufacture and market a folding step for street cars and other vehicles, has been incorporated in Louisville with \$5,000 capital stock. The authorized bonded indebtedness is \$20,000. Incorporators are Rollie A. Jackson, Owensboro, Ky., and William H. Bartlett and William A. Rosenfield, Louisville. Morton Yonts of O'Doherty & Yonts, 906 Inter-Southern Building, is also interested. Plans of the company are indefinite as yet.

**Electric Materials Company, North East, Pa.**, has been formed for the purpose of manufacturing electric machinery and repair parts, such as commutators, trolley wheels, line material, copper, bronze and brass castings, and drop forgings in copper and steel. The plant at North

East is of brick and steel construction and occupies 15,000 sq. ft. of floor space. The officers of the company are: President, G. E. Pierce; vice-president, F. B. Moorhead; treasurer, O. C. Hirtzel; secretary, N. P. Fuller. A sketch of Mr. Hirtzel's business career was published last week. This item is a correction of one in last week's issue in which an error was made in the name of the company.

**Lord Manufacturing Company, New York, N. Y.**, announces the resignation of E. A. Lightner as manager to become president of Thompson, Brown & Company, educational publishers. The latter firm is the oldest publisher of school textbooks in the country, having been organized in 1844 at Boston. The headquarters will hereafter be in New York. Mr. Lightner became connected with the Lord Manufacturing Company in 1912 as sales manager and secretary. In 1913 he became general manager and treasurer. He will continue to serve on the board of directors. C. W. Horne, who has been chief engineer of the company for the past year, has been made general manager. Mr. Horne was formerly engineer of tests for the Interborough Rapid Transit Company. He is president of the Horne & Crane Engine Company, whose automatic train stop and speed control device is being tested by the Central Railroad of New Jersey.

## ADVERTISING LITERATURE

**Roller-Smith Company, New York, N. Y.**, has issued a number of sheets describing its precision torsion balances for weighing lamp filaments and its various types of meters and circuit breakers.

**Pelton Water Wheel Company, San Francisco, Cal.**, has issued a folder describing the individual features of the exhibit of hydraulic power apparatus and auxiliary equipment at the Panama-Pacific Exposition, San Francisco, Cal.

**Standard Underground Cable Company, Pittsburgh, Pa.**, has issued a booklet entitled "Pointers on Telephone Cable Specifications." The booklet contains useful information regarding the size of conductor and sheath and type of sheath for various conditions, and directions for preparing specifications.

**Pittsburgh High-Voltage Insulator Company, Pittsburgh, Pa.**, has issued a folder describing its high-voltage porcelain strain insulators of standard styles. These insulators are all free from metal parts and are not subject to strains set up by the use of metal expanding in greater proportion than the insulation.

**Carnegie Steel Company, Pittsburgh, Pa.**, has issued the fifth edition of the Carnegie Shape Book. This book contains a complete list of all the products manufactured on the shape, plate, bar and rail mills of the Carnegie Steel Company with a few unimportant exceptions and is indicative of the variety of forms now made in rolled steel. A comparison of this edition with the fourth, issued in 1911, will show roughly the progress of the introduction of steel in varied lines within the past four years. Among the relatively new lines of manufacture will be noted very many new sash and casement sections, used in the construction of metal window panes, skylights, etc., and a large number of automobile sections together with a line of light weight beam sections distinguished from the American standard sections by the designation structural beams. The book is printed on special lightweight thin paper adopted by this company for publications of this kind and is attractively bound in green leather with gilt edges. Copies may be procured at the price of \$1.

The Port Commission of Seattle, Wash., and the Ferry Line Auto Bus Company are negotiating for the establishment of jitney bus service in West Seattle in connection with the bay ferry steamers. The plans as proposed call for the operation of three large jitney buses. The agreement provides for a fare of 5 cents from Seattle across the bay to West Seattle by ferry, and by jitney bus to nearly every part of West Seattle, 2 cents of the fare to go to the Port Commission and 3 cents to the jitney bus company. The proposed buses would compete with the Alki Point and Fauntleroy lines of the Puget Sound Traction, Light & Power Company in West Seattle.