

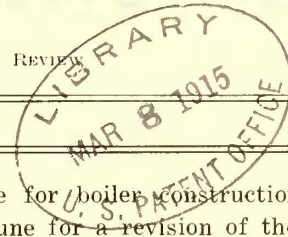
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AS TO HOLDING BRIEFS

Some good friends of the JOURNAL have taken exception to the editorial—"A Brief for the Railways"—which appeared in a recent issue. The exception is taken on the ground that we should not hold a brief for any interest. This is on the theory that a brief in this sense means a one-sided presentation; that it means special pleading and in general a declaration of "My country (or its electric railways), right or wrong!" This, however, was not our idea. The JOURNAL is the voice of the electric railway industry. When this industry is unfairly attacked the JOURNAL seeks to defend; but when policies or individuals go wrong it is the JOURNAL'S business to point out the error. The principal aim to be accomplished is a better understanding of the problems of the electric railways both by themselves and others. In these problems we include questions in respect to their construction, equipment and operation and also those of public policy. Anything that will aid in bringing about this understanding—whether it is defense, criticism or merely exposition—is a part of the brief that we hold for the electric railway industry. Owing to the fact that misunderstanding is rife and attack not infrequent, it may occur that the JOURNAL will often be placed in the attitude of defense, but always, it is to be hoped, defense of the right.

RATIONAL UNITS IN THE BOILER ROOM

The communication from H. G. Stott, published elsewhere in this issue, constitutes the strongest argument of which we can conceive for the abolition of the unit, "boiler horse-power." In this Mr. Stott points out that there are two uses for the term, one being to rate boilers in making purchases, and the other being to measure outputs of steam-generating apparatus. In both cases there are introduced material disadvantages, of which the imposition of unnecessary labor in engineering calculations (owing to the odd value of the unit) is certainly worth consideration by all engineers. The term has been perpetuated in part by its appearance in boiler-maker's catalogs, although its effect is modified by the practice of the best manufacturers in specifying the area of heating surface that applies to each rating. But in the main it is the use of the "boiler horse-power" in the standard boiler-testing code of the American Society of Mechanical Engineers that offers the real obstacle to the adoption of a rational unit. In the "short" code the term "boiler horse-power" appears twice, once as the "manufacturers' rating" and once to express the actual output of the boiler under test, and as the society has now completed the monumental work

of standardizing a code for boiler construction, the time seems most opportune for a revision of the testing code as well. Even if opposition to the myriawatt (or some other rational unit) should prevent its use in such a revision, the testing code at least will be better off with the two references to boiler horse-power eliminated altogether.

NEW YORK ASSOCIATION MEETING

That the quarterly meeting of the New York Electric Railway Association held this week at Lake George was unusually successful was due in large part to the plan used in producing the program. That it was a profitable meeting was attested by all present, one long-time convention goer stating that he had never voluntarily sat so continuously at a meeting of the association before. The device employed by President J. F. Hamilton was as follows: Three topics of vital interest were selected for discussion and two of these were assigned to two members with the request that they prepare brief papers suitable for opening the discussion. Copies of these were distributed to all members with the request that three-minute contributions be prepared in advance and delivered at the meeting. The result was that the available time was not sufficient for the presentation of all of these and for the expression of ideas spontaneously developed during the discussion. The advantages of this plan are that it insures a considerable reading of the papers in advance, these being brief and calculated to bring out differences of opinion; it encourages members unaccustomed to speaking to venture on a small scale; it permits the prompt launching of discussion at the meeting, and it minimizes the amount of rambling discussion which always accompanies lack of preparation. The plan is especially well adapted to the smaller associations at whose meetings a large proportion can have the floor if they do not want to keep it too long.

ENCOURAGING SIGNS FOR THE RAILWAYS

It is encouraging to have such utterances from high officials as those presented at the Indianapolis meeting last week of the Central Electric Railway Association by Governor Ralston of Indiana and Chairman Duncan of the Public Service Commission. Both are evidences of a saner view of the functions of the railways, which is becoming, we believe, more general. Both of these gentlemen, in representing the public, spoke about the responsibility of the railways to give good service, and if this was done the willingness of the public to grant rates that would furnish a reasonable return on a fair capitalization. Requests from

the railways for an increase in fares must be justified by a presentation of the facts, but Mr. Duncan, in his interesting analysis of the financial reports of the Indiana roads, showed that on the copper-zone basis the returns should be about 6 per cent on a capitalization per mile of track, which does not differ greatly from the actual capitalization of a considerable number of the interurban companies. Finally, Governor Ralston stated in unequivocal terms that it was his intention to recommend to the Legislature that it empower the Public Service Commission to authorize an increase in the passenger fares not to exceed $\frac{1}{2}$ cent per mile. These expressions, coupled with the recent fare decisions in the cases of the Rochester and Schenectady railways in New York, the Middlesex & Boston fare decision in Massachusetts and the Manchester fare decision in New Hampshire indicate that the public is beginning to realize the importance to its general welfare of a prosperous condition of its transportation companies.

METERS AND MANAGERS

In the issue of Feb. 27 we discussed under the heading of "Meters and Men" the desirability of judging the men with due regard to the number of stops. Another and really fundamental aspect of the car-meter problem is found in the different attitudes of the managers who buy electrical energy and of the managers who make it. Talks with the class first mentioned bring out the fact that they appreciate the energy-saving possibilities of the meter, and if they are not enthusiastic meter users they are at least ripe for a demonstration. On the other hand, talks with the second class develop a certain degree of skepticism. After all it is not difficult to account on purely psychological grounds for these differences in opinion. The manager who buys energy gets a distinct shock once a month when the power bill is presented to him for payment. Writing big checks is painful exercise. Therefore, anything that promises an immediate reduction is examined at once and will usually get a chance to make good. But where the railway generates its own power the effect of the meters is not so direct, although the saving might be in the same ratio. A difference of a few dollars in each of the many accounts of the power department would hardly be noticed on the individual invoices, yet the aggregate for a year would be very large. The fuel saving is the one large and conspicuous item, but even this would not reach its maximum until the operation of the power machines had been adjusted to meet the new conditions. Thus it is that one manager sees waste in all its hideous nakedness while from the sight of the other it is screened by a maze of accounting detail. Let the meter question be faced with an open mind, no matter what the power situation is. As we said years ago in these columns, it is as absurd to allow a motorman the unchecked use of electricity as it would be for an electric lighting company to discard meters and charge all of its customers a uniform rate independent of the amount of energy which they used.

THE AUTOMOBILE AND THE INTERURBAN

One of our subscribers, in calling our attention to the astonishing growth of the automobile industry, asks whether the 1,735,000 motor cars reported by *The Automobile* as being registered in the United States do not constitute a disturbing factor of serious import in our economic life. The figures are, at least, worth consideration, for the cost of these machines is approximately \$1,500,000,000. Last year's output alone is reported to have been 515,000 cars with a value of nearly half a billion dollars, and the expense of operating the cars in service during the same twelvemonth may be estimated at another half billion.

Undeniably, these are enormous sums to be turned into the very restricted channel of a single industry, especially when it is considered that only about 7 per cent of the total number of cars in service can be classed as commercial, or useful, vehicles. Indeed, the manufacture of motor cars has now reached first place among the great "non-productive" industries of the world, as it absorbs without bringing anything definite in return, a far greater sum annually than is spent for tobacco, confectionery, or the "movies." As a means for diverting surplus cash from the savings banks it even exceeds, by a 20 per cent margin, the cup that cheers and sometimes (if taken with sufficient frequency) inebriates.

We shall not attempt here to analyze the economic effect of this expenditure of such a large part of the wealth produced annually in this country, nor attempt to decide whether it has increased the general cost of living, as has been claimed, or whether the greater part of the money thus spent is not simply diverted from other non-productive channels. We are more interested in the effect on the electric railway industry, and here the outlook is not altogether reassuring.

Competition from automobiles can come, of course, from the commercial car or the private car. So far as the former is concerned, we have already expressed our opinion that the independent car cannot compete with the trolley car in cheapness of operation, where the traffic to be carried is sufficient to warrant the installation of an electric railway system. For this reason, in all places where the franchise conditions for the two classes of transportation are at all equal, there is no great danger from the automobile bus.

With private cars the situation is somewhat different. In their case the electric railway company not only loses the fare of the owner of the automobile and of his family, when they make business trips, but often even those of his friends, when they are traveling in the same direction and the owner places the unoccupied seats in his car at their disposal. Both city and interurban roads report that they have lost some fares from this cause, but probably the interurban lines have lost most, owing to the many indirect restrictions on the use of automobiles in city streets, especially when congestion is present.

Unfortunately there is no direct way of determining the extent to which the interurban roads have lost passenger travel from this competition of the private auto-

mobile. However, in the strictly farming states of North Dakota, Kansas and Iowa there are respectively 7.5, 8.3, and 4.8 families per motor car owned, while in New York, Massachusetts and Delaware, where the population is largely an urban one, the corresponding figures are 12.7, 11 and 15. Manifestly this indicates that the farmers are buying automobiles, and if they once have them they are likely to use them even though they may be a costly means for transportation.

As to what can be done to meet this new form of competition, the most obvious procedure (and apparently the only one) is to explain the facts to the public. The automobile offers the one great advantage of convenience, but to offset this the interurban offers speed and cheapness. Between towns an electric car ought easily to outrun a motor car in the hands of anyone but an expert or a lunatic, and for the light, cheap cars so generally sold in rural districts a speed of 30 m.p.h. is about the maximum under any circumstances. In the matter of cost, even the light automobiles will average some 6 cents per mile, at least, against the 1.5 cents or 2 cents charged on the interurban. If the farmer realized this, as he could be made to do by a small amount of publicity consistently and continuously applied, it seems reasonable to expect that, after the novelty of the automobile has worn off, it will cease to be a competitor except for very short distances or in the almost impossible cases where four or more people were invariably carried. On the other hand, the conveniences of the automobile will cause many people to reside in the country, a fact which should ultimately be of benefit to the interurban electric railway in both its passenger and freight business.

CALCULATION AND JUDGMENT

Last week under the caption "Relation of Theory and Practice" we pointed out what we consider the relative positions of "cut-and-try" and mathematical solutions of every day problems. The argument therein set forth was that better use should be made of the skill in calculating, which a large part of our educational system is designed to develop. We can go farther in this direction and state that skill in calculation is essential to progress. Its relation to the exercise of judgment, however, must not be overlooked. When a designer makes a study for a bridge truss he first assumes certain conditions of loading and calculates the proportions of parts to exactly meet these conditions, at the same time allowing "factors of safety" which his trained judgment dictates to be prudent. Calculating skill and practical experience thus go hand in hand.

Another example may be quoted from the electric railway field. A certain company wished to secure capital for an important extension. Well-considered plans were laid before the bankers by the railway engineer of way. The proposed rail section appeared light to the bankers, who referred to the practice of certain other roads in using much heavier rail. The engineer asked the bankers how they knew that the heavier rail section was better and received an evasive reply. In

his turn he protested that he knew what he was talking about because he had calculated accurately the necessary size of rail. Of course the bankers, being good bankers, deferred to the engineer's judgment because it, unlike theirs, was based upon calculation. His contention was that, in this case at least, the lighter rail was safe and economical if the track was properly maintained, and he proposed to see that it was so maintained. This indicated that he was not blindly following the results of calculation but had considered all factors involved.

The whole matter can be summed up thus: Calculation must be the basis of judgment and not a substitute for it. Again, calculation enables one to pioneer on the frontier of industrial progress on the basis of past experiences. It is only a question of time when rule-of-thumb methods must be relegated to the limbo of inefficiency.

SYNDICATED WELL-POISONING

Railway men will read with mixed emotions the article on another page describing the circulation by a newspaper syndicate of articles deliberately fabricated to create anti-railway agitation. It is to be noted that these articles were not written to describe or to hit any particular situation; they were not inspired by abuses or bad service. They are "canned" agitation, prepared with a view to pleasing any editor anywhere who may find that the war news is getting dull and who is on the look-out for something more exciting. So far as we have observed, this matter has not had wide-spread circulation but has been published sporadically.

The fact of primary interest in this connection is that a syndicate is found to be circulating libels almost as comprehensive as the declaration that "all men are liars." And for the light thrown on one method of poisoning the well-springs of public opinion we cannot be too grateful. We have here a fine exhibit of how an anti-railway campaign may be started. The syndicate or "press association" sees a prospect of making a few dollars by capitalizing a belief that it will be popular almost anywhere to "roast" the electric railway company. If the idea appeals to the editor in goes the syndicate's plates. And the "war of the strap hangers" is on—on paper. The syndicate has made a dollar a column, and the newspaper has filled its space, but what about the reader and the railway? One has been swindled by a stereotyped fake, and the other has been exploited and defamed for the profit of the syndicate and the newspaper.

There is quite enough home-made agitation, with and without cause or reasonable basis. It is beyond toleration that agitation should be made to order and sold by the inch or the pound. The more important and influential dailies are not likely to print matter of this description, but wherever it appears it should be protested against and exposed. The typographical earmarks of ready-to-print agitation are not difficult to recognize. Wherever they are noted it will aid in exposing attacks of this nature to send newspapers containing them to the ELECTRIC RAILWAY JOURNAL.

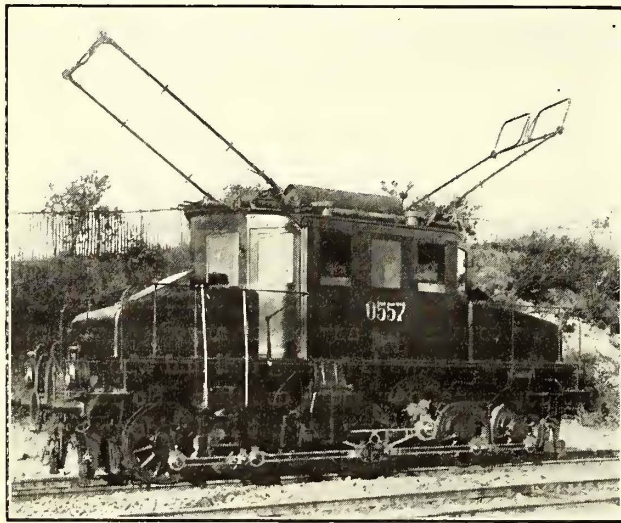
Some Results of Italian Three-Phase Electrifications

The Writer Shows from Operating Curves and Statistics of the Original Giovi Three-Phase Electrification That Regeneration in Practice Has Saved \$19,000 a Year at the Coal Pile Regardless of Brakeshoe and Other Savings

BY G. PONTECORVO, EAST PITTSBURGH, PA.

Some of the results of three-phase electrifications in Italy are already well known in this country, but some very interesting results and tests have recently been carried out by the Italian State Railway* and are worth a brief description. They were conducted on the old Giovi line, which is the most important of all the

of 3.5 per cent on a curve and has seven tunnels, of which one is 2.02 miles long with a 3 per cent grade. The importance of the line and the traffic handled on it are indicated by the statement that the electric equip-

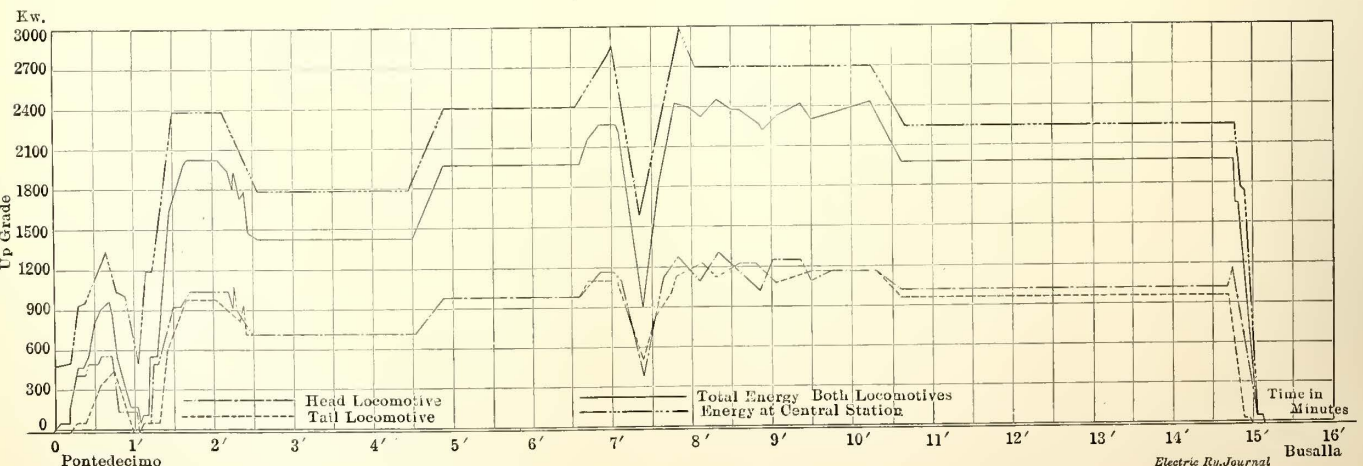


THREE-PHASE IN PRACTICE—FIG. 1—STANDARD LOCOMOTIVE OF GIOVI LINE

lines electrified by the Italian State Railways on account of its heavy traffic and steep grades.

The three-phase electrifications of the State Railways in Italy now aggregate approximately 417 miles of track, and approximately 300,000-hp capacity of three-phase locomotives are already in service or on order. The electrified portion of the Giovi line is 14.4 miles long with 38 miles of track. It has a maximum grade

*Revista Tecnica delle Ferrovie Italiane, Anno III, Vol. 5, No. 1. "Operating Results on the Old Giovi Line," F. Santoro and L. Calzolari.



THREE-PHASE IN PRACTICE—FIG. 2—ENERGY REQUIREMENTS OF TRAIN WITH TWO LOCOMOTIVES HAVING THE SAME WHEEL DIAMETER AND WITH RHEOSTAT SHORT-CIRCUITED

THREE-PHASE ELECTRIC RAILWAY LINES IN ITALY. Length of Tracks in Miles.

Lines.	Opened for traffic.	Single track.	Double track.	At stations.	Total.
Valtellina	1902	65.8	....	12.3	78.1
Giovi (old) including Branch Line	1910-1913	....	17.6	38.5	105.6
Giovi (subsidiary) ..	1914	....	15.5		
Savona-Ceva	1914	28.3	....	15.1	43.4
Monza-Lecco	1914	19.3	4.3	12.4	40.4
Mt. Cenis:					
Bussoleno-Bardonecchia	1912	14.7	10.5	12.4	71.7
Bardonecchia-Modane	1914	....	11.8		
*Simplon Tunnel ..	1907	12.4	....	1.9	14.3
Being Electrified					
Turin-Pinerolo	Electrified	23.6	....	7.5	31.1
†Sampierdarena-Genoa .....	"	....	3.7	3.7	11.1
Sampierdarena-Savona	"	24.8	....	10	34.8
Total length of tracks					431.5

*This line runs on Italian territory for half of its length only and is operated by the Swiss Federal Railways.
†This line is the connection of the Giovi lines to Genoa Stations.

ment was designed for trains every ten minutes. The line has a parallel subsidiary which is also double track. This line is also electrified with the same system of traction.

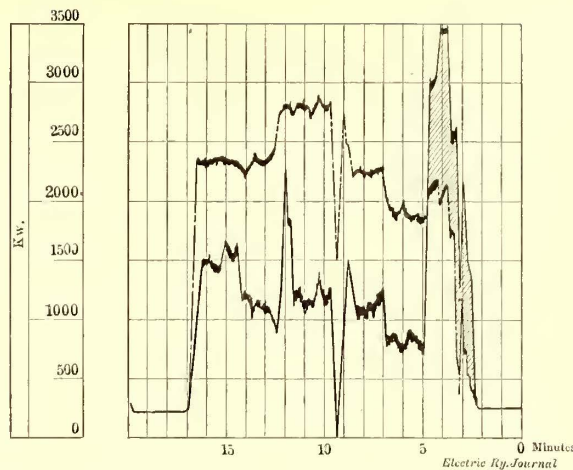
REGENERATION OF ENERGY

The principle of the regeneration of energy by a polyphase induction motor is very well known and is common to other types of electric motors, such as the d.c. shunt motor. However, the induction motor has the advantage of greater simplicity of construction, allows the use of higher voltages and is more automatic in its operation. When a polyphase motor is inserted on a line, it will absorb electric power and deliver mechanical energy. But as soon as by external means the speed of the rotating part is increased above the synchronous speed, without having to change the direction of the field the motor will pump current back into the

line. This characteristic of the induction motor is playing a very important part in railway electrification, as shown by the results hereinafter described. The tests to which we shall refer have been made principally on the Pontedecimo-Busalla section, or the one with the steepest grades on the old Giovi line.

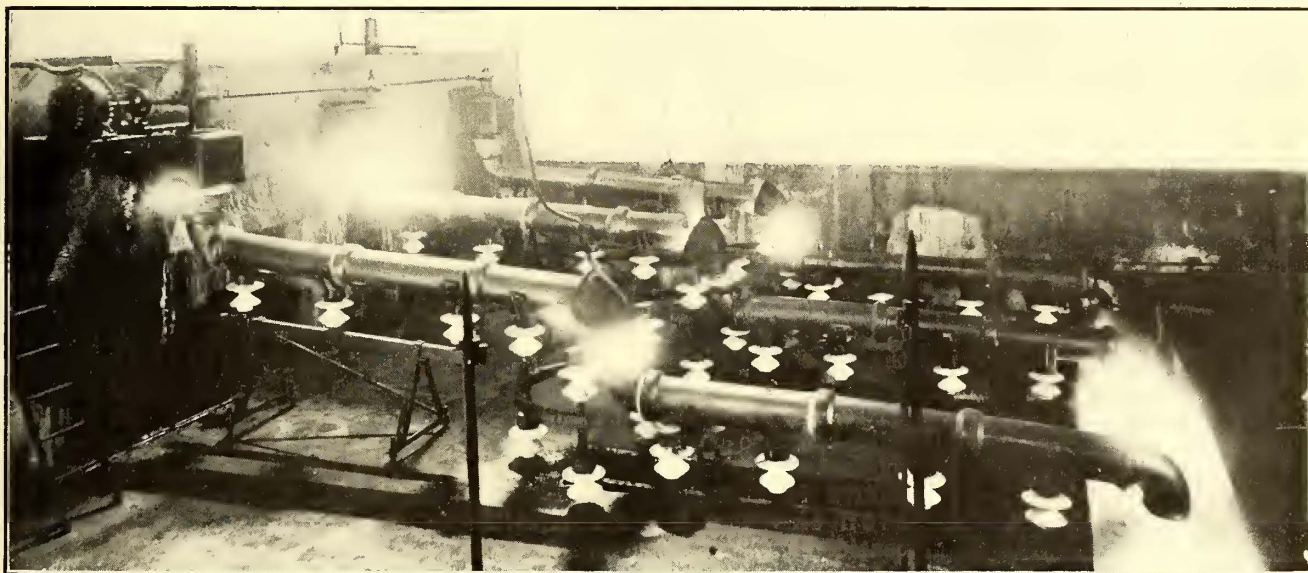
The locomotives, Fig. 1, used have the following characteristics: Five coupled axles; weight, 60 metric tons, all available for adhesion; two 3000-volt, fifteen-cycle, three-phase, 2000-hp motors; motors which can be connected in cascade or in parallel to obtain two speeds, namely 14 m.p.h. and 28 m.p.h. The contact line is at 3000 volts, and the motors are used direct on the line and without transformers. The main transmission line is three-phase, 13,000 volts, with four substations each equipped with four single-phase transformers, 13,000/3000 volts, of which one is a spare. The central station is near Genoa and has two 6000-kva turbo alternators.

If now we compare the energy absorbed and regenerated by a train of normal composition when running at 28 m.p.h. and at 14 m.p.h., we find from actual runs that the regenerated energy represents respectively 47 per cent and 46 per cent of that absorbed by the train when going up grade. For a train hauled up grade by



THREE-PHASE IN PRACTICE—FIG. 3—PROPORTION OF ENERGY ABSORBED AND REGENERATED

= 14 per cent of the generated energy. Although this energy is not a very large amount, yet the saving in actual money is fairly large as the electric energy is produced by a steam plant and the cost of coal in Italy



THREE-PHASE IN PRACTICE—FIG. 4—WATER RHEOSTAT AT CENTRAL STATION DISSIPATING REGENERATED ENERGY

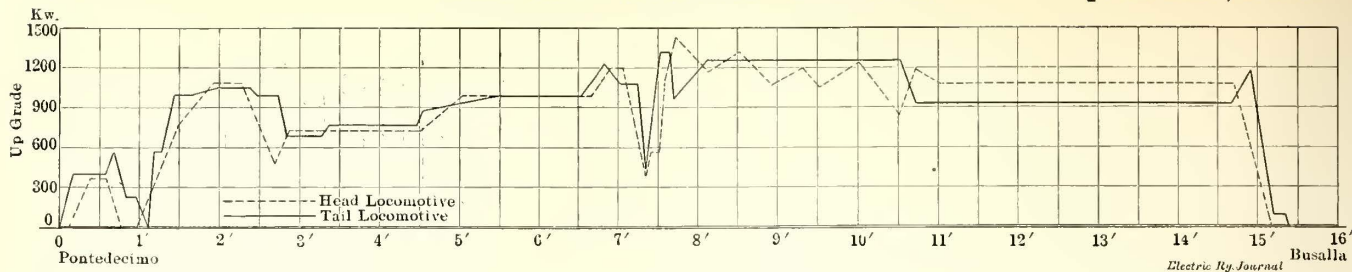
two locomotives at a speed of 28 m.p.h., with the expenditure of energy shown in Fig. 2, the regenerated energy amounted to 54.5 per cent of the absorbed energy; that is to say, on this section of the line the trains coming down grade regenerate more than half of the energy they absorb when going up grade. If we assume only two trains on this section, one ascending and one descending, Fig. 3 shows respectively the energy absorbed, the energy regenerated and the difference between the two.

But, as already mentioned, the really important figures are those which represent the saving effected by regeneration in the energy produced at the central station. This saving, of course, depends on the total traffic in both directions and on the way the schedule is arranged for a given service. The Giovi line is not particularly fortunate in this respect, as most of the traffic is in the up-grade direction, the trains on the down grade being composed mostly of empty cars. The energy generated at the central station for a train service according to schedule with and without regeneration of energy on the trains down grade shows a saving for the former of 3160 kw-hr., or $3160 \div 22,650$

is rather high, approximately \$6 a ton. In this case the saving for a year was 3166 tons, or approximately \$19,000. All this shows the distinct advantage of poly-phase motors for this class of service as they are highly efficient, can develop very high torques and are very light.

ADVANTAGES OF REGENERATING APPARATUS

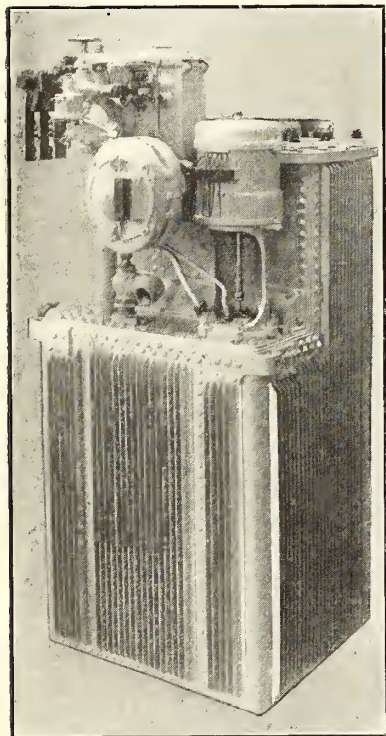
There are many cases where a three-phase electrification, if properly arranged, can take care of an enormous traffic with a very small central station and a minimum expenditure of energy. We refer particularly to lines with steep grades where most of the heavy traffic is on the down grade. But regeneration has other advantages, of which one is a reduction in the size of the generator at the central station and a better load factor on it and on all of the auxiliary apparatus. Another is the saving in brakeshoes and in the wear of the rolling stock. Trains driven by a three-phase locomotive when going down grade and regenerating do not need to use any brake. Brakes are used only for coming to a dead stop quickly and for safety. When regenerating, the locomotive cannot exceed the synchronous



THREE-PHASE IN PRACTICE—FIG. 5—RHEOSTATIC REGULATION OF LOAD OBTAINED WHEN THE DIFFERENCE IN THE WHEEL DIAMETER OF THE TWO LOCOMOTIVES WAS 1.41 IN.

speed plus the slip, which is but 2 or 3 per cent, and the composition of the trains on the down grade is such as to regenerate an energy equivalent to that absorbed on the up grade.

For a short time the electric service on the Giovi line was operated without regeneration, as the safety water



THREE-PHASE IN PRACTICE—FIG. 6—LIQUID RHEOSTAT

central station is never in operation, but it is a kind of safety valve to take care of the regenerated energy at the central station should this energy be larger than that absorbed. Such a condition can occur through a disarrangement of the schedule by which more or heavier trains will be descending than those ascending.

rheostat of the central station was not ready for operation, and during this time the average life of the locomotive brakeshoes was 7455 km, or 4620 miles. Since regeneration began the average life of brakeshoes has increased to 22,969 km (14,200 miles), or more than three times. The locomotive has twelve brakeshoes, and as the saving includes not only the cost of the shoes themselves but the cost of replacing them in labor and time saved by keeping the locomotive in commission the gain is considerable.

Under normal conditions the safety water rheostat of the central

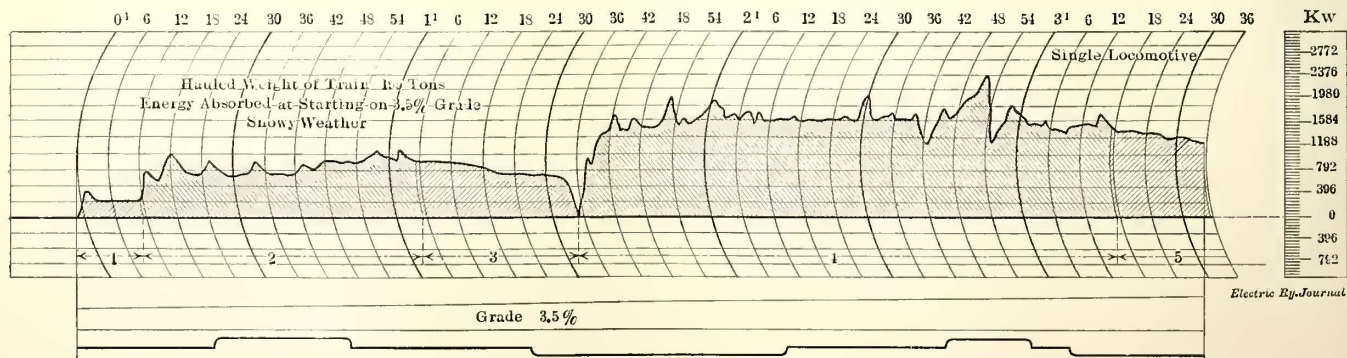
The rheostat consists of three clay tubes, through which condensing water can circulate. Three bare copper wires connected to the primary line at 13,000 volts are brought in contact with the water circulating in the rheostat. A small induction motor automatically opens the valve to admit the condensing water every time energy is sent back to the central station from the line, the rheostat being connected in parallel with the generators. This rheostat is situated in a pit in the central station, Fig. 4, but of course for most of the time is not in operation.

Other advantages of electric braking are the increased life of rolling stock, especially of couplings, due to the smooth running down grade at constant speed.

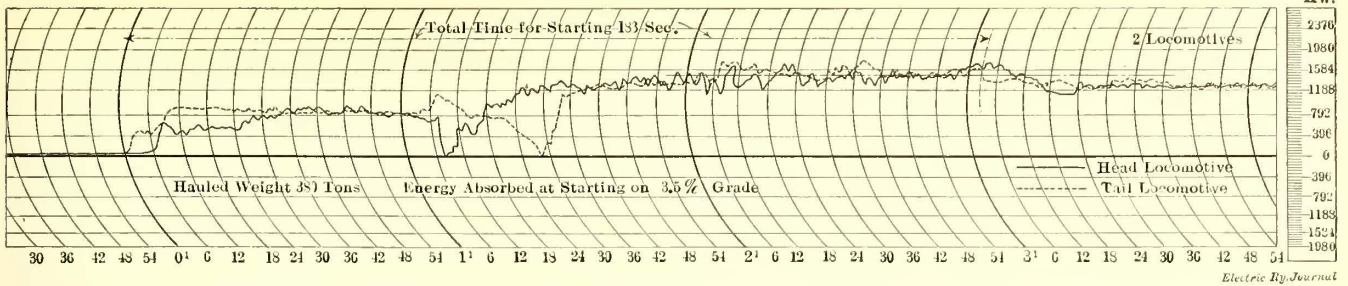
Last but not least is the record of interruptions. During the year 1911-1912 there were only five interruptions of supply in excess of ten minutes. Not one reached an hour, thus showing that the regeneration of energy gives better operating conditions because of the reduction effected in peak loads.

EQUALIZATION OF LOAD ON TRAINS WITH TWO LOCOMOTIVES

Some doubts have been expressed, even by electric traction engineers, as to the operation of three-phase locomotives in multiple, in case there should be a wide difference in the wheel diameters of the locomotives. It has been held that such a difference would distribute the load unequally. This problem has been solved by the employment of the liquid rheostat used to start the motors. When a train is being hauled up grade by more than one locomotive, the rheostat is not fully short-circuited in the locomotive with larger wheel diameter, and when two locomotives are operating on the down grade (and regenerating) the rheostat is not fully short-circuited on the locomotive with the smaller wheel diameter. How close it is possible to equalize the load on the locomotive by this method is shown by Fig. 5. Fig. 2 shows that the load is well equalized on two locomotives (one pulling and one pushing) of the same wheel diameter. The same applies when the locomotives are regenerating. Fig. 5 shows an extreme case, the two locomotives having 1.41 in. difference in wheel diameter. Even then the difference of load



THREE-PHASE IN PRACTICE—FIG. 7—REGULATION OBTAINED FOR SPEEDS UP TO 28 M.P.H.



THREE-PHASE IN PRACTICE—FIG. 8—OPERATING CHARACTERISTICS OF A TWO-LOCOMOTIVE TRAIN

(average) was less than 2 per cent with an instantaneous variation of 8 per cent. Of course this method of equalizing the load requires a small loss in the rheostat, but as in actual practice the difference between wheels is seldom very large, this loss is practically negligible. As this method does not require any complicated connection or difficult operation or a train line between the two locomotives, it can be considered very satisfactory.

ANALYSIS OF STARTING CONDITIONS—USE OF LIQUID RHEOSTAT

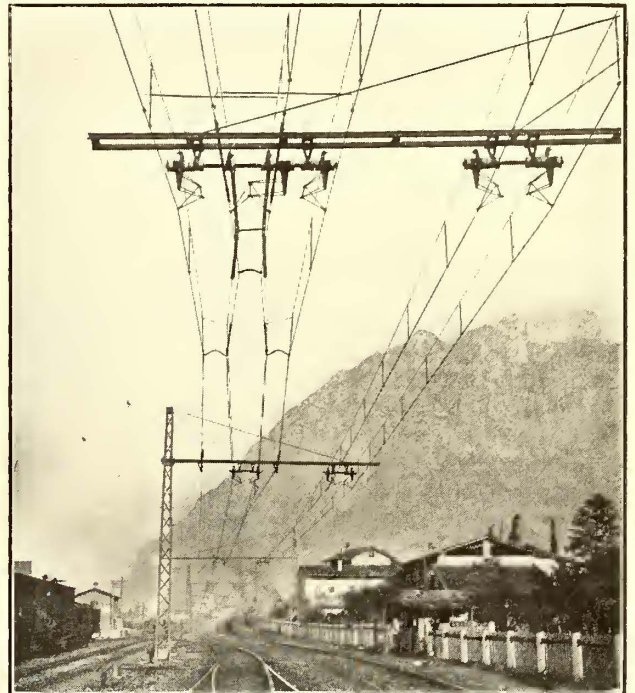
The operation of a three-phase locomotive is extremely simple. Apart from the air brake, which, as noted, is never used except to bring the train to a stop or for safety in case the locomotive cannot regenerate on a down grade, the motorman has only two handles to operate. The first handle is used to insert the motors on the line and connects them in series or parallel. It operates the main controller for making motor connections by means of an electro-pneumatic relay, but the main controller never operates under load. The other handle operates the liquid rheostat, Fig. 6, and the automatic regulator connected with it. This regulator controls the level of the water in the rheostat in such a way that for each position of the handle the power absorbed from the line is kept constant at any desired value. Figs. 7 and 8 show the exactness of regulation maintained. Fig. 7 shows the starting condition up to 28 m.p.h. on the curve section of the Giovi line with a 3.5 per cent grade for a train of 190 tons hauled by one locomotive.

This test was taken with snow on the ground and, therefore, under unfavorable conditions for traction. An examination of Fig. 8 shows that to accelerate the train from zero up to full speed required 183 seconds, and in this diagram five different periods can be observed, as follows: (1) Insertion of motors on line and opening of brakes; (2) starting up with motor connected in cascade up to 14 m.p.h.; (3) running at 14 m.p.h.; (4) changing over to parallel connection of motors and acceleration up to 28 m.p.h.; (5) running at 28 m.p.h.

It will be seen that the time necessary for changing over from cascade to parallel connection is extremely small, so that the reduction in speed of the train is negligible. Again, the absorbed energy was kept nearly constant during the entire starting period by means

of the automatic regulator in the liquid rheostat. This allowed the locomotive to keep safely near the limit of adhesion without causing high peaks in power demand.

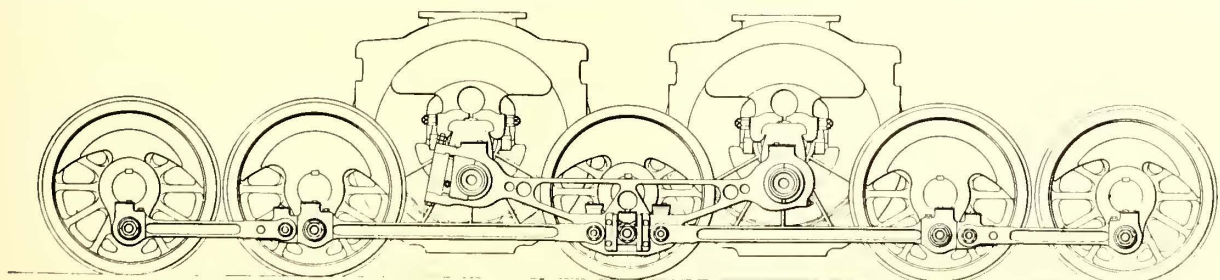
Fig. 8, which is a curve for a train with two locomotives starting on the same section of the line, shows that the total time was 183 seconds. It will be noted



THREE-PHASE IN PRACTICE—FIG. 10—OVERHEAD WORK ON THE LECCO-CALOLZIO LINE

that there is a good equalization of loads between the two locomotives and no sudden stresses in the train when either of the two locomotives changes over from cascade to parallel. The diagram also shows that for starting this train on such a heavy grade only 16.5 per cent more energy was required than was needed when running on the same grade. This is due chiefly to the automatic regulation by which the torque is kept below the point of slip.

Experiments on this section of 3.5 per cent grade with trains of increasing weight up to 450 tons with two locomotives, or a total weight of train of 570 tons,



THREE-PHASE IN PRACTICE—FIG. 9—CONNECTIONS OF MOTORS TO DRIVING WHEELS

show a coefficient of traction of $1/4.5 = 0.222$. The two speeds, 14 m.p.h. and 28 m.p.h., for this heavy freight service have shown themselves quite suitable for all operation. For yard switching, the speed of the locomotive can easily be regulated by means of the liquid rheostat.

OTHER DEVELOPMENTS

The results obtained on the Pontedecimo-Busalla line are more striking than those obtained on other railways but only in degree. On the Valtellina line, in operation since 1900, the three-phase locomotives, built by the Ganz Company and designed by K. de Kando, show the same advantages due to the regeneration of energy, etc., and electric traction has reduced the operating expenses on this line by 12 per cent.

During the last fourteen years the three-phase locomotive has had a notable development, and the two latest large locomotives built by the Società Italiana Westinghouse for the Italian State Railways are designed to solve the high-speed (62 m.p.h.) passenger service** as well as the heavy freight traffic.

The necessity for two overhead wires has not proved a serious objection in practice. The two Giovi lines, the Mt. Cenis, the Simplon, the Valtellina and the Savona Ceva, are all naturally unfavorable for overhead construction because of many tunnels, very sharp curves, reverse curves, heavy grades and stations with many sidings. Yet no inconvenience has been experienced because of these matters.

The line potential of 3000 to 4000 volts used in Italy seems to have proved very satisfactory. The winding for large motors for this voltage does not present any difficulty from the insulation point of view. The locomotive apparatus is of such simplicity that the voltage of 3000 is not dangerous, especially as no connections are made under load and the motorman does not handle any apparatus under line voltage. Again, the choice of this voltage allows the line current to be kept at about 400 amp, which can be easily collected by the trolley. The low frequency, 15 to 16 $2/3$ cycles, allows the motors to be wound for a low number of poles like four, six or eight, which gives a good power factor and permits direct-connection to the wheels without gears, as shown in Fig. 9. The connection is made through the very satisfactory means of a Scotch yoke. Another characteristic which is considered one of the weak points of the three-phase system is the limitation of speed. Yet the fact that the synchronous speed of the locomotive cannot be increased by the motorman has a great advantage. In the preparation of schedules the speed of the train is often made less than that permitted by the track, weight of trains, rolling stock and signal installations, so that the motorman may have opportunity to make up time when the train is behind schedule. As this cannot be done with three-phase locomotives it follows that the electrification can be designed with safety for the maximum speed and that the capacity of the line can thereby be increased.

A slight increase in the speed of all locomotives is then sometimes possible by increasing the frequency at the generating plant. This can be done, as in the Giovi locomotives, by designing the motors and generators for 15 and 16 $2/3$ cycles—a fairly easy undertaking, because the overload capacity of three-phase motors wound for a small number of poles is such as to allow the reduction in field strength due to the increase in frequency. The lightness of the locomotive due to the three-phase motors and to the absence of transformers, the motors being wound for high voltage, is also a very striking feature and makes the system especially valuable for mountain roads.

Employment on City Lines

New York City Board of Education Is Conducting a Series of Vocational Lectures in Which One Was Delivered Recently by H. A. Bullock

Under the title "Opportunities for Employment in a Great Urban Transportation Company" H. A. Bullock, secretary New York Municipal Railway Corporation, delivered a lecture on Feb. 15 in New York, under the auspices of the bureau of public lectures of the Board of Education. It was one of the vocational series.

He stated that a street railway is essentially a co-operative enterprise, two most essential conditions in the success of the management being the maintenance of a spirit of co-operation and the establishment of administrative methods to facilitate it. An illustration of the co-operative spirit was given last winter's snow-storm. The Brooklyn Rapid Transit Company had all of its eighty-three plows and sweepers in continuous service and, in addition to its regular force of track laborers, had a special snow-fighting force of 1500 men. These worked in shifts until through the turning of the snow to rain, and the rapid and deep formation of ice the difficulties became almost insurmountable. The men who manned the sweepers and those on the plows worked uncomplainingly and their fellows on the uniformed force at the depots volunteered by the score to shovel snow when the snow-fighting force finally succumbed to the elements. The superintendents in charge worked just as hard as the men until the storm was conquered after two days of fighting.

Mr. Bullock stated that when a candidate applies for employment with the company his personal record is inquired into, his references are investigated and he is subjected to a thorough physical examination. He is then sent to the schoolroom for a week's instruction followed by an instruction week on the road. He next goes on the extra list at a depot, continuing for three months as a probationer under the eyes of a force of specially selected men known as the line inspection force. At the end of the probational period his record is examined and he is either rejected or given permanent employment. After this a system of credits and demerits is used to determine eligibility for promotion in the ranks and to positions as starters, dispatchers or inspectors. The administration of the disciplinary system is keyed up to a standard of instruction and correction rather than to one of punishment.

For the benefit of the men the company maintains club rooms in the depots, in some of which are restaurants where food is offered at prices corresponding to those in dairy lunch rooms, a good meal being obtainable for 25 cents. These club rooms are operated by the Employees' Benefit Association, which is the principal medium through which the social activities of employees find expression. It operates a comprehensive sick and death benefit plan, paying out to its members more than it receives in dues, the difference being made up from the revenue of more than \$17,000 per year from the pool tables and bowling alleys. There are about 8500 members in the Employees' Association out of about 14,000 employees in the service of the company. The company supplies baseball regalia to its men and last year a regular league containing fourteen teams was organized in the transportation department. The medical department is well organized and the company doctors are always on the lookout for incipient disorders which may become chronic. In the first year of its operation, 1913, the medical system produced a reduction of about 24 per cent in the number of days lost by the operating employees on account of illness, a saving of 18,000 days' time.

**See ELECTRIC RAILWAY JOURNAL, Feb. 6, 1915.

Annual Convention of C. E. R. A.

The Sessions on Friday Were Devoted to a Discussion on Safety and to Business Matters—Abstracts of Papers Read at Both Sessions Are Published

The Friday morning session of the Central Electric Railway Association's annual meeting, held at Indianapolis, Feb. 25 and 26, inclusive, was attended by more than 100 members. President Schneider opened the session with the announcement that applications for membership had been received from thirteen supply men and would be acted upon by the executive committee. The next order of business was a paper on "Safety" by Dana Webster, inspector accident and liability department Aetna Life Insurance Company, Indianapolis, Ind. This paper is published in abstract on another page. In introducing Mr. Webster, President Schneider said that his paper dealt with a subject which was very necessary to the electric railway business, since it offered a means of reducing expenses which were non-productive.

In the discussion which followed A. G. Olberding, American Brake Shoe & Foundry Company, emphasized the importance of obtaining the co-operation of employees in safety work. His experience had been that the employees' committee should be changed about every two months so as to bring as many into the safety work as possible. In closing he stated that the wave of safety which has swept over the country has resulted in the expenditure of many thousands of dollars which have eliminated a large percentage of common accidents. Unfortunately, however, the insurance rates for accident liability had not been reduced in proportion to the number of accidents.

Charles L. Henry, president Indianapolis & Cincinnati Traction Company, continuing the discussion, said that one of the weak points in liability insurance was the practice of the insurance companies of paying for claims where the injured party was alone responsible for the accident. Mr. Henry was of the opinion that this practice encouraged the filing of claims which otherwise would not cost more than the fees paid to the attending physician.

H. A. Nicholl, general manager Union Traction Company of Indiana, outlined the safety organization and methods used by his company. His organization essentially consists of a general safety board made up of the heads of departments and executives, with a number of local safety committees at central points. He stated that frank criticisms of the acts of the different departments was encouraged among employees with good results. In order to promote esprit de corps banquets are held periodically, where addresses are made by company executives, department heads and the chairmen of the local safety committees. Mr. Nicholl said that these banquets had brought forth addresses by employees which were surprisingly good. During the summer months employees' picnics were held and baseball teams were organized among the employees at the various headquarters along the line. In conclusion he stated that his company felt that the results obtained justified the effort and expense.

W. A. Carson, general manager Evansville Railways, stated that his company had a safety committee organization similar to that described by Mr. Nicholl, but that one-half of each local committee were changed every six months. His experience had been that it was difficult to get the employees to send in safety suggestions, particularly at the beginning of the work. In order to have a complete understanding a meeting of all the employees was called, where the purpose of the campaign and the

need of safety suggestions were explained, with the result that he now has the co-operation of all the employees. Despite this, interest lagged at times, and safety suggestions were few. It appears that the failure to adopt the suggestions of some discouraged them so that the plan has been adopted of explaining to each employee whose suggestion had been rejected why that decision was reached. Mr. Carson also stated that he made it a practice to pay the employees for the time during which they attend the safety committee meetings.

T. W. Kettelman, Ohmer Fare Register Company, said that his company had been able to increase the number of safety suggestions by eliminating the names of the employees until the suggestion had been approved. Safety suggestion boxes have been installed in the different shop departments. The names of the employees offering suggestions were not known to the board or committee passing on the suggestion until the award was made. The secretary of the safety board opened the safety suggestion boxes, and he was the only one who was permitted to know the names of employees making suggestions. The same practice was adopted in regard to complaints, and it has been found that the elimination of the name encourages better results and excludes friction between employees and departments.

W. Tichenor, claim agent Terre Haute, Indianapolis & Eastern Traction Company, said that the biggest factor in the safety movement was that of making the employees think. Many accidents could have been avoided if employees had just thought or had been disciplined to keep their minds constantly on their work.

BUSINESS SESSION

Following this discussion President Schneider called for the report of Secretary-Treasurer Neereamer. This was published on page 413 of the issue of last week. Following this report, the president addressed the association briefly and thanked the members for their co-operation in making the year's work a success. At this point the report of the nominating committee was received and approved, and the following officers were elected for the ensuing year:

President, Charles L. Henry, president and general manager Indianapolis & Cincinnati Traction, Indianapolis, Ind.; first vice-president, A. Benham, general manager Ohio Electric Railway, Springfield, Ohio; second vice-president, C. N. Wilcoxon, president Chicago, Lake Shore & South Bend Railway, Michigan City, Ind.; treasurer, A. L. Neereamer.

The new executive committee consists of the following members: E. F. Schneider, general manager Cleveland, Southwestern & Columbus Railway; W. S. Whitney, general freight and passenger agent Ohio Electric Railway; H. A. Nicholl, general manager Union Traction Company of Indiana; W. A. Carson, general manager Evansville Railways; E. B. Peck, vice-president Terre Haute, Indianapolis & Eastern Traction; R. A. Crume, general manager Dayton & Troy Electric Railway; H. Cavanaugh, auditor Cleveland, Southwestern & Columbus Railway; J. F. Keys, general passenger agent Detroit United Railway; F. D. Carpenter, general manager Western Ohio Railroad; S. W. Greenland, general manager Fort Wayne & Northern Indiana Traction; S. D. Hutchins, Westinghouse Air Brake Company, and W. H. Bloss, Ohio Brass Company.

It is planned that the next meeting of the association will be held on June 17 and 18, 1915, and if enough members will take part, a boat will be chartered for a forty-eight-hour trip from Cleveland to Buffalo and return. Both the railway and supply members voted unanimously for the boat trip meeting.

On Thursday evening, Feb. 25, the members of the association and their ladies were the guests of the Drew Electric & Manufacturing Company in a theater party given at Keith's Theater. On Friday afternoon, Feb. 26, about seventy-five members of the association were the guests of the Prest-O-Lite Company, Inc. The trip to the plant was made on two special cars furnished by the Terre Haute, Indianapolis & Eastern Traction Company. At the plant the members inspected the manufacture of prest-o-lite and the pressed-steel holders. After following the various processes through the plant, the Indianapolis speedway, which was nearby, was inspected.

Abstracts of Governor Ralston's letter and of addresses presented at both sessions follow.

LETTER FROM THE GOVERNOR OF INDIANA

Hon. Samuel M. Ralston, Governor of Indiana, sent a letter to President Schneider of the association, which was mentioned briefly in the report of the meeting last week. Governor Ralston said in part:

"Both as a citizen and as an official, I am greatly interested in the business in which you are engaged. The work of the common carrier has grown to such proportions in this country and is so intimately associated with the country's welfare that when it ceases to be profitable, the injurious effects are immediately apparent. For the last few years it has been the contention of the railroad and interurban interests of the country—especially in Indiana—that the passenger fares allowed by law are not sufficient to cover the expenses incurred in passenger traffic. This point has been pressed with much vigor upon the public mind, and at this time there is a bill pending before the Legislature of Indiana proposing to fix the passenger fares at 2½ cents per mile.

"On all hands it is agreed that all railroads and interurbans are expected to furnish the best service possible in consideration of the charges they are permitted to make therefor. Generally speaking, there is no complaint on the part of the public of the character of service furnished, but it is the contention by these companies that their passenger traffic is losing them money. If this be true, it is not as it should be. So long as the public demands a high grade of service it should be willing to make that service possible on the basis of a reasonable profit to those furnishing the service; and, broadly speaking, I think the public is willing that this should be done.

"The difficult question is, however, What are the facts? Does the service rendered the traveling public for the charges permitted in Indiana make it impossible for the railroads and interurbans to realize a reasonable profit? If the ex parte statements of the railroads and interurbans can be taken as the truth, this question must be answered in the affirmative. I believe it is conceded that the increase in passenger fares sought by these roads would yield them in Indiana approximately \$500,000 a year. This is a large sum of money; too large, I think you will agree with me, for representatives of the people to authorize the railroads to collect from the people on the ex parte statement of the interested party. I am not insinuating that this ex parte statement is or would be erroneous, but I believe that the question it seeks to influence favorable action upon is of such vast importance to the public that no official, either in executive or representative capacity,

would be warranted in acting favorably upon it without hearing from both of the interested parties. It would be difficult, if not impossible, for the present Legislature at this late day, with all the other work demanding its attention, to take up this important subject and give it a thorough investigation and come to an equitable conclusion.

"Personally I am friendly to these great properties, and I know the people of Indiana are. I want them to receive a fair profit for their service and to succeed; but this should be done on a basis that will be fair, so far as it is possible to arrive at such a basis, to both the roads and the public.

"With this idea in view, it is my intention to recommend to the Legislature that it empower the Public Service Commission of Indiana to authorize an increase in the passenger fares in this State not to exceed ½ cent per mile. The commission should, of course, make an investigation of the conditions of any road, upon its filing a petition with the commission asking for an increase of fares. This petition should contain such facts as would warrant such increase and as may be required to be set forth therein, under a rule of the commission; and it may be the showing made by some roads in support of their petitions will be so conclusive of the question at issue, although ex parte, that but little additional evidence will be required by the commission. This course it appears to me, considering the circumstances of the case, will best promote an intelligent settlement of this difficult public question; one, too, in which all the factors of a political nature or party advantage will disappear."

ADDRESS BY HON. THOMAS DUNCAN

Hon. Thomas Duncan, chairman Public Service Commission of Indiana, began his address by referring to the condition of the interurban electric railways in the State, and saying that the volume of the business conducted by this class of lines, their readiness to serve the public at many places and at frequent intervals, and the strength of their cars. He commended the plan of holding annual conventions for the consideration of mutual interests, as he believed the time has passed when a competitor can hope to outstrip his rival by secret means or undermine him by silent encroachment.

He then analyzed some of the causes of the present business depression, and its moral, as he saw it, was the homely old maxim, "Live within your income." He said that the people of Indiana were proud of the achievements of those who invested in electric railway properties, and, if he read the times correctly, there is among the people of the State a friendly feeling toward these properties. There prevails a general solicitude for the welfare of the business and a desire to be helpful at this time. In return for this helpfulness, however, the people demand absolute honesty, the highest efficiency consistent with prudent economy and a faithful public service. This public service does not favor the increase of the revenues of the companies to fill their coffers and make them rich but to furnish sufficient revenues to save them from distress and ruin in a time of general business depression. The public is willing to pay a reasonable return upon the fair value of the property that has been prudently provided for the performance of a public service. The people are willing to forego any further expenses for what might be adequately termed the luxuries of transportation and are only demanding that they be carried in safety by the transportation companies.

Mr. Duncan then presented a summary of statistics from the reports filed with the Public Service Commission of Indiana for the year ended June 30, 1914. He

said that the roads so reporting at that time had outstanding the following capital liabilities:

Common stock	\$81,587,291.67
Preferred stock	39,996,510.00
Funded and floating debt.....	104,869,134.05
Total capital liabilities	\$226,452,936.72

There was paid in dividends the following amounts:

On common stock	\$139,335.00
On preferred stock	400,802.11
Interest debts of leased roads.....	2,049,622.82
Total	\$2,589,759.93
Interest accrued during year.....	\$3,925,928.46

The book value of the entire lines June 30, 1914, was \$207,328,208.42.

The total operating revenues for all these lines were as follows:

Passenger revenues	\$16,736,164.21
Freight revenues	1,223,716.80
All other operating revenues.....	606,241.43
Total	\$18,566,122.44

Revenues from other than operating sources increased this total to \$19,188,610.77.

Of all the revenues of the interurban lines 86.06 per cent was derived from passenger transportation and 7.68 per cent was derived from freight transportation. The four street railway systems derived from passenger transportation 92.7 per cent, 97.8 per cent, 98.6 per cent and 98.6 per cent of their revenues, respectively.

There was expended in operating expenses \$11,580,787.08, or slightly more than 60 per cent of the total revenue. This sum was divided as follows:

	Total	Per Cent
Maintenance of way and structures....	\$1,974,315.98	17.04
Maintenance of equipment.....	1,285,971.80	11.10
Traffic	113,649.61	0.98
Conducting transportation	6,230,502.98	53.80
General and miscellaneous	1,976,346.71	17.07
Total	\$11,580,787.08	100.00

There was paid for superintendence of transportation about \$236,248.05. Payment for injuries and damages required \$556,877.75 during this year. Trainmen received \$2,453,968.96, or 21.19 per cent, of the operating revenues. This is a little over 12.7 per cent, or more than one-eighth of all revenue received.

After defraying the operating expenses of these various lines there was left for the industry \$7,607,823.69. There accrued during the year interest liabilities against these companies in the sum of \$3,925,928.46. There was also a fixed charge for taxes, the aggregate of which was \$1,010,464.31. The sum of these two items is \$4,936,392.77. Deducting this sum from \$7,607,823.69 leaves \$2,671,430.92, as the net return of this industry for that time. This would pay a dividend of 6 per cent on the \$39,996,510 of the preferred stock of the electric railways and leave nothing for dividends on the common stock, or it would pay 4 per cent on the preferred stock and leave practically 1 per cent for common stock. This, Mr. Duncan said, was not an inviting picture from the standpoint of the investors, even if a certain percentage of the common stock represents water.

ANALYSIS OF RETURN ON INVESTMENT

Continuing, Mr. Duncan said in part:

"These properties are private properties clothed with a public interest subject to the reasonable regulation of the State but with the management of this left largely to the owners. The public is under no obligation to protect the investors. It does not guarantee returns or underwrite investments in electric railway properties. Its duty ends by paying, above operating expenses and taxes, including depreciation, such a sum as will yield

a fair return upon the reasonable value of the property used and useful for the convenience of the public. Tested by this rule let us reason together.

"After the payment of taxes and all operating expenses for the year 1914 there was left from the earnings \$6,597,359.38.

"The total mileage of the electric railways reporting to this commission is 3099.93, or, for practical purposes, 3100. This surplus would yield a return of 5 per cent on a value of \$42,583 per mile. It would yield a return of 6 per cent on a value of \$35,469 per mile. It would yield a return of 7 per cent on a value of \$30,402 per mile. It is believed, that when the interurban railways of the State are placed on the copper-zone basis, the revenues of these roads, considered as a whole, will yield a return of 6 per cent on a valuation of the roads at between \$35,000 and \$40,000 per mile.

"Our commission has not yet been able to complete the valuation of a single line of interurban road. Our engineers have been for some time engaged in the valuation of the Indianapolis, Columbus & Southern Traction Company. The reports, however, show that six of these roads are capitalized at less than \$40,000 per mile and twelve are capitalized at less than \$50,000 per mile. The total operating revenues of the interurban lines was 30.34 cents per car-mile, and the average operating expenses of these lines was 18.30 cents per car-mile.

"It is my judgment that the people of the State served by these lines have very little reason to complain of unjust charges and of inadequate services. We have encouraged the change from the nickel to the penny zone. This we have done upon the theory that it was more equitable to the passenger and would add something to the revenues of the company. But one line so far has actually changed the basis of its fares.

BASIS OF RATES TO BE THE COST OF SERVICE

"Unless I have misapprehended the spirit of recent legislation touching public utilities, it means that ultimately the basis of all rates will be the cost of the service rendered. This will not be adverse to the prosperity of the electric railway business, unless the electric lines are overwhelmed by competition arising from the activities of its younger competitor. For, if rates were to-day based wholly upon a just and reasonable return of the actual value of the properties used, it is my judgment that there would be no reduction in the rates for the transportation of either freight or passengers. It is my further judgment that these roads are now entitled to at least the increased earnings that would follow the penny-zone basis of fares. But it is also my opinion, that when the rate for the transportation of passengers is fixed at 2 cents per mile, these roads will earn a net return of at least 6 per cent on the fair value of any one of the interurban lines. A further increase of fares above the penny-zone basis would probably add nothing to the revenues of the electric carriers, while the rate for the steam passenger carriers remains at a maximum of 2 cents per mile.

"The spirit of the age is not philanthropic. It does not pay fares for the sole purpose of assisting the carriers, nor do the carriers establish and operate their business for the sole purpose of rendering a public service nor for the purpose of adding comfort and convenience to that part of the public which desires to travel. The age is largely utilitarian. The people are constantly endeavoring to secure adequate service at the least reasonable rate. The carriers are with equal pertinacity endeavoring to obtain the largest return that is practicable to earn upon the investment in the property.

"So long as the public and the carriers assume toward each other the attitude of opposing interest, so long the day of justice will be deferred. The interests are not opposing but are identical, and when I say the age is utilitarian, I do not mean that the people or the utilities have lost any of their sense of justice. I am not a believer in the idea that the golden age is in the past. On the contrary, I am firmly of the opinion that each generation lives in a golden age. I am optimistic. I believe that in the business world and in all relations of life there were never greater opportunities than there are at the present hour. We have the embarrassment arising from a temporary depression in the business world, but this can only be the shifting of clouds in front of a splendid sun. With the unbounded resources of this country, with its splendid people and with the best government in the world, we have no reason to complain and no reason to insist that at any other time or in any other age there were opportunities better than there are at this hour.

"There has been less criticism of the conduct of the interurban railways in this State than of any other public utility under the jurisdiction of our commission. There have been complaints from private individuals in an informal way against a number of the street car lines, but no formal proceeding has been filed on this subject before the commission. It is a pleasure to note that the managers of these properties have shown a friendly disposition toward the law, and a spirit of co-operation with the commission. I do not recall that we have at any time asked any one of the managers of these properties for information that has not been cheerfully given, even though at times granting the request necessarily incurred some inconvenience and some expense.

"I do not believe that State regulation of the electric railways has been harmful to the industry. On the contrary, I think it has been helpful. Whatever of present embarrassment encompasses some of the lines is not chargeable to the State regulation of public utilities nor to the administration of the regulatory laws. I am firmly convinced that the electric railway business has no greater discouragements and encounters no greater adversities than any other great business has encountered in its infancy. After watching with as much care as the manifold duties of my position would permit for a period of nearly two years the management and the conduct of the electric railway business in this State, I feel that the people of the State are proud of these properties, and that the owners and managers, as a whole, have no just grounds for complaint. The business can be established on foundations of permanent and continued success only by the attainment of such efficiency as will render to the public such services at such reasonable rates as just men ought to appreciate and be willing to pay.

RESPONSIBILITIES OF RAILWAYS

"I am convinced that the public, and even the managers of these properties, have underestimated the great responsibilities this industry assumes. When we reflect upon the fact that in one single year more than two and one-half times the population of the United States entered and alighted from the cars of the electric railways of Indiana, we begin to comprehend the tremendous responsibilities this business carries. The safety of all that Indiana respects, honors and loves is confided to you many times during the year.

"As a commission we will enforce the laws in a spirit of justice, without fear and without favor, and you will observe that, in so far as any one but the utilities themselves are concerned, the law moves only against transgressors.

"The only advice that I could give to you at this time would be to husband your resources with the most rigid economy, increase the efficiency of yourself and your employees by every method known to the industry, and at every opportunity inspire the public mind with a confidence in your integrity and in your unselfish devotion to the people's service. Realize as fully as you can a great fact often ignored, that public sympathy and a friendly public spirit toward you is an asset of supremest value."

ADDRESS BY DANA WEBSTER

Dana Webster, inspector accident and liability department Aetna Life Insurance Company, Indianapolis, read a paper entitled "Safety" at the meeting on Friday. Mr. Webster said, in part:

"It is the experience of every large employer, as well as other agencies which have taken an active interest in accident prevention, that, if a successful safety campaign is to be waged, a comprehensive organization to formulate and carry out a definite plan or program is absolutely essential. The necessity for organization in safety work is apparent when we consider the many-sided problem that is involved in accident prevention. Broadly speaking, it may be said to include as its chief branches:

"(1) Ascertaining the actual conditions of a risk under which employees in any institution perform each task and determining the practical possibilities of eliminating or reducing the risk.

"(2) The provision of proper working conditions and of efficient safeguards for dangerous conditions or for dangerous machinery and appliances.

"(3) The careful selection, instruction and supervision of workmen and their assignment to work for which they are not unsuited.

"(4) The promulgation of rules for safeguarding and their rigid enforcement.

"(5) The inculcation of habits of caution in the minds of all concerned.

"Workmen can well be selected for their caution as well as for their ability to do work. A reckless employee, no matter how skilled he may be, costs his employer more money than he is worth. Every employee should be carefully instructed in his work, not only in how to get results but in how to avoid danger to himself and others. The 'stitch in time' adage applies no place better than it does here. In assigning a man to work and in keeping him at it, his personal characteristics should always be duly considered.

"Another very important function in accident prevention work is that of impressing upon the employee the sincerity of the employer in his desire to prevent accidents. You cannot consistently ask the workman to do his share in accident prevention unless you are doing your own. Spending some of your money, however, in a way which he cannot help see will inure to his benefit is the best sort of a guarantee of good faith.

"When we come to consider the inculcation of habits of caution as a means of accident prevention we reach the most difficult and, at the same time, the most important part of the problem. Any accident prevention campaign must fail largely in its purpose unless the co-operation of the workmen themselves is secured. As a great safety leader said recently 'Safety men are more important than safety things.'

"One of the most efficient means of getting employees interested in 'safety first' is to have the employee serve on a safety committee which will go over the plan and equipment once a week and look for dangerous conditions and the means of guarding them, seeing if the safeguards provided are being used, and observing if

the workmen are doing their work as safely as possible. This not only results in better safeguarding and working methods, for in many respects no one knows so well as the workmen themselves what is needed to prevent accidents, but it also greatly stimulates the interest of the men in safety work. The members of this committee can be changed from time to time so as to get the widest range of suggestions and to bring as many men as possible within this sphere of influence, and each man who has served on a committee is urged to consider himself an unofficial safety inspector ever afterwards, keeping up his active interest and making any suggestions that may occur to him.

"One of the greatest fields for productive safety work is among the workmen of the future, through systematic education. This education can well be given to apprentices, in the industrial schools, in the training departments of our great industrial establishments, in the vocational schools, in the manual training departments of our public schools and, to some extent, possibly in the ordinary school classes. If habits of caution are inculcated in our future workmen during the formative period of youth, when they are most inclined to be receptive, they will cling to them through life."

ADDRESS BY CHARLES C. PEIRCE

Charles C. Peirce, vice-president American Electric Railway Manufacturers' Association and manager railway department, General Electric Company, Boston, Mass., spoke first of the work of the Manufacturers' Association. He referred to the permanent office at 165 Broadway, New York, where electric railway men and manufacturers of electric railway apparatus and their agents are always assured of a hearty welcome; of the plans of the secretary and treasurer, Mr. McConaughy, to supply the members of the association information in regard to openings for foreign trade through an arrangement made with the bureau of foreign and domestic commerce of the Department of Commerce, and of attendance by committees of the association at the National Foreign Trades Council at St. Louis and at the meeting of the Chamber of Commerce of the United States at Washington a short time ago. The results of the observations of the committees will be transmitted to members as soon as possible.

Mr. Peirce then referred to the status of the electric railway companies, which he said were carrying about all of the troubles they could stand, and to the influence on public opinion of the press. He quoted Dr. Hadley, of Yale University, that the power now possessed by the press carries with it a grave responsibility to the public, and said that it was the duty of the press to clear up any misunderstandings that may have arisen between the public and the transportation utility. He said that he had recently had an opportunity of reviewing the editorial comments from more than fifty newspapers of the United States upon the mid-year meeting at Washington. Much of these comments had to do with the address of President Wilson, and they were couched in various tones of commendation and criticism, but through them all ran a spirit of friendliness to the business interests of the country, which is encouraging to a degree. It was Mr. Peirce's belief that the American newspaper to-day had become America's greatest utility, and therefore, to paraphrase Grover Cleveland's celebrated remark, "The position of the editors of a newspaper is an absolute position of public trust."

THE MANAGEMENT AND PUBLIC RELATIONS.

In continuing Mr. Peirce said, in part: "During the last decade, which, in this country, has been one of marvelous growth, the individual ownerships of our

utilities have passed over to corporations, and there has resulted an unfortunate attitude on the part of the public toward the street railways which has been caused sometimes by the unthinking acts of mistaken corporation officials, who gave the impression that corporations were not human; that they were organized under the laws mainly to evade personal responsibility, and that, having accepted the acts which give them the right of incorporation, they set themselves up as greater than the people from whom their power was derived.

"And we oftentimes hear it said that the attitude of a corporation is reflected in the acts of its officials. I have often felt that, given the opportunity of getting upon the rear platform of a car, I could, in nine cases out of ten, tell the peculiar characteristics of the management which handles that property. Being a new art, in many cases we have made the mistake of selecting weak men for managerial positions. It has been no uncommon thing in the early days to see properties which have cost hundreds of thousands of dollars being managed by directorates who thought they were wise in hiring men at very low salaries, thinking thereby to save money for the benefit of their enterprise. But a workman is always worthy of his hire, and you only get in this world for labor return exactly what you pay for, and low-priced men, generally speaking, are able to give only a low-priced return.

"In the evolution of all forms of corporations in the last decade, there has been a tendency to do away with the personality of the active agent in almost every instance. This is a reaction from the so-called one-man control, which has been unpopular from the belief that has crept into the minds of the American people that no one man should be allowed, under our democratic form of government, to exercise such abnormal control. Yet it seems to me that this works to destroy the strength of the corporation, as the successes of most of our great corporations have generally been made under the personal magnetic direction of a single mind.

"The tendency has been toward doing away with direct responsibility and going into committee management. But it is a well-known saying that divided responsibility is no responsibility. Committee management in many cases does not, and cannot, give anything except a compromise direction. Of course we know that in committee work, generally speaking, there is always a strong mind which dominates. If this is a fact, to get properties back to the most efficient basis, strong men should be placed at the helm, and if they are not strong enough to do the work they should be replaced and others appointed who are able and will produce the results aimed at.

"In corporation growth the personality of the active agent and the potentiality of personality have seemingly been lost sight of by the various authorities who pose as organizers, efficiency engineers and students of so-called 'system.' The very magnitude of our American corporations to-day requires positive personalities for efficient direction. In the street railway business especially, unlike the other utilities, our agents are in immediate contact with the community every hour of the day and night. How easy it is, therefore, for our agents to create a wrong impression for our company by some little act or statement."

THE PROBLEMS OF THE INDUSTRY

Mr. Peirce, in continuation, said that the ten years which ended in 1905 were the banner years for electric railway extension. Their power for good was recognized by the people and their promoters received every encouragement. Since that time the situation had changed materially, and more and more restrictions had been thrown around electric railway development.

with the consequence that there had been a slackening and in some communities an almost total cessation of electric railway extension. Those in the electric railway business believe that if the public knew, as the railway men know, that the profits are not exorbitant, and in fact hardly commensurate with the risks taken, there would be fewer such restrictions.

The nickel of the passenger has been divided into its component parts according to the uses to which it is put, and it has been shown that 1.68 cents goes into wages of employees; 0.97 cent for supplies; 0.74 cent for interest; 0.56 cent for rent; 0.23 cent for taxes; 0.21 cent for claims of damages; 0.16 cent for reserve funds; 0.14 cent for salaries, and 0.31 cent to the stockholder.

The interest of the supply man in electric railways is very marked, as it is the nickel of the passenger that enables electric railways to live, and it is the nickel of the passenger that enables the electric railways to buy supplies. When the flow of these nickels into the pockets of electric railway companies ceases, or is diminished, the life-blood of the manufacturer of railway supplies is vitiated. Hence, the manufacturers should help the railways, and by so doing they are helping not only the interests of the railways, but their own interest.

In the American Electric Railway Association there is a splendidly equipped and most potential means of securing the object which the railway men and the manufacturers seek. Through its committees and publications and numerous other channels, it is battling, and with some degree of success, for the rehabilitation of conditions as they have existed. It deserves the support of every railway man and of every manufacturer and of every representative of a manufacturer.

In conclusion Mr. Peirce said, "I am sorry that there is no more intimate way in which it can be designated than by the somewhat coldly impersonal term of 'association,' since it is rather the railway man and the manufacturer who are fighting through the association than it is that the association in itself is performing the work. It is our organization, gentlemen. Its success is our success; its failure, if such a thing is conceivable, would be our failure. And I trust that I am not pre-empting the prerogatives of my fellows in the operating field when I urge upon you the duty, not of supporting its interests by your co-operation and enthusiasm, but of supporting your interests through this instrument which stands 'ready made' for your use."

ADDRESS OF MATTHEW C. BRUSH

In his address on Feb. 25 at the Central Electric Railway Association, M. C. Brush, second vice-president Boston Elevated Railway and president American Electric Railway Transportation & Traffic Association, explained that he had been requested by President Allen of the American Electric Railway Association to represent him at the meeting. He said he had been selected because one of the vice-presidents, Mr. Henry, was a member of the Central Electric Railway Association and Mr. Allen felt that it was unfair to call upon him for this reason, and the three other vice-presidents were unable to attend. Mr. Allen could not be at the meeting on account of an expected operation.

Mr. Brush complimented the Central Electric Railway Association on its membership and representative character. He then showed the growth of the electric railway industry during the past 33 years by giving some statistics for 1882, when the national association was organized, and at the present time. He then sketched

briefly the work being undertaken by the American Electric Railway Association, mentioning particularly the committee on public relations, the committee on federal relations, the bureau of fare research, the joint committee on overhead and underground line construction, the committee on standard classification of accounts of the Accountants' Association, the committee on standards of the Engineering Association, the board of accident prevention and the association's monthly publication. He also referred to the mid-year convention at Washington, which he said was the most successful winter meeting the association had ever had, and commended the selection of Washington instead of New York. The speaker believed that the publicity which the association received in connection with this meeting would help the public to understand some of the problems of the railways. Continuing, he said: "The public as a whole is fair, but the great difficulty in the past has been that the public has not understood the real facts relating to the conduct of the transportation business, for which misunderstanding the companies themselves are in a measure at fault for not having earnestly endeavored to acquaint the public with the facts.

"Mr. Allen was very anxious that I endeavor to convey to you his thought that while corporations can be members of the associations, the corporations themselves cannot do anything in the line of work. The work of the association, like all their work, must be performed by individuals. Individual effort, or the efforts of three or four individuals, would produce a certain amount of work. The highest efficiency, therefore, in the association work is produced with a large group of individuals, and the larger the group the higher the standard of the association work. Mr. Allen believes that the association must tell the story of the electric railway industry to the world. One of the means is to tell those engaged in the industry what the story is, make them believe in it to such an extent that they will tell it to their neighbor, to the butcher, the baker, the barber, etc. He believes that the majority of electric railway employees today do not understand what the real story is and what the real troubles are. Associations like the Central Electric Railway Association, co-operating with the American Association, can be of great value to the industry in educating the men now depending on the industry for their bread and butter to the true story, and then having them go forward and tell it to the world."

In conclusion, Mr. Brush congratulated the companies in the Central States on the support they had given to the national association and on the services which representatives from that section had rendered to the national association. He then made a plea for continued support of the association from all present.

ANNUAL REPORT OF CHAIRMAN OF THE CENTRAL ELECTRIC TRAFFIC ASSOCIATION

BY A. L. NEEREAMER

During the year ended Dec. 31, 1914, your association has held eleven meetings, all of which have been well attended and as a result a great deal of good work has been accomplished. Of the membership of the Central Electric Traffic Association, forty-seven lines representing 3626 miles, participate in tariffs and other publications of our association. This is an increase of one line and 57 miles over the previous year. Joint and local baggage tariff No. 8, participated in by forty-three lines and cancelling joint and local baggage tariff No. 7, was issued Aug. 14, 1914. This is the second issue of this tariff during the year.

The interchangeable 1000-mile ticket is now participated in by thirty-one lines representing 2868 miles, as

shown by joint passenger tariff No. 13, issued Sept. 24, 1914, an increase of one line and 76 miles over the year preceding. This ticket appears to grow in popularity as 6000 tickets were ordered and placed in the hands of the agents during the year past, making in round numbers 28,000 tickets ordered since its inception, or an average of more than 4200 per annum.

The official classification is filed by the chairman for thirty-nine member lines, an increase of one over the year preceding. There has been only one issue of the official classification during the year, but that publication now has ten supplements, and from present indications it will be reissued about July 1, 1915, with quite a number of very important changes in its construction.

In September, joint passenger tariff No. 14, which is a reissue of joint passenger tariff No. 6, was placed in the hands of the member lines. This publication is participated in by thirty-seven of the member lines, and when the present supplement, which is now in the course of compilation, is completed, two additional lines will be added.

Joint freight tariff No. 10, participated in by thirty-eight lines, covering exceptions to official classification, is now about ready to be placed in the hands of our member companies. This tariff cancels joint freight tariff No. 8, which was issued March 31, 1914.

The committee having in charge the basis of uniform class rates has been working diligently on this subject, and the information collected by them will be of great value to us.

The official interurban map is now in the hands of the map makers, being revised, and when finished will be complete and up to date. An index of all cities and towns will be printed on the back, thereby making it of greater value to the traveling public. The committee having this in charge devoted considerable time to securing the necessary data.

In a paper read before the parent body at the meeting held in Toledo last June, your chairman referred to "intangible benefits" derived from the association by its members. The past year is one in which this has been more perceptible than any period during the life of the association.

The past year has been fraught with great activities as well as being one of progression and, notwithstanding the depressed financial condition, of success to the association. This success and the results achieved is due to the co-operation of the members and the valuable assistance given by members—individually and collectively—as well as the various committees (all of which have been active and energetic) to the chairman in the discharge of his duties. And for that support he now extends his heart-felt thanks. The display of the same spirit and loyal co-operation during the coming year will achieve greater and more valuable results, as well as extend the scope of the association.

Legal Aspects of Accidents

At a recent meeting of the Washington Railway & Electric Company section of the American Electric Railway Association, George P. Hoover, attorney for the company, presented the attorney's view of the accident question. He contrasted the old and the new conditions in regard to the attitude of the courts toward responsibility for accidents and explained how the work of the trial attorney can be lightened through co-operation.

Mr. Hoover quoted an early accident report as follows: "On ——— trip, north bound, at 4½ and Missouri Avenue, Chinaman jumped off car and fell; couldn't get his name; chased him two squares and couldn't catch him." Mr. Hoover said that accident

reports in the early days were written principally upon the backs of transfers. People at that time had not become so enlightened upon the subject of suing for damages, lawyers were not so active in the prosecution of claims against railroads, and doctors had not become so proficient in the discovery of the various ailments which are now attributed very largely to accidents on railroads.

In the early days it was easy for the railroad to win accident cases because the courts held that if it appeared that the person injured had failed to look out for approaching cars, as a matter of law he was guilty of contributory negligence even if the employees of the company were negligent in the operation of the cars. Under such circumstances the courts did not undertake to measure the degree of negligence on the one hand or the other. During the past few years the courts have adopted what is commonly termed the "humanitarian doctrine" or the "doctrine of last chance." In simple language, this means that even though the man who sustains the injury has himself not exercised the degree of care which is imposed upon him by the law and by his own carelessness has placed himself in a position of peril, nevertheless, if the motorman of the car by the exercise of reasonable care could have seen him in a position of peril and then by the exercise of ordinary care could have stopped the car in time to avoid the accident, the company is liable to the man injured. The courts have practically nullified the doctrine of contributory negligence in this class of cases.

There is also a variation in the law itself and in the enunciations of the principles of the law which make it more difficult for railroad companies to win their cases in court and more important for the railway to prevent accidents, and in those which cannot be prevented to secure as many witnesses as possible, and to make observations as to its exact location. A company's attorneys, even after investigation of an accident by the claim department, sometimes have difficulty in determining the nature of the charge which is to be presented against the company upon the trial of the case. Hence any statement by the plaintiff made before the trial of how the accident occurred, or how he claims the accident occurred, is valuable. As the claimant may deny or correct this statement in court, other testimony should be secured.

Mr. Hoover showed that the operating department is primarily charged with the responsibility for keeping the road open and the public is primarily interested in being transported to their destinations, and not in helping to secure the names of witnesses. Further, the use of a curtain behind the motorman often makes it difficult for passengers to see an accident. But a systematic investigation by the company's representative frequently secures the names of people who have seen the accident, and this is the only means by which the company can defend itself against claims. The names of witnesses should be secured even if an accident appears trivial at the time, for a slightly injured person may later have an exaggerated idea of his injury and may decide to present a claim.

In conclusion the speaker instanced a number of classes of accidents which are very difficult to defend, particularly those due to persons crossing behind a car which is passing another at a high rate of speed, to the swinging of the rear end of double truck cars, to unsafe or improperly located platforms, to icy platforms and steps, etc. Finally he urged the managements of electric railways to impress upon employees the necessity for avoiding accidents and to commend them for prompt action when accidents occur.

Syndicated Anti-Railway News

An Account of How Some Daily Newspapers Get Their "News"—Anti-Railway Material Sent Out as "Features" for Local Paper Reproduction

Those who are not acquainted with the methods followed by daily newspapers in securing the material which they print in their pages have little idea of the great variety of sources from which news comes. Many readers believe that practically all the matter printed in a daily paper, except that received from the associated or other news bureaus by wire and the advertisements, is originated in the editorial office of the daily paper. By inference they apply this same deduction to editorial articles, local news, cartoons, the joke columns, the book reviews, the society column and so on. This is as far from the facts as would be the conclusion of the man in the street that a railway company manufactured all of

subject apropos of nothing. The answer may be that the newspaper is a subscriber to some national bureau which is sending out news or "feature" material of this particular kind at this particular time. The article, when received by the local daily paper, may be changed around somewhat to give it local color, but the idea and central thought are not that of the local editor at all. Very often the pictures used to illustrate the article are syndicated.

The local editor is protected as regards the "news" feature because he knows that the national bureau does not sell to more than one paper in a city, and to the local editor it makes very little difference if the same ma-

"Any City Can Profit in Jitney Bus Business!"

TRANSPORTATION EXPERT DECLARES MUNICIPAL JITNEY BUS LINES WILL SOLVE STREET CAR EVIL AND SHOW A PROFIT.

BY J. BRADLEY SMOLLEN

Staff Special.

CHICAGO, Feb. 6.—"When gigantic traction corporations, secure in the possession of cast iron franchises, abuse their privileges by furnishing inadequate service, then it is time for the municipality to step in and compete with them. And it can compete with them—and make money!"

That is the conviction of Alderman Eugene Block, chairman of the committee on local transportation of the Chicago city council, father of the movement to establish a system of city-owned "jitney buses."

Block has just proposed that the city set aside \$300,000 to establish the nucleus of a city-wide series of five-cent auto buses and solve the traction problem that subway-less Chicago is continually compelled to bear.

He is very much a jitney bus fan where municipal ownership of the vehicles is concerned; and just as pronounced in his opposition to the privately owned cars. He's out to create better public service conditions and will accept no half measures.

He proved his sincerity the other day. A sample jitney bus rolled up to the city hall and aldermen and other city employes were invited to take a test ride. Block, naturally by virtue of his position was the recipient of a special request.



Eugene Block

aldermen and other city employes were invited to take a test ride. Block, naturally by virtue of his position was the recipient of a special request.

SYNDICATED ANTI-RAILWAY "NEWS"—TWO "SPECIALS" DIRECTED TO EDITORS BOOMING THE JITNEY BUS

its cars, trucks, motors, over-head equipment and power station equipment in its own shops.

Practically no newspaper could afford the force to prepare in its own office all of the material which appears in its columns, and the smaller the city, the more the daily paper has to depend on outside sources for its material. The result is that there is a large number of bureaus of national scope which supply all classes of information to daily papers, syndicating it so that the cost of the service for each paper is comparatively small. These services include practically anything that an editor may think a considerable number of his readers might want, that is to say, society news, sporting news, literary news, comic pictures, political gossip, travelogues and even "plate material," which is matter already stereotyped so that the local editor does not even have to set it.

This explanation may be of help to a reader in explaining why his local daily paper may take up a certain

erial does appear at the same time in other papers in other cities.

ANTI-ELECTRIC RAILWAY CAMPAIGN

The ELECTRIC RAILWAY JOURNAL has had drawn to its attention some syndicated material of this kind which has recently been sent out to daily papers by a newspaper publicity bureau, together with the "mats," or matrices, required for the illustrations. Three of these are reproduced herewith. The interest to electric railway companies lies, of course, in the fact that this particular bureau, having exhausted other subjects which it thinks of live interest, is suggesting an attack on local railway companies as a means of "winning new readers." The note to the editors on the reproduction on page 463 is particularly significant. The rank injustice inflicted on the local company or the immorality of attacking a legitimate business enterprise without cause does not seem to have occurred to the news bureau. This month it is

JITNEYS ROUT NEW ORLEANS TROLLEYS; BRING 3-CENT FARE TO THOUSANDS OF SCHOOL CHILDREN.

Special Correspondence.

NEW ORLEANS, La., Feb. 6.—"All aboard! No straphanging!" cries Dan Feitel, head of the New Orleans Jitney-obile company, just established.

"Plenty of seats now," echoes the car company.

"Three cent fare for school children!" retorts the "jitney" man.

The railway company hasn't yet answered the three-cent cry of the "jitneys."

The jitneys have gone the railway's company one better, but the hetting for Mr. and Mrs. Public's patronage still is on!

In the meantime, with competition keen, thousands are riding to and from work in jitneys de luxe and others are "joy-riding" about New Orleans in them.

For months past the city, led by Mayor Martin Hehrman, has been hot and fast after the railway company to get more cars and better schedules, hoping against hope to afford some relief for the countless straphangers.

Promises galore were made by the company.

But, were they carried out?

Not until the "jitneys" came along!

Now, however, in desperation the car company is trying to get back the straphangers' patronage, grabbed by the "jitneys." Great, big cars are being hurriedly placed in operation—the type

the railway company. Next month it may be some other interest or enterprise. And during the excitement produced by the jitney bus movement, it is possible that other concerns of this kind will utilize all sorts of muck-raking material on this subject. How little regard may be shown for facts is fairly well indicated by the article headed "Any City Can Profit in the Jitney Bus Business."

To just what extent this material has been published by daily papers in this country the ELECTRIC RAILWAY JOURNAL is unable to say. The bureau in question is

multiplied and broad-coated libel offered at a trifling sum per column in the hope that some editor too feeble minded to think for himself will use the copy. The case would be much the same if a newspaper syndicate offered a story headed "Mothers Start War on Clerical Child Poisoners."

The attempt to capitalize in the cheapest form a pre-conceived animosity toward city transportation companies might easily have been the text for another paragraph in President Hadley's article in the February *North American Review* under the title "The Organization of Public Opinion." As it is, the following sentences, should they come to the eye of the railway baiting syndicate or of newspaper editors, will not seem ungermane to the subject here discussed:

"A man who desires to make his newspaper popular is under a constant temptation to cater to the prejudices of his public. Without actually making grave mis-statements he can print the facts which they like in large type and suppress or relegate to the obscure columns the facts which they do not like. Under these circumstances their judgment is distorted and their preconceived opinions confirmed, until they become incapable of weighing the real evidence on which their political action ought to be based. If another paper tries to furnish them with the true facts, they do not believe it. They are accessible only to the kind of evidence that their particular journal prefers to furnish."

Straphangers Start War on Rotten Car Service---Demand Seats, Clean Air and Warm Cars.

SECOND CITY JOINS NATION'S FIGHT ON HOGGING CORPORATIONS; PEOPLE OUT TO CLEAN UP EVILS OF STRAPHANGING, IRREGULAR SERVICE, COLD CARS AND CONDUCTORS WHO "BUST YOU ON THE JAW."

NOTE TO EDITORS:

Why not get your own straphangers started, on this better car service thing? One Chicago paper is getting fine action with its campaign and certainly winning new readers. Just give your people a chance to write you letters kicking on the car service in your town and they'll find plenty of things to kick about. You can condense their letters and carry the main complaint in a sentence or two. N. E. A.

CHICAGO'S SARDINE SYSTEM.



Staff Correspondence. CHICAGO, Ill., Jan. 08.—The man is standing on the corner. He is waiting for a car. Poor boob. One whizzes past. Then another. The citizen begins to get exasperated. His feet are cold and his head hot. Fifteen minutes later another car comes dashing along. In desperation the would-be passenger stands in the middle of the track and determinedly holds his ground. The speeding car stops with a jolt two yards away. The man runs around to the rear, but the car, with a "tag," leaves him abandoned, starts off quickly and the citizen's over-anxiety to part with 5 cents costs him a fall in the snow.

But here come more cars—lots of them. Over the same spot where only three cars passed in half an hour a dozen now pass in half a minute. The irritated citizen boards the first one, crowded to the guards, and clings on the back step.

The conductor, a big burly fellow, is threatening a passenger with a "bust in the jaw" when the car comes to a sudden stop. The one ahead has hit a woman and a crowd has gathered.

"Look out for the 'gray' about," Call the police," admonishes a passenger who has seen the traction company's famous—so, infamous—claim department in action.

But hardly does he speak the words before a speeding cloud-colored auto ambulance comes around the corner. The unaccustomed woman is loaded in and carried off to a hospital, her whereabouts to be unknown to relatives or friends until she has been hauled into accepting a small cash amount for her injuries and relinquishing all rights to sue the corporation.

That is what the traction companies of Chicago are inflicting on

the public and trying to make the public like it, according to the complaints filed by disgusted straphangers.

The fact remains that Chicago, the second city of the United States, is having the kind of trouble with its street car service that would not be tolerated in any other city of the world.

Cars run irregularly and simultaneously. They do not even maintain the same routes hugging the loop. One cannot tell where a car is going to take him half of the time. It is either that or being ordered off half way downtown with the words, "Far as we go."

Ventilation is rotten, most cars are cold and frequently 150 persons are crowded into a trolley that seats 40, according to reports on file in the health department.

Only a few days ago a woman was pushed off a crowded back platform and, being rushed to a hospital, gave birth to her child—prematurely, the physicians said. Persons riding in the out-

side suffer the most. Cars run infrequently and then usually only part way, necessitating a long wait at some cold transfer corner.

Woe to the citizen who tries to catch the "owl car." He usually gets up from \$2.50 to \$5 for a taxi ride home. Taxi drivers follow the last cars on various lines and the motorman obligingly passes up the belated citizen, it is said. One taxi driver admitted he picked up fifteen fares in one night in this manner.

Chicago street car employees have won a reputation for their roughness and insolence. This could not result unless as a reflection of the company's system—that of obtaining rough and insolent help. It is notable that no small men ever get such jobs. They are all big, husky fellows.

Now Chicago is disgusted with its car service. And it takes something to get a Chicago straphanger disgusted. But the nation-wide fight on hogging public service corporations has reached this city and the citizens promise a day of reckoning for the street car company.

CHICAGO, JAN. 4.

The Red Book

The McGraw Publishing Company, Inc., will not hereafter issue the McGraw Electric Railway Manual, commonly called "The Red Book." When publication of this manual was begun in 1894, very few electric railway companies published annual reports, and there was no place where the financial statistics of these companies could be obtained except for the roads of about six states in which the reports of railroad commissions were published.

This condition has now changed. A sense of the importance of making such statistics available has led most companies to issue annual reports in a form available to the investor. Elaborate statistics also are published by regulatory commissions in nearly every state. Again, at least three financial manuals devoted originally to steam railroad securities now include statistics of electric railway companies. A further publication of the Red Book would therefore seem largely to duplicate the reports being made by the electric railway companies and others.

Consular Recommendations on South American Trade

That the United States has in the last few years been making steady advances in the markets of the various South American countries is plainly brought out in a publication just issued by the Bureau of Foreign and Domestic Commerce, of the Department of Commerce, entitled "Consular Recommendations in South American Trade." Consular recommendations are well summarized in a report from Rosario, Argentina, which states that the principal factors in extending American trade may be included under five heads: Investment of American capital, steamship facilities, credits, direct personal effort, and willingness on the part of American manufacturers to comply with local requirements. The first two of these points have been thoroughly discussed in the press and in official publications, and steps have been and are being taken to provide the missing facilities.

SYNDICATED ANTI-RAILWAY "NEWS"—CIRCULAR IN WHICH EDITORS ARE URGED TO START A CAMPAIGN AGAINST "ROTTEN CAR SERVICE"

said to issue from five to eight pages of newspaper material with illustrations in mat form every day from its central office, as well as additional material from two other offices which it has in other parts of the country. If the usual course is followed, the matter prepared by this syndicate will be offered to every newspaper in the country that is a possible purchaser. This matter carries in one of its headlines the declaration that straphangers are starting a war on "rotten car service." No particular city's car service could have been in mind when this head was written. It is merely a cheaply

Twentieth Quarterly Meeting of N. Y. E. R. A.

At the Lake George Meeting, Held March 2 and 3, the Main Topics Discussed Were Maintenance and Fare Collection

The twentieth quarterly meeting of the New York Electric Railway Association was held at the Fort William Henry Hotel, Lake George, on March 2 and 3, with President James F. Hamilton, Schenectady, in the chair. The meeting opened with a banquet on Tuesday evening, attended by 104 persons, and the formal proceedings were confined to a 3½-hour session held on Wednesday morning. The latter was preceded by a meeting of the executive committee.

THE BANQUET

The banquet toast list was prepared with a view to giving the railway men the point of view of the outsider as far as possible. In introducing the speakers Mr. Hamilton compared the association to a school which comprises both teachers and students. Several speakers took a cue from this and made reference to education in its relation to railway work.

James O. Carr, counsel for the General Electric Company, explained the relation of the lawyer to the public service corporation, which includes, he thinks, the function of helping his employer to comply with the law and not to evade it. J. Teller Schoolcraft, mayor of Schenectady, told a string of stories designed to show the pleasant relation existing between the officials of that city and the railway. He concluded with a poem "Making Your Dreams Come True," which expressed the relation of the track worker to the railway official from the former's standpoint. C. S. Sims, vice-president and general manager D. & H. Railroad, emphasized the unsatisfactory financial condition of electric railway properties and urged the companies to work primarily to secure fare rate increase. N. I. Schemerhorn, a merchant of Schenectady; Rev. C. B. McGill, a Presbyterian clergyman of the same city; Harlow C. Clark, representing the American Electric Railway Association, and Elmer J. West, president of the Chamber of Commerce of Glens Falls, also spoke. Mr. McGill gave a condensed history of invention in this country and its relation to electric railway development and Mr. Clark showed briefly the identity of the railway men present and the national association. Mr. West, who is also vice-president of the Adirondack Electric Power Corporation, spoke from the standpoint of a civic body which has taken a reasonable attitude in the recent agitation against the D. & H. Railroad. He said that the corporation needs friends in these days but the corporation is not free from blame for the present condition.

WEDNESDAY'S SESSION

The main session of the meeting was devoted to three topics: "What the New York Electric Railway Association Can Do For Me," "Collection and Registration of City and Interurban Fares," and "What Constitutes Good and Sufficient Maintenance?"

In opening the discussion on the first topic Mr. Hamilton outlined the manner in which the program had been prepared. As the association is made up of individuals, each must take advantage of the opportunities which it affords. There followed what might be termed an "experience meeting," opened by C. J. Witherwax, passenger agent Schenectady Railway Company. He defined the purpose of the association, which is to discuss topics of every-day practical use. The educational function is

prominent, and even if a particular discussion is not exactly along the line of one's everyday work it is important in promoting interdepartmental sympathy. The association can help in developing a higher grade of ability necessary to success. W. H. Hyland, claim agent Fonda, Johnstown & Gloversville Railroad, thought that the banquet benefits him most, as the speeches reflect the experience of important men. The "personality" of the meetings, that indefinable something which results in "liking the fellows" is also important.

C. H. Smith, assistant general manager United Traction Company, Albany, took another "tack" in urging that railway income must be increased and that the association should secure legislation permitting charging for transfers. Coming back to the course previously marked out, B. Penoyer, engineer maintenance of way, and C. J. MacAleer, claim agent, Schenectady Railway, and C. F. Hewitt, general manager United Traction Company, reinforced the claims of earlier speakers regarding the value of the meetings.

Harlow C. Clark, New York, started the meeting off on another "tack" by using the jitney bus situation to illustrate the lines of cleavage of national and state association work. Mr. Hewitt followed with the statement that these bus lines must be kept within the jurisdiction of the public service commissions. J. E. Hewes, general manager Albany Southern Railroad, gave fresh information showing the injustice of the present terms of competition, illustrating by a case in which a bus line has an exclusive franchise to use a state highway under practically no restrictions. He believes that buses on state highways should obey crossing laws. He urged the association to secure legislation to that effect and also to make failure to register fares, on a conductor's part, prima facie evidence of theft. He gave amusing instances of how railway property is valued for taxation purposes and said that the railways should exert a regulating influence on commissions.

George A. Lewis, Auburn local manager Auburn & Syracuse Electric Railroad, noted a tendency of the commissions to make concessions and urged the railways to stand firm in their reasonable requests. William M. Lawyer, Whitmore Manufacturing Company, Cleveland, Ohio, stated that the larger salaries and more secure tenure of office of Canadian commissions produce more satisfactory results than our system.

J. P. Barnes, general manager Buffalo, Lockport & Rochester Railway, spoke for association publicity. Charging for transfers is but scratching the surface. To convince the public of the good faith of the railways the full message with reasons must be given. Referring to the appropriate clause in the first article of the association's constitution he recommended the establishment of a permanent secretarial office for the supply of ammunition with which to fight false statements. F. E. Belleville, auditor Schenectady Railway, gave statistics showing that out of \$370,000 of net income of his company last year \$100,000 went into taxes of one kind or another. H. C. Prather, Syracuse local manager Rochester, Syracuse & Eastern Railroad, then read a resolution embodying Mr. Barnes' suggestion of a permanent association office, which was referred to the executive committee with power, the sentiment favoring such action if practicable.

Following the above discussion James E. Hewes, general manager Albany Southern Railroad, read the paper on "Collection and Registration of City and Interurban Fares," abstracted elsewhere. He explained extemporaneously the plans used and to be used on his road and incidentally mentioned that the cost of producing transportation is 9 mills per passenger mile and that, by increasing rates considerably last year, the gross income was increased with 110,000 fewer passengers carried. In the discussion C. H. Smith said that, in his opinion, the best system for collecting city fares is the pay-enter plan with cash-box and register. Inspectors should check up conductors frequently. Mr. Hewes agreed with this. C. F. Hewitt pointed out the difference between city and interurban fare collection and that railway men differ as to the necessity for auxiliary registers. W. S. Hamilton, superintendent Schenectady Railway, expressed his belief in the use of available methods, the financial condition of many properties not being such as to permit of the rental or purchase of registering devices. In Schenectady cars are equipped with counting fare-boxes, revenue and non-revenue registers, and pay-enter conductors are required to balance fare-boxes and registers on each half trip, recording balances on the daily reports. These are checked frequently and immediate explanations of discrepancies are called for. All cash and revenue tickets are registered on the "cash" register. A poor system rigidly enforced is superior to a good system more loosely conducted. All cash and revenue fares should be deposited by the passengers.

J. P. Barnes took up the subject of conductor honesty, dividing men into three classes: (1) Those normally and naturally honest; (2) those who will study out ways to "beat" any system, and (3) those whose honesty is dictated by circumstances. With honest conductors registration of fares is simply a counting mechanism for supplying data for changes in service, etc. Devices should protect honest men and encourage the third class to be honest. The system also should produce legal evidence of theft, not necessarily for use in prosecuting cases, but for the moral effect.

In reply to the question as to what evidence will be satisfactory in court, James McPhillips, attorney Hudson Valley Railway, replied that he did not know any way by which such evidence can be produced by a system of fare collection. These systems are thwarted in their real purpose by dishonest conductors. He thought that most conductors are honest and did not believe in having much patience with dishonest ones. He did not believe that a law would be effective in making failure to register fare *prima facie* evidence of theft.

F. E. Belleville, Schenectady Railway, stated that the "tear-off duplex" system is in operation on the lines of this company and that the use of the register has been discontinued. The ticket serves as a receipt and an identification check. Conductors at the end of each trip collect the "squares" in the passengers' hands and turn them over to the auditor. At the end of each trip conductors are required to note on their trip sheets the opening and closing numbers of the duplexes torn, together with their denominations. These are checked against the station master's report.

V. L. Edmunds, Railway Audit & Inspection Company, Philadelphia, Pa., stated that discharging men for dishonesty has little effect as it is apt to be taken as a joke. He instanced a motion-picture film in which the hero was "Rob Nickels." Preaching rather than law must be resorted to, as the preachers formerly got results with "eternal damnation." H. W. Peck, general manager Schenectady Illuminating Company, thought that reward would be better than penalty, say the use of a bonus for good work, but C. F. Hewitt replied that

"virtue would have to be its own reward." J. P. Ripley, J. G. White Management Corporation, said that the bonus had been tried without success. L. A. Hall, purchasing agent Fonda, Johnstown & Gloversville Railroad, thought that a dishonest conductor can beat any register especially with a totalizer on it, while Elmore De Witt, Pennsylvania Steel Company, ventured the suggestion that it may be considered a bright thing to beat a register.

In closing Mr. Hewes expressed general agreement with previous speakers, but said that an occasional change of system is good if for nothing more than the moral effect.

WHAT IS GOOD MAINTENANCE?

The last feature of the meeting was the reading by Mr. Barnes of his paper abstracted elsewhere in this issue and the discussion briefly summarized below.

B. Penoyer, engineer maintenance of way Schenectady Railway, said that as far as the track is concerned it must be kept well aligned and the joints must be promptly and well repaired, all welds being ground smooth. Especially in paving is the removal of small evidences of wear necessary. Sometimes entire paving is ordered replaced when repair of only part was required. C. H. Smith, United Traction Company, agreed with this, urging incessant inspection and prompt repair, the latter carefully supervised. Insufficient track maintenance means high operating cost; accidents, derailments and wear and tear of rolling stock, etc. Good and sufficient maintenance also means "safety first."

J. P. Ripley followed with the statement that Mr. Barnes is really arguing for economical maintenance. The real question is how much money the directors will grant for maintenance, no matter how desirable and profitable the latter may be. Mr. Hewitt agreed with this, but encouraged the engineers to keep up their good work, stating that if their recommendations could be carried out property would be improved and returns would be better.

F. A. Bagg, chief engineer Fonda, Johnstown & Gloversville Railroad, instanced improved bonding as an element in maintenance and said that the word "Best" should replace "Good" in the title of the paper under discussion. Physical perfection in maintenance is rarely justified for operation and maintenance are interlinked. H. L. Barber, general manager Plattsburgh Traction Company, discussed waterproofing around track structure and showed that sometimes municipal specifications for paving do not take the railway's requirements into consideration. He wondered if the association could do anything to improve this condition.

J. E. Hewes, Albany Southern Railroad, pointed out certain inconsistencies in the public service commission's requirements regarding maintenance due to lack of experience on the part of commissioners. He thought that commissions should include, each, a financier and a railway manager. Replying to this and the remarks of other speakers, James McPhillips, Hudson Valley Railway, summed up as follows: Railway directors will always give favorable consideration to clear and definite recommendations. Railways should not tolerate illogical rulings of commissions. These matters should not be regulated by laws, already too numerous. City councils will usually give consideration to explanation of what type of railway construction is best suited to local conditions.

F. S. Doyle, master mechanic Schenectady Railway, gave the mechanical man's point of view regarding maintenance. Equipment should have daily inspection duly recorded. Inspection on a mileage basis should also be enforced and light repairs should be made promptly. An-

nual inspection should be more complete. The record of car failures is a good indication of the efficiency of the mechanical department.

President Hamilton then closed the meeting after a resolution of sympathy to Mrs. J. H. Pardee on account of Past-President Pardee's critical illness had been passed and ordered sent by telegraph.

COLLECTION AND REGISTRATION OF CITY AND INTERURBAN FARES

BY JAMES E. HEWES, GENERAL MANAGER ALBANY SOUTHERN RAILROAD COMPANY

Years ago the cash drawer of the retail and wholesale traders was replaced by the cash register, and to-day even the bootblack, with his one assistant, must have a cash register. The financial outlay represented by this cash register is as nothing when compared to the results accomplished by the new mechanical bookkeeper.

The value of the public indication has made the cash register indispensable in all lines of business activity, including the railway business.

Publicity is the safeguard against dishonesty, and therefore the more publicity we have the better. Money is the greatest tempter. Dishonesty is a recognized factor in railway operation. We do not doubt that our men are honest, they would not be in our employ if we knew them to be otherwise, but a check is necessary to make dishonesty as nearly impossible as we can.

There are many so-called cash fare-registers in use throughout the country to-day, but some are not adequate. To my mind the essential feature of a car register is that it be capable of recording each fare registered under its separate classification. The principle of registering a five-cent cash passenger and a three-cent cash passenger simply as two passengers is wrong, and is one to be discouraged because of the opportunity it gives the conductor to "knock down" two cents on each five-cent fare registered, aside from the fact that it is not good business.

A fare registering system to be successful must be one that is fair to the conductors' interests as well as to the company's interests. If your conductor is collecting five different denominations of fares and is registering three of these of widely different value upon one counter, what means has your conductor to show you that he has turned over all of the various fares as were paid by the passengers? If you provide means for a separate registration and indication for each of these five different denominations of fares the conductor is collecting, he knows that he has indicated to his passengers the receipt of their fares, and the permanent register record shows that he has registered them as paid. This same register record shows you that you are getting all of the fares paid by the passengers.

So much for the man who cares, but what about the man who does not care, the man who believes he is entitled to more of the company's money than is paid him in wages? How does the former system affect him? You virtually say to him: "Here is a machine upon which to register your fares; for every fare you register upon it you must turn in a fare"; thus leaving it to him to say how many of the various kinds of fares he has collected. If it suits his convenience to turn in a lesser number of 5-cent fares than were collected and to turn in a correspondingly larger number of school tickets than were received, making up the excess of school tickets from a stock previously purchased by his friends, how can you know of this substitution, as he has turned in a fare for every fare the register calls for? His chances to substitute school and regular tickets for 5-cent fares enable him to pilfer an enormous amount of money within a short time.

Now, a fare-register providing a separate counter for the school tickets, for the 4 1/6-cent tickets and for the 5-cent cash fares would prevent this substitution. When the conductor registers a fare he should indicate to the passenger its value by registering the same, and once the fare is recorded it should remain an untamperable record, compelling the conductor to turn in fare for fare as received.

In like manner there should be a separate registration and classification for each pass, special ticket, commutation ticket, etc. There is danger in the register which permits a change of the indication on the register after the fare has been recorded. Thus, on such machines it is the practice of disloyal conductors to register one value and to indicate another, that is, a man may register a 5-cent fare and then quickly indicate 50 cents on the register.

It is the aim of most interurban railway companies to require passengers to secure tickets at all agency stations before entering the cars. In some cases arbitrary measures are taken to attain this end; in others it is sought by indirect means, such as by levying an extra charge upon those who neglect to buy tickets, a receipt being given the passenger whereby he can have this extra charge rebated upon presentation of the receipt at a ticket office. With the car register, such a transaction is handled by the conductor registering the actual value of the ride, and collecting, say, ten cents in excess of the fare, for which he issues a ten-cent redeemable excess receipt. If the conductor starts with one hundred excess checks, at the end of the day he must account for these one hundred receipts or their cash equivalent over and above the amount which is shown on his register record.

The necessary thing in connection with handling tickets is the immediate cancellation of tickets and prompt transmission of such tickets to the auditing department. Until canceled, a ticket is in some respects like a bank bill; the general demand for it gives it a value. Consequently some men are tempted, and, through collusion, some take advantage of this circumstance to resell or replace on the market tickets that should be canceled and destroyed.

There are two ways to prevent the manipulation of tickets, which on interurban properties is a serious problem; first to place time limitations on them, and, second, to register the tickets as collected at their actual cash value.

Furthermore, the classified register record should be hidden from the conductor. With the record locked within the register, he has no means of knowing what this record calls for, consequently he must turn in all his collections. He counts his change before starting to work, deducts this amount when he quits, and turns in all of his day's collections. Now he is turning in upon the basis of what has been collected and not what has been registered.

By means of this closed record of registration we have a basis for figuring the personal efficiency of the conductor and therefore we can grade our men accordingly. At the present time, when so much stress is laid upon the human factor and the efficiency of our employees, this grading of our men according to their merit is very important. With such information the operating official is placed in most intimate touch with the work of his conductors that he cannot see.

So far as human ingenuity can provide for the performance of a duty, there is a moral force behind the system that compels some registration—the proper registration for each fare collected. The several indicators make the registration compulsory, for the reason that the conductor does not know but that the very passenger from whom he has received a fare is on the car for the

purpose of watching him. If that particular passenger is not doing so, some other may be, and this fact requires him to be careful and honest. It raises his standard of efficiency, gives him a better opinion of himself and makes him a more competent, all-around employee, capable in time of filling a position "higher up."

As a summation, we know that any system which makes a bookkeeper out of the conductor is, at best, inaccurate, and, furthermore, inaccuracy breeds carelessness, and carelessness breeds inefficiency, and inefficiency makes dissatisfied patrons. Inaccuracy, carelessness, inefficiency, dissatisfied patrons; these spell "loss."

WHAT CONSTITUTES GOOD AND SUFFICIENT MAINTENANCE?

BY JAMES P. BARNES, GENERAL MANAGER BUFFALO, LOCKPORT & ROCHESTER RAILWAY COMPANY

Opinions differ widely as to the degree of maintenance which could be defined as good and sufficient on various properties, but it may be defined broadly as that which keeps a property in such condition as to permit and facilitate good and efficient operation.

As maintenance expense is a part of operating expense, maintenance and operation are closely interlinked, and maintenance must always be considered in the light of the operating conditions and problems of the individual property.

If current maintenance is as thorough as possible, the depreciation charges will be relatively small, while if the current maintenance is kept to as low an expenditure as possible the deterioration of the property will be more rapid and consequently the depreciation charge should be correspondingly increased. This fact will tend toward a constant expenditure on maintenance; with the special divisions as between current maintenance and depreciation—which may be described as deferred maintenance—varying in respect to each other in accordance with the manner in which the current maintenance is handled.

There are two matters in connection with current maintenance which seem of prime importance:

- (1) Maintenance of such degree as positively to insure safety, reliability and convenience of operation.
- (2) Maintenance of such degree as to insure, so far as possible of determination, a minimum depreciation charge.

Considering the first requisite, it is obviously essential for any property that it be maintained to such a degree as to insure safety and reliability of operation, no matter what its earnings or conditions of operation may be. This is the first duty the transportation corporation owes the traveling public, and it will not be disputed. The fulfillment of this condition requires that roadbed, pavement, line, power house, and car equipment shall be maintained to a standard sufficient to fulfill the conditions of safety and convenience. For example, track must be maintained in such condition as to permit operation at schedule speeds without danger of derailment, not only on account of the physical dangers involved, but equally for the reason that the results of derailments are deranged schedules, dissatisfied patrons and all the ills resultant from adverse public opinion.

Continuing the reference to track structures, an excessive number of low joints and the consequent noisy operation may bring about the same results, so far as adverse public opinion is concerned, but the revenues of the company may be insufficient to allow for the complete elimination of this particular source of difficulty and at the same time allow for the proper standard of safety in maintenance of other structures and equipment. Under these conditions it would certainly not

be wise to repair the low joints if the expense of that repair necessitated the departure from standards of safety in the maintenance of other structures and equipment, and, therefore, it would seem that this poor condition of track might be, for the property so situated, properly classified as good and sufficient maintenance.

The question now arises as to whether the property, situated as we have supposed in the above instance, should make any charge to depreciation, or deferred maintenance. If the depreciation is considered in the light of a periodical increment, based upon the cost of eventual replacement, the charges may be spread out over a long period of time and be individually small, or may be grouped within a small period and be individually large.

The second method may be considered as drawing upon the future for present needs, as the amount which would otherwise be charged to depreciation would thus be made available for current maintenance.

Numerous instances might be cited where the earnings of a property are not more than sufficient to pay its operating expenses, taxes and fixed charges. Whether an allowance for depreciation should be included in the operating expense of such a property is a question for consideration.

Considering the second requisite, where the earnings of the property are sufficient properly to care for its maintenance, it would seem obvious that the standards of maintenance should be such that the physical condition of structures and equipment will be at all times the best possible, resulting in the longest possible life and the greatest convenience and reliability of operation.

Experience has taught all of us that equipment which is kept up—well lubricated, bearings renewed when they should be, bolts kept tight, small defects remedied before attaining large proportions, etc.—will actually have a longer useful life than equipment which is not so carefully and completely maintained. This standard of maintenance would result in a small depreciation charge. This may be carried to the extreme.

To be good and sufficient, maintenance must be economical. In this connection, economical is taken to mean that money expended on maintenance is expended only where actual, positive and beneficial results are to be obtained. Maintenance must be planned ahead so that relatively heavy jobs may be undertaken and accomplished at times when the operating requirements of the property are light.

Joint Committee on Line Construction

The fifth meeting of the national joint committee on overhead and underground line construction was held in New York on Feb. 24. The committee devoted practically all day to a continuation of the revision of the present power wire crossing specifications, and divided the work up into sections to be apportioned to various sub-committees for revision. The committee expresses a desire for suggestions as to desirable requirements, and also detailed criticism of any of the clauses of the present standard power wire crossing specifications. The next meeting is scheduled for March 31.

Although 1913 and 1914 were years of strikes and depression in Colorado, the new business department of the Arkansas Valley Railway, Light & Power Company, Pueblo, under the superintendency of E. F. Stone, made a record in securing new business. During this period the horse-power of connected motor load was increased from 14,956 to 18,485—a gain of 23.6 per cent. Gross receipts from this source during the same period increased 29 per cent.

COMMUNICATIONS

Rational Units for the Boiler Room

INTERBOROUGH RAPID TRANSIT COMPANY
NEW YORK, Feb. 26, 1915.

To the Editors:

Your editorial support of the plan to rate boilers on a heating-surface basis is very much to the point. Present American practice in this regard is most illogical, and it is not surprising that confusion results from a system of nomenclature under which 3000-sq. ft. boilers can have ratings that range between 250 hp and 350 hp and then are put into service wherein they are said to have outputs that range from 200 hp to 1000 hp. The unit, "boiler horsepower," has long since outlived its usefulness, and it may well be discarded. Obviously, the proper basis for the purchase of a boiler is area of heating surface.

There is, however, a point in connection with the matter which was mentioned only indirectly in your editorial of Feb. 20. This is that the boiler horsepower has come to be widely used not only as a basis for purchase but also as a unit of production, or output, for steam-generating apparatus. When it is applied in the latter sense there is somewhat more excuse for it than in the former, but still it has two serious objections: First, the fact that it is an absolutely arbitrary unit which can be converted only with difficulty into the common terms of heat production and power; and second, the fact that it is thoroughly misleading.

With regard to the first of these objections it may be said that the output of steam-generating apparatus can be directly expressed only in thermal units. In ninety-nine cases out of one hundred, however, the heat of the steam is eventually transformed into electrical energy. For this reason a unit of output which is easily convertible into electrical terms would be somewhat more convenient than the b.t.u., because a calculation for changing heat units into kilowatt-hours would have to be made anyway.

The boiler horsepower offers no such convenience. Its value expressed in b.t.u. is a complex number, difficult to remember, and its value in kilowatt-hours is equally unhandy in calculations. In fact, it is divisible by no common unit and its retention imposes entirely unnecessary labor upon engineers merely for the sake of an outworn precedent which even was established in error. In consequence, I have been for some time past strongly in favor of the use of the myriawatt, but if this cannot be generally accepted, some unit such as 100,000 b.t.u. is the only logical alternative.

The second objection, or the misleading character of the "boiler horsepower" as applied to output, also constitutes an important argument against it, and abolition of the term would, perhaps, serve to clarify some of the fundamental principles of boiler operation which have become decidedly obscured. Most important among these is the necessity for distinguishing clearly between the different functions of the furnace and the heating surface.

The furnace gives out heat—the heating surface absorbs it. The duties of the two are fundamentally different. Only the former is properly subject to a rating in terms of power, because the output of the heating surface (or that which is commonly called the boiler) is quite incapable of being definitely measured by a single expression. Little or no control can be exercised over heat absorption by the heating surface. Cleanliness is the only factor. On the other hand, flame conditions and excess air in the furnace may alter the efficiency 20 or 30 per cent, according to the character of stoker operation. Manifestly, the stoker or furnace is the con-

trolling factor, and the heating surface is largely incidental to steam generation.

That apparatus of such indeterminate duty as this should be endowed with a definite output, at least by implication, because of the existence of the term "boiler horsepower" is a most unfortunate misapplication of names. No engineer would try to express the output of a condenser in horsepower without qualifying his statement by giving the vacuum and intake temperature. Why should it be considered any more reasonable to speak of the horsepower of heating surface? No heat-transfer apparatus, such as condensers, evaporators or feedwater heaters, can logically be rated in horsepower.

H. G. STOTT, Superintendent of Motive Power.

Uniformity in Car Colors

DENVER TRAMWAY COMPANY
DENVER, COL., Feb. 23, 1915.

To the Editors:

I have read with interest the editorial in your issue of Feb. 6, on the question of car colors. Most of us are strong for uniformity and standards and accustomed to working out savings of even less amounts, but if a certain color is pleasing to the public, that fact no doubt has a value equal to several times the amount saved—should some other color be cheaper. Assuming the same durability in both cases, \$5 per car is probably the full amount which can be saved by any change in color on a large city car. On a system which I have in mind, having a total of 386 cars, and possibly an average of 300 cars during a period of six years ending Dec. 31, 1914, 226 cars were repainted during this period. This is equivalent to thirty-seven a year, which, at \$5 a piece, would mean a saving of only \$185.

No doubt the steam railroads chose their present general standards on the basis of the colors on which coal dust and smoke would show the least and not particularly because the color in other ways was cheaper to maintain or that it would look better for a longer time. I doubt very much whether there is any great difference in the cost of maintaining the various tints or shades now in use, provided always that the best quality is used.

There is good reason for standards of color on steam roads, but with electric cars in city service I can hardly see any good reason for them, and in view of the strong efforts now being made by electric railway companies to "please the public," and the popular maxim that "it pays to advertise" it seems most important for a company to continue with the color which it considers is most cheerful and pleasing to the greater number of competent judges.

W. H. MCALONEY,
Superintendent Rolling Stock.

Chicago Elevated Club

The Elevated Club of the Elevated Railroads of Chicago held its fourth meeting on Thursday, Feb. 25, 1915. The principal part of the program was taken up by C. C. Farmer, of the Westinghouse Traction Brake Company, who gave an illustrated talk on air brakes. The difference between the old and the new methods of application of air brakes was described, and the marked advantage obtained by the latest equipment as installed on the new steel cars recently purchased by the company as compared with the old types was explained. Mr. Farmer described in detail the new air-brake equipment, as well as the construction and operation of the new Universal valve with its quick action feature which was also installed on the new all-steel cars. Although this club is only about three months old, its membership now approximates 130 and is growing rapidly.

Equipment and Its Maintenance

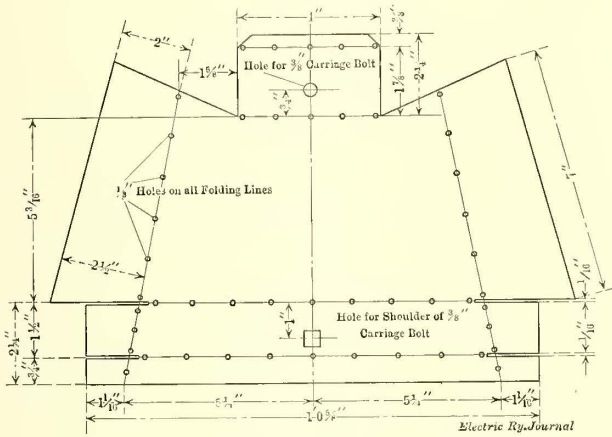
Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

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

Removing Snow from Under-Running Third-Rail

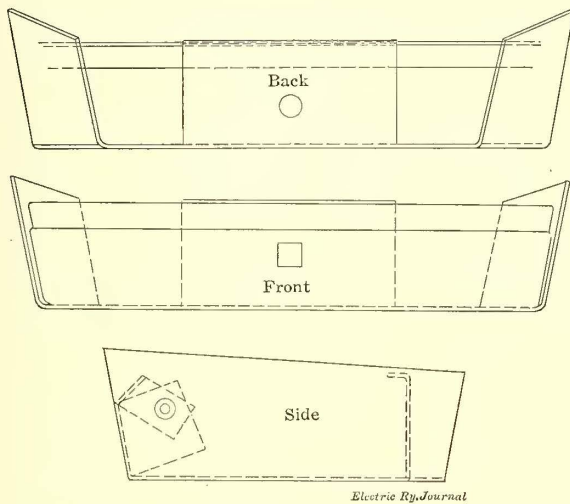
BY F. L. HINMAN, MASTER MECHANIC NEW YORK STATE RAILWAYS—SYRACUSE AND ONEIDA LINES

Some trouble has been experienced during several winters past in the operation of the under-running third-rail system between Oneida and Syracuse (West Shore electrification) due to the drifting up of snow under the third rail in such quantities as to cause the



PATTERN PLAN FOR THIRD-RAIL SNOW SLIPPER

collecting slipper to lose contact with the rail and seriously interfere with schedules. In order to overcome this trouble a sheet-steel snow slipper of the design illustrated was developed. This slipper is easily and



THREE VIEWS OF THE THIRD-RAIL SNOW SLIPPER

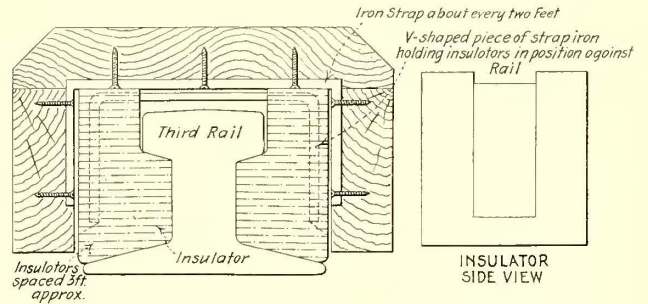
quickly attached to the collecting shoe, and by its use the space under the third rail is kept free from snow. When this slipper was first tried out we found that the additional weight of the snow slipper was too great to be taken care of properly by the shoe springs then

in use. However, the substitution of a stronger spring overcame this defect. During several trials made this past winter it was found that at speeds of from 25 to 40 m.p.h. this device is very effective, although it clears fairly well even at lower speeds.

High-Voltage Third-Rail Construction

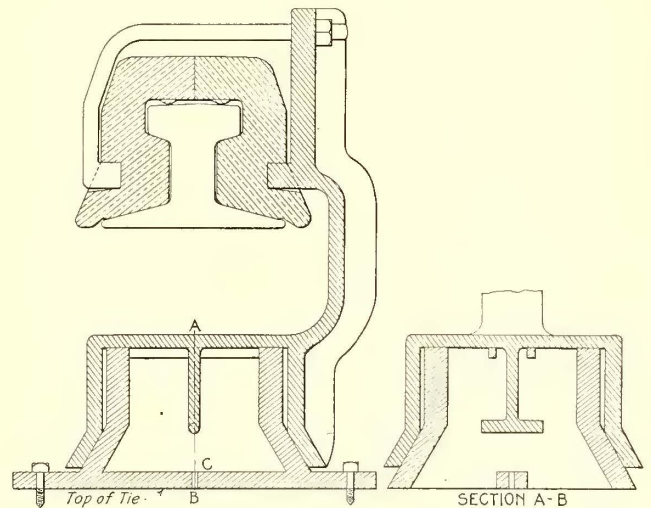
BY A. H. TRACY, ASSISTANT ELECTRICAL ENGINEER COMMITTEE OF INVESTIGATION ON SMOKE ABATEMENT, CHICAGO, ILL.

The accompanying drawings show a suggested type of third-rail support and protection suitable for high-voltage operation. The improvement in the support con-



THIRD-RAIL PROTECTION BETWEEN SUPPORTS

sists in so mounting the supporting bracket on a cup-shaped casting that the third-rail and its insulators are relieved of all strains due to the depression of the ties caused by passing trains. The third-rail is prevented



HIGH-VOLTAGE THIRD-RAIL SUPPORT

from turning over by the T-shaped portion of the bracket base which is limited in its upward movement by the two cross webs at the top of the cup-shaped casting.

To erect the third-rail a nail is driven into the tie at

the point *c* which has previously been located by a template. The cup is then centered by means of the nail and is revolved horizontally so that the T-shaped projection on the bracket will pass between the webs of the cup. When the bracket has been mounted the cup is revolved 90 deg. into its normal position and bolted to the tie. The third-rail is then blocked up into position and erected in the usual manner.

Between supports the major portion of the insulating qualities is provided by porcelain insulators held in position by U-shaped pieces of flat iron strap. These insulators also serve as the supports for the protection proper which is simply an inverted trough.

The construction described permits rapid and cheap erection and at the same time provides high insulating qualities. Since the protection boards or trough are not relied upon for the major portion of the insulating quality they can be creosoted and their life thus materially increased without appreciable detriment to the insulation. Rapid deterioration of the inner surface of the protection due to contact with the rail is avoided. The first cost of the protection will probably be less since the protection trough can be made in quantity in the shop and the high cost of carpenter work in fitting the protection to the rail along the right of way will be avoided. Space for bonding is provided between insulators.

Painters' Putty and Shellac for Repairing Controller Division Plates

BY R. H. PARSONS, ELECTRICAL FOREMAN

Controller division plates are subjected continually to heavy arcs so that they are gradually eaten away until there are holes through them. Long before that time it is necessary to renew the plate to prevent more serious trouble. These plates vary in cost from 11 cents each upward, according to the type of controller and the manufacturer, in addition to which some labor is involved in renewing them.

A very simple and surprisingly efficient manner of repairing such plates lies in the use of painter's putty and shellac as hereinafter described. Although the use of putty would seem to mean patch work a trial will prove it to be a kink worth knowing.

When the car comes in for inspection or shop repairs and the division plate is found with a burn hole it can be repaired, unless the plate is nearly gone, in the following way:

Without removal from the arc deflector, scrape every particle of burned or glazed parts from the division plates to leave the hole well cleaned. Then shellac the entire surface.

Mix together good shellac and putty until it is thinner than putty alone, but pliable and sticky. Then fill up the hole, making a neat, smooth job. After a few minutes shellac again over the plate. For the best results the filling should be allowed to stand as long as possible, say twelve hours. If the car or controller cannot be held out of service, one hour will do. In the latter instance the surface would burn a little when exposed to a heavy arc, but the harder under-layer would not be affected.

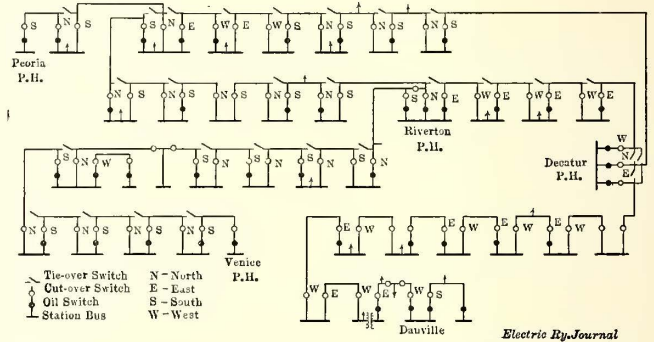
Any plate which has enough left for the putty to cling to can be repaired in this manner for a life equal to and often longer than that of a new plate. The same scheme will apply to line switches and contactors, except in cases where the arcing plates are purposely made of light material. In the latter case it would be cheaper to throw them away than to spend labor on repairs. The arc plates and chutes of circuit breakers can also be repaired advantageously by the same process.

Power Dispatching

BY G. L. FITCH, POWER DISPATCHER ILLINOIS TRACTION SYSTEM

The position of power dispatcher on an electric railway has been advanced until it now has become one of the most prominent in the economic operation of the road. The time when the electric energy could be handled by the train dispatchers or the line could be cleared for work by the co-operation of the linemen and the substation attendants has passed, and many of the larger roads now place the responsibility on one man.

In order to give an idea of the duties involved in power dispatching on the Illinois Traction System, a brief description of the arrangement of the power houses, substations and facilities for handling power, is necessary. In general the system radiates in three principal branches from Springfield, Ill., situated at the approximate center of the State. One branch extends to Peoria, Ill., a distance of 75 miles, another to St. Louis, Mo., a distance of 98 miles, and a third to



I. T. S. POWER DISPATCHING—DIAGRAM OF HIGH-TENSION CIRCUITS

Danville, Ill., a distance of 123 miles. These branches, together with several connecting lines, form an interurban system of 427 miles in length.

Energy at 33,000 volts for these interurban lines, as well as for supplying power and light to consumers distributed over the entire system, is furnished by four power houses situated one at the end of each branch and one at Riverton, Ill., near Springfield, or the center of the system.

The Venice power house at the St. Louis extremity of the line is the largest and contains two turbo-generators, one 5000 kw and one 3000 kw, and also one 1000-kw Corliss, direct-connected engine. In this power house also is a substation with two rotaries, each of 1800-kw capacity, which supply the interurban lines and a small city railway system. A 1700-volt lighting and power transmission line to Edwardsville, Ill., 22 miles distant, is also supplied from this station.

The Riverton power house, at the center of the system, has a total rating of 4000 kw with three units consisting of two turbines of 2000-kw and 1000-kw capacity, and one 1000-kw Corliss, direct-connected engine. This station also contains one rotary converter of 300 kw and the generating capacity will be increased further by a 5000-kw turbine which is in the course of installation.

At Danville, the eastern extremity of the line, is one of the smaller stations which also furnishes power for the city railways, one of the properties of the Illinois Traction System. This station contains a 2000-volt a.c. Corliss unit, direct connected, one 1000-kw d.c. generator and one 1000-kw rotary converter. Additional

capacity is being provided for by the installation of one 5000-kw a.c. turbine.

Peoria, at the northern extremity of the system, has a capacity of 4000 kw a.c. in two units, a 3600-kw d.c. unit and two rotary converters of 1800 kw each. In addition to the energy furnished to the interurban lines this station supplies power to the Peoria City Railway and the Peoria & Pekin Terminal Railway.

Spaced at equal distances of approximately 10 miles, between these power stations are thirty-four substations in which the 33,000-volt a.c. energy is transformed to 650 volts d.c., at which potential it is fed to the trolley. These rotaries are of several types embracing the Stanley, Westinghouse and General Electric and range in capacities from 300 kw to 750 kw.

A three-phase, 33,000-volt transmission line connects all of the power houses and substations through two sets of disconnecting switches located at each substation. Also on the outside of each substation in the line, between the ingoing and outgoing lines, are disconnecting switches of the Burke, Delta-Star air-break and General Electric outdoor, underhanging type, which permit

handling of all high-tension switches in power houses or substations. In other words, no one was allowed to open or close a switch without direct orders from the power dispatcher. This also applied to the 2300-volt signal power transmission line which is fed from several of the substations.

This arrangement continued until about two years ago, when the superintendency of the overhead and substations was transferred to the signal engineer and the power dispatcher was moved to Springfield. This new arrangement has worked out very satisfactorily since it gives the power dispatcher the proper authority over the signal maintainers, thus permitting cases of trouble to be handled with greater dispatch.

POWER DISPATCHING METHODS

When the power dispatcher is asked to clear the line between two stations, the lineman must stay on the line until it is reported clear. During this time the lineman hears each order given to the substation attendant, and is thereby assured that the correct directions have been given. In clearing the line the power dispatcher first orders the attendant to drop his oil switch, pull out his disconnecting switches on the side of the station he wishes to clear, and be certain that his tie-overs are open. When the attendant reports back that the orders have been executed, the dispatcher clears the substation at the other side of the defective section by similar orders. After ascertaining that the lineman has his test set connected, the dispatcher reports the line clear. This makes the lineman who is asking for the line responsible for the rest of the men with him, since no one else can order the power on, and then only through the power dispatcher.

Most power interruptions occur during electrical storms due to the breaking down of insulators, and in many cases the wire is burned in two. This has been overcome as much as possible by requiring the maintainers to keep close watch for broken insulators and to make renewals promptly with new 45,000-volt insulators which have been adopted as standard.

In addition to handling the power, the night power dispatcher has charge of the terminal at Springfield. The day power dispatcher operates the telephone exchange from the six lines, keeps in touch with the linemen, telephone, signal and substation maintainers, who report to him three times a day to receive orders or report cases of trouble. In addition to these duties a record is kept and turned in to the assistant general manager each day showing the trouble of the previous twenty-four hours for all substations, high-tension lines, telephone lines, trolley and signal systems.

In order to facilitate the work of the dispatcher a chart of the transmission lines and substations is placed in front of his desk. This shows the manner in which the 33,000-volt lines enter each station, also the locations of the smaller power lines. Another conveniently-located chart enables the power dispatcher to keep a record of the substations at which extra men are worked. A third chart, also hung near by, shows the 2300-volt signal line with all switches, and a fourth chart is used to show the different places where the 33,000-volt line may be cut, red pegs being inserted to indicate at a glance which switches are out in every substation. In addition to this last chart, as a further check, a large record sheet is kept to make note of each change, all cases of station and high-tension trouble and the names of persons who are working on the high-tension line. A report is turned in each day by the different substations, and a trouble card is made out for every case of power interruption, the latter being shown in one of the illustrations. These reports are filed as to date and are kept as a permanent record.

1-30-11-2M 67230			
ILLINOIS TRACTION SYSTEM			
RECORD OF TROUBLE			
CLASS OF TROUBLE	Trolley Break		DATE 12/5/14
DIVISION	Springfield	TIME OFFICE NOTIFIED 3 12	NOTIFIED BY Dispatcher
REPORTED FOR REPAIRS TO	E. Quick	TIME REPORTED 3 15	TIME REPAIRED 7 10
EXPLANATION OF DELAYS			
REMARKS	Break at Hick Creek - 100 feet down.		
	Broke at splice.		
	Material	\$ 11.11	Cost
	Labax	4.61	
	Line Car	4.29	
		20.01	
	Cred. For old trolley	6.00	
	Total Cost	14.01	

I. T. S. POWER DISPATCHING—TROUBLE CARD

any station to be cut out without breaking the line. These last switches have been found very convenient on numerous occasions, being used to clear the high tension in a substation while repairs are being made.

There are two separate telephone lines connecting the power houses and substations. One line is used by the train dispatchers and the other for commercial business, both centering on a switchboard in the power dispatcher's office at Springfield. The power dispatcher has precedence over all other business during high-tension trouble, hence direct conversation may be held with the engineers at the power houses or with substation attendants at all times. In case both these telephone lines are out, a long-distance Bell telephone is available. All maintainers are provided with a test set which they connect to the telephone line when requesting that the high tension be cleared for making repairs. Thus the power dispatcher is enabled to notify them in case any trouble occurs on another part of the system, which would make it necessary to put the power through the cleared section.

PROCEDURE IN HANDLING POWER

The Illinois Traction System has passed through the experimental stage of handling power through the train dispatchers. This method proved unsatisfactory on account of the different dispatching divisions, in which each dispatcher endeavored to handle the power for the best interest of his own division. Power dispatchers were first located at Decatur, Ill., where they worked shifts of twelve hours each and reported to the operating engineer. At that time they were made responsible for the proper distribution of the power and the

Linemen's Non-Electric and Electric Searchlights

A necessary part of the equipment of the cross-country lineman is a searchlight outfit to permit him to examine insulator or other line equipment on the poles or towers. In a recent trip through central New York two different combinations for this purpose were found.

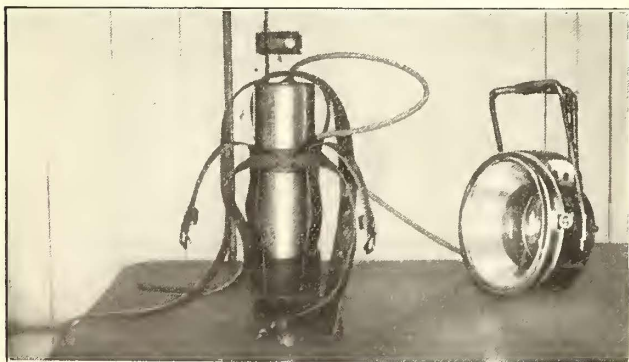
The Buffalo, Lockport & Rochester Railway, which has 60,000-volt transmission lines, furnishes its linemen with an outfit comprising a Prestolite Type MC (motorcycle) tank, a "Grandad" solar lamp of 9½-in. front diameter and 6¼-in. depth, made by the Badger Brass Manufacturing Company, Kenosha, Wis., and the necessary harness for conveniently carrying the out-



MANNER OF CARRYING AND USING TANK OUTFIT

fit. The tank holds fuel to provide light for twenty hours, from which it is evident that its weight, now 10¾ lb. including the strap, could be somewhat reduced by providing a size to hold only one night's supply. The lamp alone weighs 7¼ lb. Its rays will show a cracked or crumbled insulator at 50 ft. The cost of charging the twenty-hour tank is only 50 cents to 60 cents, as against twice that sum for five dry cells.

The neighboring New York State Railways—Rochester Lines—have, for the last three years, been using a battery outfit with tungsten lamp and high-power parabolic reflector, all mounted in an aluminum case and



LINEMAN'S SEARCHLIGHT OUTFIT ASSEMBLED BY THE BUFFALO, LOCKPORT & ROCHESTER RAILWAY

weighing 2½ lb. The cell capacity is good for ten hours, and the illumination is ample for inspecting cross-arm fittings on poles 40 ft. to 45 ft. high. The trade name of this outfit is "Niagara Flashlight" and it is made by the Niagara Searchlight Company, Niagara Falls, N. Y. It is listed at \$10, but is usually sold at about one-third less. It has the distinct advantage of being readily carried as a part of the equipment in a lineman's belt.

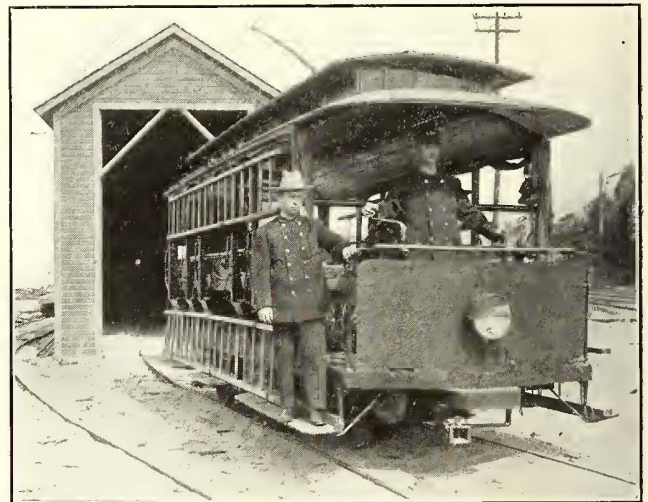
Fire-Fighting Car at Duluth

George D. McCarthy, assistant secretary Commercial Club, Duluth, Minn., presents in the February issue of *The American City* the following data on a fire-fighting trolley car used at Park Point, a suburb of Duluth.

An unusual condition was responsible for the equipment, but the same idea may be found applicable to other isolated suburbs where poor roads or other barriers prevent ready response by horse or motor equipment.

The harbor of Duluth is formed by a narrow strip of land extending across the western end of Lake Superior. This strip, only 400 to 600 ft. wide, extends for 7 miles from the Minnesota to the Wisconsin shore. About 3 miles of it, extending from the Duluth shore, are built up with a variety of residences.

The settled portion of Park Point, as the suburb is called, is cut off from the city proper by the entrance to the harbor, which is spanned by an aerial bridge. It would take too long to cross this bridge to respond in time to a fire alarm. However, this is not the main obstacle to reaching the houses at Park Point with fire-



DULUTH OPEN CAR USED FOR FIRE-FIGHTING

fighting apparatus. This suburb is so narrow that only one street is laid out. The car tracks are laid in that street, the surface of which is beach sand, loose and shifting and offering no foundation to team travel.

The fire-fighting problem proved a difficult one for many years. Bucket brigades did what they could, but when a house on Park Point took fire the chances were ten to one that it would burn to the ground. Insurance rates were high, permanent residence was discouraged and cheap construction encouraged. A fire tug would solve the problem under ordinary circumstances, but the water along the shore is so shallow that a fire tug could not approach.

Some bright mind hit upon a trolley fire department. The co-operation of the Park Point Traction Company was obtained. In 1907 a car that was in good condition, but had served its usefulness as a passenger car, was purchased by the city for \$650. The seats were taken out and the braces retained. A hose box was installed the whole width of the car. It was left open at both ends, so that no matter which way the car is going it can carry the hose line from the hydrant to the point of the fire.

The equipment consists of 1500 ft. of 2½-in. hose, two shut-off nozzles, twenty 26- and 30-ft. ladders, a 14-ft. roof ladder, six axes, four pike-poles, two 6-gallon Babcock extinguishers, extra charges, rubber coats and hats for volunteers.

Under the arrangements with the railway, the city agreed to pay the company \$30 a month, for which the company erected a house for the car, keeps it in repair and furnishes a man to operate it when an alarm of fire is turned in. The car is stored near the main offices of the company, so there is always a motorman on hand to respond to an alarm.

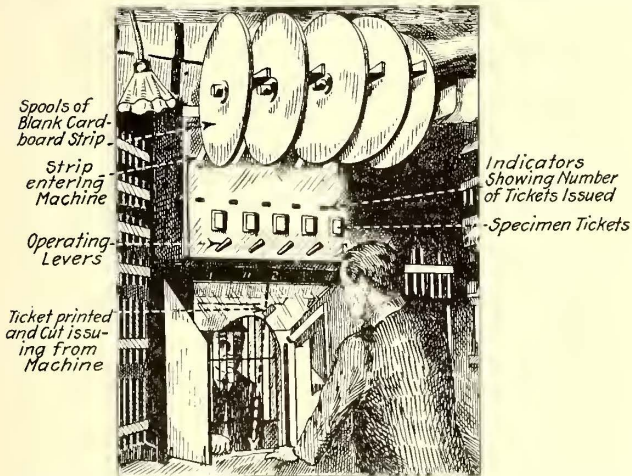
When an alarm is turned in from Park Point the car is started down the tracks immediately, and has absolute right of way; an automatic electric gong is cut in as soon as the car starts, so that all along the Point notice is given that a fire alarm is being answered. Volunteers are picked up on the way and are usually plentiful. As soon as the alarm arrives at headquarters it is conveyed to the nearest regularly organized company, and the members respond without equipment. Usually the volunteers have checked the fire before they arrive.

London Ticket-Selling Machine

A ticket-printing machine has been on trial service at the Victoria underground station of the Metropolitan District Railway, London, England.

This machine is arranged to print, cut and deliver at the counter five distinct types of 1¼-in. x 2¼-in. tickets of the following fare denominations: 1d., 1½d., 2d., 3d., and 4d. Cardboard in narrow strips is stored in five rolls and is fed into the machine. The motor of this machine is put in operation by the ticket agent, who depresses the small lever corresponding to the denomination of the ticket required.

The mechanism is contained in a metal box about 2½ ft. wide and 1½ ft. high attached to the wall above



INSTALLATION OF TICKET-PRINTING MACHINE AT VICTORIA STATION, METROPOLITAN DISTRICT RAILWAY, LONDON, ENGLAND

the booking window. Counting machines are located above the levers, with indicators showing to the operator the number of tickets issued of each denomination. During nine weeks the machine issued 119,568 tickets.

Each ticket is printed in the regular form, and gives the destination, route, transfer directions, class and fare. The date is also printed across the end.

The machine has proved satisfactory except for occasional imperfections in cutting from the roll, and somewhat indistinct printing. The delivery of the ticket is very rapid; in fact, it is often on the counter before the purchaser is ready for it. One hundred tickets a minute can be issued. The management believes there is a future for such a machine and that present defects will be overcome after a reasonable period for experiment with different inks, paper stock, etc.

Illuminated Guide Signs In England

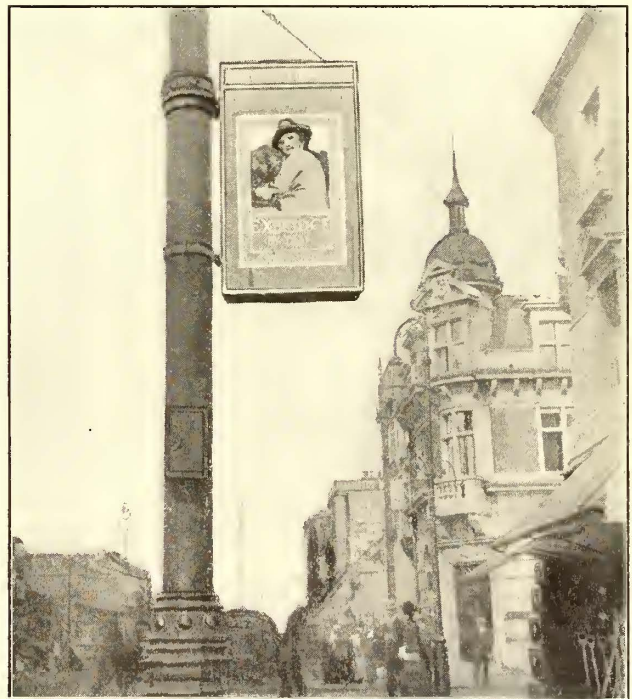
Transparencies installed on trolley poles, to denote the direction of various routes from important centers, are a favorite mode of advertising with European street railway companies. The London United Tramways,



TRANSPARENCY OF LONDON UNITED TRAMWAYS WITH ARROW INDICATOR

Ltd., utilizes signs of this description, notably at the Shepherd's Bush terminal point in West London, and at other transfer points.

The signs are about 2 ft. x 3 ft. x 5 in., a sheet-metal



TRANSPARENCY OF LONDON UNITED TRAMWAYS CARRYING SCENE ON COLORED GLASS

frame with ground-glass panes forming a transparency. The glass faces are variously inscribed, some merely setting forth principal destinations in black letters, with red arrow, as in the case of the route direction to Ealing and other towns, reproduced herewith. Other signs bear painted scenes or figures in colors, men-

tioning some notable attraction—a park or public resort, for example. These signs are illuminated by eight or ten small-wattage lamps, half on either side, in simple white refractors which diffuse the light throughout the interior, lighting both faces. Connection with the electric railway poles is with ornamental iron brackets clamped on the pole.

While the cost of operating such signs on the railway lighting services is inconsiderable, their effectiveness in directing the public to its proper destination is sure to be of value.

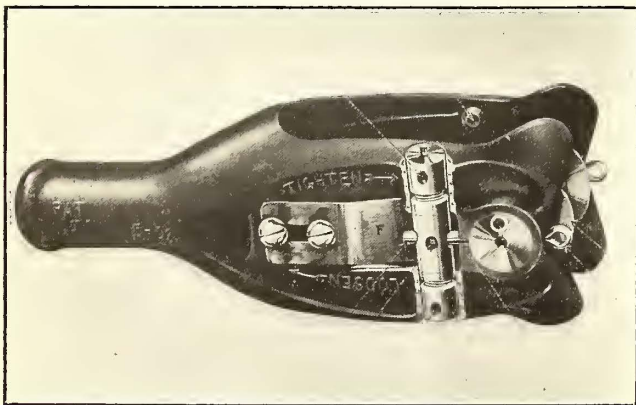
Non-Arcing Harp and Oil-less Bushing

New designs in trolley-wheel harps and bushings are now being offered by the More-Jones Brass & Metal Company, St. Louis, Mo. The company's non-arc harp for high and low-speed service has as its chief feature a method for gripping the axle pin securely. This feature prevents deterioration due to the arcing which arises between the pin and harp when the connection between these parts is loose.

The other new product is the V & K type oil-less bushing which has been developed for use in all of the forty-eight wheel designs of this manufacturer and which is also adapted to any other make of wheel. These oil-less bushings are recommended particularly for city and suburban service.

An accompanying illustration shows the new harp with a portion of the frame cut away, so that the details of the pin-locking device may be clearly seen. This harp is bottle-shaped, to eliminate the possibility of catching on the overhead wires. The harp is made of malleable iron or bronze, as required, and is designed with standard pole-fit dimensions.

The patented gripping device for locking solidly and holding the axle pin securely consists of right and left-hand steel screws fitted into the limbs of the harp. A central gripping nut made of bronze connects the two opposing screws. Movement of this nut in one direction serves to clamp the harp body metal tightly around



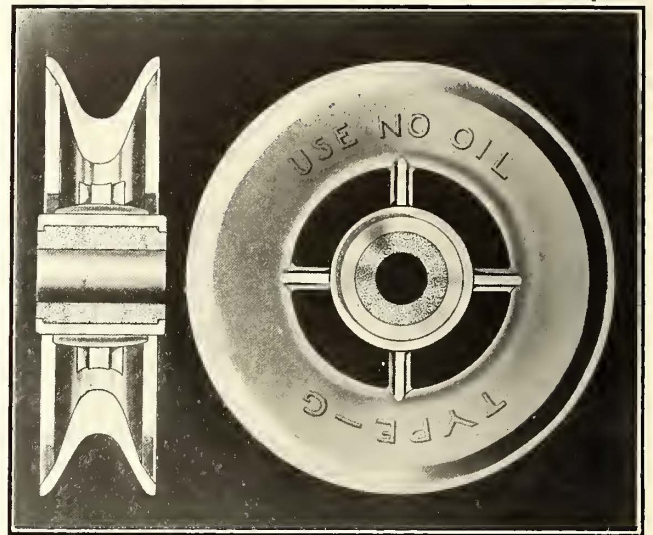
NON-ARCING HARP

the axle pin. Reverse movement loosens the pin. In practice this movement is obtained by turning the nut. The axle pin is locked in place by a cotter pin passing through harp, axle pin and the center of the locking nut. Thus the pin is held rigidly in place and no opportunity for chattering and arcing is afforded. This tight fit in the harp assures maximum wheel mileage because it affords a rigid bearing for the wheel. Also this rigid fastening maintains a good path for the flow of current between the axle and the harp and thus the contact springs are relieved of part of their usual duty.

By means of the expanding and contracting feature of the gripping nut a wide range of adjustment is pos-

sible in the axle pinhole. This greatly simplifies the operation of inserting or removing a pin. It obviates entirely the necessity for the common and sometimes destructive practice of driving pins in and out with a hammer whenever wheels are changed. From the operating standpoint the foregoing features, particularly that of being able to change wheels on the road without the use of tools, should be attractive.

The manufacturer states that this type of harp is adapted for any make of wheel and that any wheel in this harp, notwithstanding its type or manufacture, will show 30 per cent. to 50 per cent. greater life than with the ordinary harp, this increase being due to the rigid pin bearing. The gain is effected because of the absence of wear in the pinholes. This harp when fitted



SECTIONS OF TROLLEY WHEEL AND OIL-LESS BUSHING

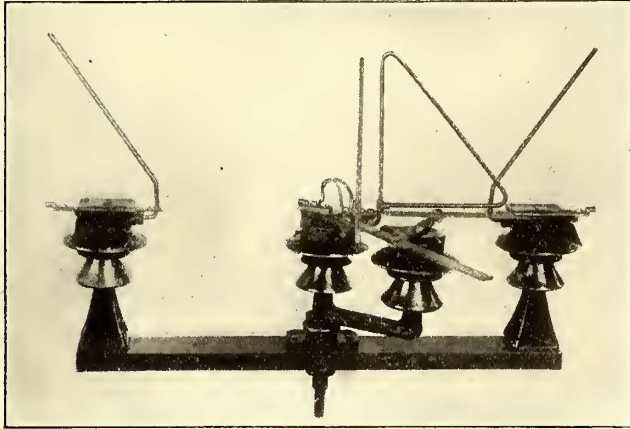
for high-speed service has contact springs with single rubbing surfaces. The springs are held in place by two screws threaded into bosses on the harp casting. With this construction the springs may easily be replaced without cutting rivets.

For high-speed service the company recommends its solid or hollow case-hardened axle pin, lubricated with grease. For city and suburban service the new More-Jones oil-less trolley-wheel bushing is recommended. A wheel with this type of bushing inserted is illustrated herewith. The distinctive feature of this wheel is the patented Simpson graphite and bronze gauze bushing. This bushing consists of a solid bronze housing of standard exterior dimensions which make it interchangeable, and an interior bearing material of bronze gauze impregnated with graphite and hydraulically compressed into the bronze housing.

One of the important claims which is made for this type of bushing is the following: It has high conductivity and consequent low drop in voltage between the line and the motor circuit, because the bearing is made of conducting material and because it is self-lubricating without the use of oil or grease. Another important factor in favor of the oil-less bushing is that the expense connected with the usual frequent lubrication of other types of wheels and the destructive effect of oil on car roofing are avoided. Also the first cost of the bushing includes the final and only lubricating cost. In cold weather the lubricating qualities do not vary as when oil or grease are used. The harp and wheel are always clean and in fit condition to be handled by car crews if wheel changes on the road are necessary. When once properly assembled no further attention is required until the wheel is worn out.

Double-Throw Horn Gap Switch

A single-pole unit of a new double-throw horn gap switch is shown in the accompanying cut. The main contacts of the switch are protected from all burning by auxiliary arcing horns. A feature of particular interest is the use of two blades at an angle of 60 deg. from each other. With the use of two blades mounted in this way it is necessary for the switch to rotate



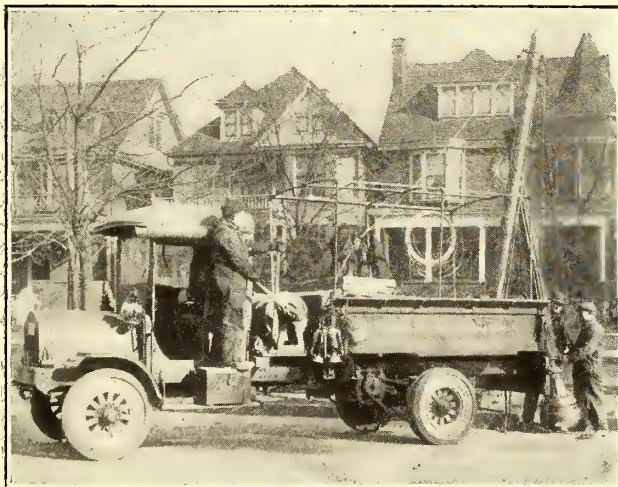
DOUBLE-THROW HORN GAP SWITCH

through less than 120 deg. of the circle, which condition allows a simple crank and connecting bar type of operating mechanism to be used for interconnecting three such units for simultaneous operation.

A three-pole switch of this type for 22,000-volt service can be carried on the top of a single wooden pole. The equipment is manufactured by the Railway & Industrial Engineering Company, Pittsburgh, Pa.

Winch for Pole Handling

The Northern Engineering Works, Detroit, Mich., has recently supplied one of its Northern motor truck hoists



PLATFORM DRUM WINCH SETTING POLES

or winches on a Packard truck for use by the Public Lighting Commission of Detroit.

This hoist is of the platform drum winch type with inclosed gears, is made in both spur-gear and worm-gear form and is driven by a clutch connection from the motor shaft of the truck. It can be used either in the form of an ordinary winch for hauling articles off and on the truck or in connection with boom and tackle as shown. The gears are all cut, running inclosed in oil. The drum is machined and is made in various sizes, ac-

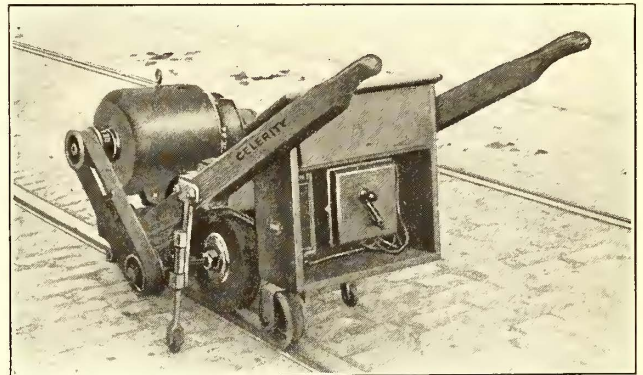
ording to the amount of rope that is to be wrapped. This winch can be applied to any truck but is usually recommended for those of very heavy capacity. It is made in various sizes from 1000 to 2000 lb. capacity, single line.

A One-Man Rail Grinder

The Equipment Engineering Company, London, Eng., is the maker of the "Celerity" rail grinder which is designed for leveling rail joints, deepening grooves, switches and crossings, and executing all other kinds of grinding work in connection with rails. It is very light, weighing only about 420 lb. complete. The weight of the motor is balanced over the running wheel to give the requisite pressure for the grinding wheel and relieve the operator as much as possible.

The machine can easily be wheeled along the track by one man, or placed on the car front. Street obstruction is reduced to a minimum, as a width of only 2 ft. is occupied, and the ordinary highway traffic can use the side paving just as if no grinding were in progress. As but one rail is occupied at a time, it is easy to wheel the machine out of the way of passing cars, and put it on the track again as soon as the line is clear.

The power is obtained direct from the overhead wire, and as the motor is close to its work, one of low output



ONE-MAN ONE-RAIL GRINDER READY FOR WORK

is sufficient to drive the grinding wheel. The power is transmitted by belting, the elasticity of which, in such intermittent work as grinding, is valuable.

The machine is operated by one man only, who stands in an easy upright position and moves the grinder forward and backward over the rail joints. The motor starter is within easy reach, so that the machine can be stopped instantly by the operator without the assistance required in the case of most grinders. The labor costs of operating this machine are about one-half of those for other types, since one man only is required to work the grinder, with the help of a boy, if the condition warrants it, to ward off other traffic and remove the trolley attachment when cars are passing.

As the machine is of the mono-rail type, its bearing is instantly obtained. The second wheel is merely provided to carry the frame and is fitted with an adjustable spring sufficiently powerful to lift the grinding wheel clear of the rail immediately the pressure of the hand is removed, so that the depth of cut is regulated by the pressure of the hand on the shafts. In addition to the sense of touch, the operator is also enabled to know the depth of cut taken by the quantity of sparks from the grinding wheel. The automatic cutout in connection with the starter is so arranged that the machine cannot be made to cut too deeply. The grinder is already in use on many systems in England and elsewhere including Blackburn, Darwen, West Ham, Southampton, Wigan, S. Shields, Bolton and Salford.

LONDON LETTER

Tramway Prosperity Affected by War—Some Roads Extending—Women Conductors Considered in Edinburgh

(From Our Regular Correspondent)

A further reduction in the dividend of the Dublin United Tramways from 5½ per cent to 5 per cent was recently announced. The report shows that the distribution could have been maintained, but the directors decided on a conservative policy, owing to the war. After paying all interest charges, the sum of £98,000 was available for dividends. A year ago, only £10,000 was set aside for renewals. This year £23,000 in all is specially appropriated, and the amount carried forward is increased from £9,500 to £11,400.

Although the revenue of the Manchester Corporation Tramways undertaking shows a considerable falling off for the nine months of the municipal year recently completed as compared with the corresponding period of the previous year, the receipts for the past few weeks have been on the up-grade, and have been actually in excess of those for the early part of last year. The all-night cars, which have now been running upwards of a year, have not been profitable, but as they have proved a great convenience the committee has decided to continue them.

Owing to the increased cost of living, the executives of the Amalgamated Society of Tramway & Vehicle Workers at the monthly meeting at Salford unanimously decided to permit all branches of the society to apply for an increase of 15 per cent in wages. The society has a membership of nearly 30,000, and the meeting was attended by representatives from London, Manchester, Birmingham, Leeds and Wales. At the close of the meeting the secretary stated that the executives had a number of applications from the branches for permission to apply for increases in wages owing to the extra cost of living.

Railless trolley omnibus schemes seem popular in South Wales, and following upon the opening of the 5-mile route from Williamstown, through Tonyrefail, to Gilfach Goch, in the Rhondda Valley District, comes a proposal from the Aberdare Urban District Council to make extensions totaling about 5 miles in that area for operation by railless traction. The estimated cost is nearly £50,000.

The question of the lighting of the Leicester tramway routes was discussed recently at the meeting of the Leicester watch committee. Experiments have been made with the high pressure gas system near the gas offices and elsewhere, and with electric light at the end of Horsefair Street, the Midland Station, and suspended central lights on the recently constructed tramway in King Richard's Road. The lighting sub-committee submitted a unanimous recommendation to the watch committee in favor of electric light for the illumination of tramway routes generally, and this was adopted subject to the approval of the Council.

The extension of the Bakerloo Railway from Paddington to Queen's Park has been opened for traffic. It makes an addition of 2 miles 36 chains to the mileage of this railway, which now extends from the Elephant & Castle, on the south side of the river, to the Queen's Park station on the main line of the London & Northwestern Railway, a total distance of about 7 miles. There are four stations on the new extension. The extension serves a large and populous district, and enables travelers on the tube system to join the trains of the London & Northwestern Railway running on its new line to Watford. When this new line has been electrified through trains will be run from the Elephant to Watford, but at present it is necessary to change at Queen's Park. The lifts at these new stations have been abandoned in favor of escalators, and long passages have been carefully avoided.

The report of the Board of Trade on London traffic, just issued, deals largely with the growing necessity for increasing main arterial roads owing to the constant expansion of traffic. Theoretically, the substitution of motor for horse-drawn vehicles should tend to lessen congestion, but practice shows that the intermingling of fast motor traffic and slow horse traffic neutralizes the advantage. As to obstruction, the horse vehicle takes first place and the electric tramcar second. The report adds that opinions have been unduly influenced in favor of the electric tramcar by its carrying capacity and its comparative immunity

from fatal accident, but that these factors cannot be taken into consideration when dealing with road obstruction. In the case of the motor omnibus, while its power of acceleration and retardation is not so good as that of the tramcar, its flexibility enables it to circumvent obstructions and to give room to overtaking or meeting vehicles.

The Edinburgh Tramways, which has sent between 300 and 400 men to the army, is considering a proposal to replace some of the enlisted employees with women conductors. The work is not more arduous physically than some in which women already engage, and much of the mounting of stairs which it involves on most types of tramcars might easily be avoided if passengers would tender their fares to the conductor as soon as they stepped on the platform.

In the report of the London & Southwestern Railway for the year ended Dec. 31, 1914, it is stated that the work connected with the electrification of the company's suburban lines has, notwithstanding various difficulties, made steady progress during the year. The main power house at Wimbledon and the substations at other places are practically complete, and the machinery is being erected. Several of the trains are ready. Good progress has also been made with the placing of conductor rails, the bonding of track rails and the laying of high-tension cables on the first section of the railway to be electrified, namely from Waterloo to Kingston via Twickenham and Malden.

According to the London County Council returns as to recent tramway receipts, about £10,000 was lost as a consequence of the tramway breakdown some weeks ago. During that week 3,000,000 fewer passengers were carried. Now the Council proposes to arrange for linking up the system with other sources of electrical supply. The London Electric Supply Corporation is already furnishing the Council with energy, and the company has now offered a further supply up to 3500 kw at a price of £3 a kilowatt a year, plus a stated price per unit for at least six months. The Council is to have the option of extending the arrangement for a further period of six months. If at any time after the expiration of the first period of six months the Council merely requires a supply of power for standby purposes only, the charge to be made will be at the rate of £2 a kilowatt a year. The electrical energy will be provided at the company's Deptford generation station, and the Council is to furnish the requisite high-tension cables to connect this generating station in parallel with the Council's Greenwich generating station. When the necessity for continuing these arrangements has ceased, the cables can be retained between the two generating stations and utilized for providing such power as may be required on emergency, or they can be withdrawn from the ducts and used elsewhere.

The electricity scheme promoted by the London County Council has been killed by the Council itself. In November last the Council decided to obtain Parliamentary authority for its proposals, and the bill dealing with the matter has been duly deposited. Under Act of Parliament, however, it was necessary that the resolution of November should be confirmed by an absolute majority of the whole Council. That majority the scheme has not secured. The reasons for Progressive hostility were explained by Sir John Benn, who pointed out that the scheme, on its technical side, contained the basis of a settlement, but that the proposals were vitiated by bad finance, the flouting of Parliament, the breaking up of local government, and the surrender of the rights of the ratepayers. The borough councils, as a body, were also against the bill, while ten of the wealthy companies were combining against the Council with a view to presenting an opposing bill.

At the annual meeting of the City & South London Railway, the chairman stated that but for the war the company would now have been well forward with the reconstruction authorized by Parliament in 1913. When the war came plans and drawings had been passed and arrangements made with contractors and a portion of the money had been raised, but no contractors' men had been set at work. When this railway passed under the control of the Underground Electric Railways, London, it was intended to increase the tubes to the same size as the other tubes controlled by the company and to furnish new rolling stock of a type similar to that used on the other railways. This work, however, has been entirely suspended for the time being.

A. C. S.

News of Electric Railways

NEW YORK COMMISSION INVESTIGATION

Among those who testified on Feb. 25 were Mayor Mitchell, President McAneny of the Board of Estimate, and Frederick W. Whitridge, president of the Third Avenue Railway. Both Mayor Mitchell and Mr. McAneny agreed in the main points of their testimony. About transferring the construction work from the commission to the Board of Estimate, they thought it advisable theoretically. The drafting of a new charter seemed to afford an opportunity for the transfer. Mayor Mitchell thought that the transfer should come into force on Jan. 1, 1918, at the beginning of the next city administration.

Mr. Whitridge thought that the original commission, appointed by Governor Hughes, had made the public service law ridiculous, while their successors were courteous and sensible. The first commission treated its large powers like a plaything. He had to call the attention of the original commissioners to the fact that it was a misdemeanor to disseminate false information about the value of securities. Asked what he would do about constructing the subways, Mr. Whitridge said he would get Colonel Goethals and tell him to go ahead. He thought the expenditures of the commission should be limited to \$400,000 or \$500,000 a year. He favored taking from the commission the right to issue orders, and requiring it merely to report facts to the courts, which would have the right to make orders. If he were commissioner he would send for the right man and tell him what he wanted and if he refused he would call in the newspapers and have a hearing.

On Feb. 26 the committee had on the stand as witnesses ex-Mayor Seth Low, ex-Chairman of the Commission W. R. Willcox, George B. Cortelyou, president of the Consolidated Gas Company; Theodore P. Shonts, president of the Interborough Rapid Transit Company, and Timothy S. Williams, president of the Brooklyn Rapid Transit Company. Mr. Shonts favored regulation. He did not consider that the commissioners so far appointed had tried with earnestness to solve difficult problems. He did not see how regulation could be carried on effectively except by somebody in daily touch with the companies. He had a very high opinion of Alfred Craven, chief engineer of the commission, and the other engineers of the commission, but even these men were not so well qualified as the company's own men to say what was best for the practical operation of a railroad. There had never been any conscious effort on the part of the Interborough Rapid Transit Company to evade the orders of the commission. He thought that the rule of reason should be applied to violations of the commission's orders. He did not quite know how far the authority of the commission went, but it certainly should not extend to making up the company's train schedules or saying how much it should spend on maintenance.

Mr. Williams said that without any disrespect to any of the gentlemen who had occupied the position of commissioner it was indisputable that not one of them had, at the time of his appointment, any administrative or technical experience to qualify him for the office. The men on the commission were, with few exceptions, of sincere purpose and industry, but they had to be educated in office to a knowledge of the necessarily complicated problems upon which they were called to decide. He thought that the wheelguard order of the commission was purely a matter of personal pride and prejudice on the part of Mr. Maltbie. Mr. Williams criticised the report on Brooklyn Rapid Transit service made to the commission by Joseph Johnson, head of the commission's transit bureau.

Mr. Willcox reviewed the points of difference at which the commission and Mr. Whitridge had come into contact. The law was opposed to the transfer of the rapid transit work of the commission to the Board of Estimate. He thought that a member of the Board of Estimate might be appointed to the commission.

The hearings as regards the commission for the first district were concluded with a session open to the public to present suggestions on Feb. 27. Only two persons availed themselves of the opportunity.

The drafting of the report to the Governor in regard to

the inquiry into the first district commission by the legislative committee has been intrusted to a sub-committee consisting of the chairman, the counsel, Senators Mills and Foley, and Assemblymen Meier and MacQuiston. This committee met on March 2 to frame its findings for submission to the full committee. It was said at the time that the sub-committee was divided on the question of how far the report should go in criticising the official conduct of the public service commissioners, but it was expected that the report to the full committee would be made by March 4. On that date the committee was still at odds and the inquiry into the commission for the second district was begun despite the previous threat of William Hayward, counsel to the committee, that he would delay the investigation.

DETROIT PURCHASE VOTE ON MARCH 31

A special meeting of the stockholders of the Detroit (Mich.) United Railway has been called for March 31 to take action on the proposal of the City Street Railway Commission to assume, with the approval of the electors, bonded indebtedness of \$24,900,000 in exchange for the lines of the company within the one-fare zone. The company has not as yet given any indication as to what recommendation it will make to the stockholders, but it is understood that the board of directors is inclined to recommend that the city's offer be accepted.

The announcement of the commission's proposal to purchase has already called forth numerous attacks upon the plan, and in the event that the commission and the company reached an agreement a bitter fight is sure to occur before the proposition reaches the public. There are many legal questions involved which must be adjusted before the matter will be in shape for presentation to the electors; in fact it is held by several legal authorities in communications to the newspapers that charter amendments and special action by the Legislature will be required before the city is empowered to assume the company's bonds. The commission is now giving most of its attention to the legal phases.

It is understood that the traffic survey prepared by Barclay Parsons & Klapp, New York, will be presented to the commission by March 15. This survey is an exhaustive study of the transportation needs of Detroit covering present lines, needed lines, rerouting and the subway question. It will undoubtedly have a large bearing upon the entire street railway question.

BAY STATE ARBITRATION HEARINGS

In the hearings before the arbitration board in the Bay State Street Railway wages investigation, C. F. Bancroft, superintendent of motive power and machinery, was called as a witness by the employees' organization. Mr. Bancroft stated that the average hourly wages of armature winders had been increased from 21.05 cents in 1905 to 27.74 cents in 1914. The company had more than thirty carhouses and stations. About 1200 men were employed in the motive power and machinery department. Wages varied with the locality, tending toward higher amounts in the larger places. The company had offered the operating staff at the Quincy Point (Mass.) power plant a bonus dependent upon reductions in the consumption of coal, and in this way wages had been increased. Fifteen years ago the power plants of the various roads now making up the system generally were operated in two twelve-hour daily shifts; about ten years ago ten-hour shifts were substituted, and in 1910 the plants were put upon an eight-hour basis. The wages of all employees in stations had remained unchanged per day, but automatically increased per hour. Mr. Bancroft did not consider power-station work difficult, but felt that it was responsible and trying. There were now forty-three power-station engineers, fifty firemen and thirty-five oilers in the company's service, compared with thirty-four engineers, forty-six firemen and twenty-seven oilers in 1910. A reduced working day in a generating plant correspondingly decreased the amount of work done per man. A 10,000-hp generating unit now requires less labor than a 2500-hp machine did twelve years ago. Such units were increasingly automatic in their operation.

INDIANA LEGISLATURE

A bill has been introduced in the Senate of Indiana prohibiting the location of freight depots within 1000 ft. of places of worship. The following bills have been passed by the Senate: Bill regulating news agencies and requiring the Associated Press to file a schedule of rates with the Public Service Commission; the Symons bill providing that railroads shall maintain flagmen or automatic crossing signals at all crossings where the view is obstructed; bill providing that employers must give service letters to discharged employees upon request. The bill making it unlawful to trespass upon railroad property was killed in the Senate.

Representative Waltz has had withdrawn the 2½ cent railroad fare bill introduced by him, and, in accordance with the recommendations made to the Legislature by Governor Ralston and outlined in his letter to the Central Electric Railway Association at the meeting in Indianapolis last week, Mr. Waltz has introduced a bill giving the Public Service Commission of Indiana the right to increase the passenger rates of railroads to 2½ cents per mile upon petition and examination of the facts showing that such increase is justified.

The following bills have passed the House: the Sare workmen's compensation bill, amended and made a compromise measure; the Feick bill providing for a board of mediation and arbitration for all labor controversies; the bill amending the public utility act by placing stock yards under the jurisdiction of the commission; the bill providing penalties for officers of public utility corporations that collect money in excess of published tariffs, but exempting from this law utility corporations of fourth and fifth class cities that contracted to give free service to manufacturing industries prior to May 1, 1913. The following bills have been killed: amendment to the boiler inspection law providing that all boilers placed in service after July 1, 1915, shall be allowed a factor of safety of not less than 5.5; bill providing that public service corporations giving service by measured rates shall not fix a minimum charge for service.

CINCINNATI SUBURBAN FRANCHISE

The Council of Cincinnati, Ohio, on Feb. 16 refused to entertain the suggestion of the Federated Improvement Association that the franchise recently granted to the Cincinnati, Newport & Covington Street Railway be repealed and that a new ordinance be passed specifically providing that the company shall change the location of its tracks to streets other than those designated to be occupied.

Richard P. Ernst, attorney, representing the company, made an address before the Cincinnati Real Estate Exchange on Feb. 18, in which he furnished a complete analysis of the franchise. The new routes forced upon the company have been found unprofitable by the Cincinnati Traction Company, and the purely local business in Cincinnati will not amount to much. The road carries 30,000 people into Cincinnati every morning. The franchise granted to the company will necessitate the giving of rights, even to a road that might come into Cincinnati from northern Ohio. Mr. Ernst read letters from President Hinsch of the Fifth-Third National Bank and E. W. Edwards, president of the Rapid Transit Commission, stating that they will support the ordinance at the referendum election in March.

CLEVELAND CONSTRUCTION ORDINANCES

An ordinance was passed by the City Council of Cleveland, Ohio, on the evening of March 1 authorizing the laying of a double track on Euclid Avenue between East Twenty-second and East Fortieth Streets. The consents of property owners have not yet been secured. Peter Witt, street railway commissioner, says that the consents are unnecessary under the charter provisions. This section of Euclid Avenue is known as "Millionaires' Row."

It seems likely that there will be serious opposition to the construction of a street railway on East 123rd Street, Cleveland, although the Council adopted a resolution in April, 1914, agreeing to authorize the expenditure of funds for that purpose on the dedication of the street. The changed financial conditions of the country have made several members doubtful as to the propriety of building the line the coming summer, and the city may not accept the street until there are better prospects for business.

LEGISLATION IN NEW YORK

The following bills have been introduced in the Senate: to amend chapter 478 of the laws of 1893, entitled "An act to incorporate the city of Olean," in relation to the location of street surface railroad tracks in the streets of said city; to amend the railroad law, in relation to fencing right-of-way; to amend the railroad law, in relation to footpaths upon certain trestles; making an appropriation for the elimination of certain grade crossings.

The following bills have been introduced in the Assembly: to amend the railroad law, in relation to lighting railroad cars on steam railroads in cities of the first class; to amend the railroad law, in relation to the rate of fare on certain elevated railroads operating in Kings County; to provide for the improvement of the New York Central & Hudson River Railroad tracks and property along Riverside Park, in the city of New York, to require trains to be operated thereon by electricity; to amend the workmen's compensation law; to amend the penal law, in relation to persons unable to read and write not to act or be employed as engineers, firemen, hostlers, watchers or trainmen in running or operating locomotive engines or trains; to amend chapter 478 of the laws of 1893, entitled "An act to incorporate the city of Olean," in relation to the location of street surface railroad tracks in the streets of said city; to amend chapter 345 of the laws of 1888 entitled "An act to provide for the relief of the city of Buffalo and to change and regulate the crossing and occupation of the streets, avenues and public grounds in said city by railroads," in relation to the care, repair and maintenance of bridges, viaducts and subways at street crossings above and below railroad tracks; to amend the railroad law, in relation to footpaths upon certain trestles; to extend the time of the New York Connecting Railroad to finish its road and put the same in operation; to extend the time of the New York Connecting Railroad to complete the construction of its bridge across the East River, as authorized by chapter 752 of the laws of 1900, chapter 691 of the laws of 1905 and chapter 606 of the laws of 1910; making an appropriation for the elimination of certain grade crossings; to amend the general corporation law, in relation to an action against a corporation to compel specific performance of obligations.

OHIO LABOR LEGISLATION

Representatives of a number of street and interurban railroads appeared before the labor committee of the House of Representatives at Columbus on Feb. 18 to protest against the passage of the Ott bill regulating the hours of labor for conductors and motormen. The principal objection was to the requirement that the men have thirteen consecutive hours of rest. J. J. Stanley, president of the Cleveland Railway, said that such a requirement would make a 3-cent fare impossible, as the schedules could not be arranged so that the men could have that period of rest without increasing the number of motormen and conductors very materially. The company employed 2500 motormen and conductors and this change would mean a large increase in the wage item.

Frank B. Carpenter, of the Western Ohio Railway; E. F. Schneider, of the Cleveland, Southwestern & Columbus Railway, and F. W. Coen, of the Lake Shore Electric Railway, represented the interurban interests. They contended that it would be impractical to apply the conditions of this bill to the train service without employing many men who would be called upon to work only one or two hours a day. G. Davies, Cleveland, and W. W. Smith, Cincinnati, presidents of the local unions in the two cities, represented the employees. They argued that the schedules of hours could be applied to the operation of cars without much additional expense.

The Myers bill has been recommended for passage by the Senate judiciary committee. It makes legal the service by a sheriff on a receiver of an interurban railway in any county through which the road passes. The Smith bill requiring dust-proof screens for the protection of motormen and conductors on both street and interurban cars was passed by the House on Feb. 16.

A hearing was held on Senator Louis P. Pink's bills by the Senate judiciary committee on Feb. 24. These bills provide that proof of injury to persons or property by

steam or electric railways shall be *prima facie* evidence of carelessness on the part of the operators of the locomotives or cars which caused the injury. Attorneys for the roads said that the bills would make them practically insurers of everything along their right-of-way. It is likely another bill may be formulated that will require claim departments to produce all the evidence they secure.

A resolution has been introduced in the Legislature calling for a detailed statement of the finances from the State treasurer, in order that appropriations might be made in an intelligent manner. This would give public utility companies, insurance companies and other corporations an opportunity to show what they are paying for the support of boards, commissions and other organizations established to regulate their operation.

Senator William Behne introduced a municipal ownership measure on Feb. 24 which is practically a reproduction of the Mills bill of the preceding session. It provides that bonds issued by a municipality for the purpose of constructing a public utility plant or purchasing one already in existence shall be a lien on the entire tax duplicate of the municipality instead of on the property only, as the law now stands. It also provides that bonds issued for this purpose shall not be considered with those issued for other purposes. The Mills bill in its original form was defeated at the last session of the Legislature.

Senator W. R. Collins of Cincinnati has introduced a bill that provides for the cancellation of the lease of the Miami & Erie canal and the payment by the State to the city of Cincinnati of \$74,707, which the State has already received as rental for that portion of the property within the city. The bill further provides for a new lease with rent on the property free. The city desires to use this property for a portion of its rapid transit line.

CONDITIONS IN RHODE ISLAND

Men in Charge Under Federal Dissolution Decree Review Problems Before Them

The trustees appointed under the dissolution decree in the New Haven Railroad case to hold the stock of the Rhode Island Company, Providence, R. I., have issued a statement in part as follows:

"The trustees find that nearly all of the property is held by the company under leases calling for the payment of large annual rentals and imposing burdensome requirements; that the company is subject to the terms of a strict franchise agreement with the city of Providence; that there is a contract between the company and organized labor, and that the company has been operated for many years with what, under ordinary conditions, would be considered an undue regard for economy. They find at the present time a reduced income and the necessity for increased expenditure. These are conditions which the trustees did not create and which at present they are unable to change and they seem to call for considerate judgment on the part of the public.

"That which is most needed for safety of operation must be done first and less pressing needs must be attended to in their order. Within the last fifteen years the company has adopted as its standard a type of platform collection or prepayment car which compares favorably with the cars of other cities, except that in many places where there are wider streets a much larger car can be used. The adoption of the prepayment car as approved by the city of Providence necessitates a very early abandonment of the small cars still in use, and large expenditures for radical repairs to such small cars are not therefore justified. New cars are needed and are being constantly put in commission, but all that are required cannot be obtained at once.

"Neither in Providence nor elsewhere has it been found possible to provide, by any system on, or above, or below the surface of the ground, all the transportation that is demanded at rush hours. Every effort will be made to provide it here, but complete success cannot be hoped for. It is to be borne in mind that during the greater part of the day cars are not occupied to nearly their seating capacity, and that there must be some relation between income and outgo. It costs about \$10,000 per year to keep in operation a single

car, and additional cars cannot be put on unless the service demands them.

"The company has, we believe, an excellent corps of employees who share with the directors the desire to make the service the best possible. The trustees hope to give the community all the service that it is in their power to give. To this end they invite rather than resent fair and intelligent criticism, and suggest that such criticism be made in the first instance to the officers of the company and especially to A. T. Potter, the vice-president, who will either himself act upon them or else bring the matter to the attention of the board of directors."

PHILADELPHIA'S AMENDED ORDINANCE

The ordinance in the interest of high-speed rapid transit was put through the Philadelphia Councils on March 4 as amended recently in opposition to Director of City Transit Taylor. The bill was passed by a vote of sixty-two to eighteen in the Common Chamber and thirty-four to eleven in the Select branch. The forces on either side had been sharply aligned long in advance of the meeting. A plan offered by Councilman Dripps to eliminate the specification of routes from the measure was lost. As one paper put it there were "hours of caustic debate and insinuation." The *Ledger* said on March 5:

"The ordinance as passed, Director Taylor declares, nullifies Philadelphia's purpose to build a comprehensive system of high-speed transit. It destroys plans for which the citizens spent thousands of dollars. Common Councilmen Dripps, Conn and Horn, as leaders, fought valiantly to so amend it that it would be possible to construct practical subway and elevated structures. The voters in the galleries and corridors, hundreds who had turned out in support of their interests as taxpayers, added their voices to the pleas of these men, but Connelly, Seger and Costello held the balance of power."

ONTARIO RADIAL RAILWAYS

At the annual meeting of the Hydro Radial Union of Ontario on Feb. 24 representatives of municipalities from all parts of the province indorsed the project for constructing a network of municipally owned radial railways to serve the rural districts. Sir Adam Beck said the Dominion government should grant the usual subsidies to the municipalities, as the proposed lines were for the general benefit of Canada. The time had arrived for stopping the payment of subsidies to private companies. He praised the Toronto City Council and the Harbor Board for the provision made for entrances for the radial lines. Resolutions were passed requesting the Dominion and Provincial governments to grant subsidies towards the cost of constructing the proposed lines.

Reports on Utah Utility Bill.—It was stated on Feb. 25 that two reports on the Evans public utility bill will be made to the judiciary committee of the Senate. The majority report, it was said, would be unfavorable.

P. A. Y. E. Coin Boxes for Ferryboats.—It is announced that the Southern Pacific Company will install coin boxes at the San Francisco ferry terminal so that local ferry passengers for Oakland, Berkeley and Alameda will not be required to buy ferry tickets.

New Oklahoma Road.—The Cushing (Okla.) Traction Company placed about 17 miles of line in operation recently from Cushing to Drumright and has construction work under way for the electrification of 17 miles of steam track between Drumright and Jennings. This is a freight handling line with a large oil tank-car traffic.

Toronto's Transit Plans.—The three engineers who are to plan the new rapid transit system for Toronto conferred with Mayor Church, Sir Adam Beck and the Board of Control on Feb. 26. The Mayor announced later that satisfactory arrangements had been made for the completion of a general plan and that the details and the estimates of cost would probably be ready by Nov. 1.

Chicago to Build 20 Miles of New Track.—In compliance with its contract agreement with the city of Chicago, the Chicago Surface Lines has planned to undertake during 1915

new track extensions which will total approximately 20 miles and rehabilitation work on fifty-one different streets, the amount of work varying from short sections of one block to sections of more than a mile in length.

Full Crew Legislation in New Jersey.—A bill was introduced in the New Jersey Assembly on March 2, calling for the repeal of the full crew law. Another bill authorizes the State Board of Public Utility Commissioners to determine the number of men that shall be hired to operate passenger and freight trains when the passenger trains are made up of three or more cars and the freight trains of six or more cars.

New Haven Reindictments.—The Federal Grand Jury at New York has returned a superseding indictment against the twenty-one officers, directors and lawyers of the New York, New Haven & Hartford Railroad, charging violation of the Sherman anti-trust law. The indictment is similar to the one returned last November, but was found for the purpose of overcoming objections made to the manner in which the first indictment was obtained.

Illinois Legislative Deadlock.—Owing to a deadlock which has lasted for seven weeks, the General Assembly of Illinois is just now preparing to begin work. A speaker has been elected, but he has not appointed his committees. The Senate has been tied up by a contest for power between Republicans and Democrats, and committees have not been named there. In neither house had the introduction of bills been commenced on Feb. 27.

Municipal Line Receives Financial Aid.—Claiming that the Seattle (Wash.) Municipal Railway System is still incomplete and will not have a fair test until it is extended to Ballard on the north, six of the nine Councilmen at a recent meeting of the Council voted to appropriate \$10,000 from the general fund to continue the operation of Division "A." Mayor Gill opposed the loan, as noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 27, page 431.

Extension to Toronto Civic Line Opened.—Mayor Church, of Toronto, Ont., assisted by several Aldermen and chief civic officials, formally opened the new civic car line on Bloor Street on Feb. 23. The civic party made a trip over the entire route from Dundas Street to Quebec Avenue and return. The Mayor acted as motorman and Works Commissioner Harris as conductor. After the trip short addresses were made, and it was suggested the line should be extended to Jane Street.

Couple Arrested for Forgeries.—Frank Harris was recently arrested in Chicago and Mrs. Dora Fitzgerald was arrested in Cleveland on Feb. 23 on the charge of issuing forged checks for more than \$2,000, the Northern Ohio Traction & Light Company being the victim. Harris was formerly employed by the company. Shortly after he left bogus checks began to come in bearing the signature of M. M. Erdman, treasurer. The woman is supposed to have been responsible for the penmanship on the checks.

Suit in Seattle.—Scott Calhoun and Joseph Parkin, receivers of the Seattle, Renton & Southern Railway, recently filed in the Federal Court a suit against the city of Seattle, seeking to restrain and enjoin the city from proceeding to appropriate, condemn or damage the company's right-of-way, extending from Jackson Street on the north to Ryan Street, the city limits, on the south. The value fixed by the receivers on this right-of-way is in excess of \$1,000,000. The petition will be heard by the court on March 15 unless some other date is agreed upon by the parties in interest.

Bus Franchise Considered in New York.—Members of the committee on franchises of the Board of Estimate met on March 1 to consider the applications for motor bus franchises in Manhattan. Applications for franchises were made more than a year ago. In July so-called model routes were laid out by the bureau of franchises. Mayor Mitchel was asked on March 1 if action on the motor bus franchises could not be expedited so that such vehicles could be placed in operation to relieve the traffic congestion on the Eighty-sixth Street Crosstown railway and the Ninth Street Crosstown line. He said that traffic congestion was no reason for acting on franchise matters not fully matured.

Washington Senate Passes Utility Bill.—With but one vital change, the public utilities bill passed the Senate of the State of Washington on Feb. 24. The measure is an

amendatory substitute for the Taylor bill, which established the new principals of granting indeterminate franchises, and required the issuance of certificates of necessity and convenience after a full hearing on the question before a new or competing utility company can enter a field already occupied. The bill gives supervisory powers over municipal corporations which have the franchise-granting privilege, but vests in the various city councils the right to issue the original franchise. As amended by Senator Taylor, its sponsor, the bill is to be submitted to popular vote by referendum in 1916.

Elevated Third-Tracking in New York.—Alfred Craven, chief engineer of the Public Service Commission for the First District of New York, has reported to the commission that with additional reinforcement, which will not cost more than \$200,000, the Second Avenue elevated railroad in Manhattan will be strong enough for the operation of trains composed of the composite cars now used in the subway which the Interborough Rapid Transit Company proposes to transfer to lighter trucks and to operate upon the elevated railroads. He is also of the opinion that the Third Avenue elevated railroad will be strong enough for the same operation after the third-tracking work is completed, but suggests that he be allowed six months in which to complete his investigation and decide finally as to the Third Avenue road.

Safety First Federation Meeting.—The Safety First Federation of America, which has for its objects uniform laws for control of automobile traffic and improvement of street traffic conditions throughout the country by a standard system of supervision, was organized in New York on Feb. 26. In addition to the election of a board of directors, which includes police commissioners, representatives of automobile clubs, and civic organizations from fourteen cities, these officers were elected: Vice-presidents, Harold W. Newman, police commissioner, New Orleans; Charles M. Talbert, director of streets, St. Louis; John Gillespie, police commissioner, Detroit; J. H. Lippincott, New Jersey Traffic Commission; treasurer, Charles L. Bernheimer; executive secretary, Frederick H. Elliott, New York. The federation will meet again in Detroit in the fall.

Severe Storm in Missouri.—A storm the night of Feb. 22, followed by a fall in temperature, resulted in the downfall of sixty-two poles on the Excelsior Springs division of the Kansas City, Clay County & St. Joseph Railway. Most of the poles were blown over and not broken. The line was out of operation between Kansas City and Liberty for about eighteen hours, and the section between Liberty and Excelsior Springs was tied up until Friday evening, Feb. 26. The poles carrying the high-tension line fell over the track. Not all the damage was continuous, the longest series of felled wires being about 1½ miles. The other damage was scattered. There was no damage to other equipment or to persons. None of the other interurban railways reported damage to wires or poles, but telephone and telegraph companies in eastern Kansas and northern Missouri suffered heavily.

Decision in New York Labor Case.—During the week ended Feb. 27, the Court of Appeals of New York handed down decisions in the Heim and Crane cases, upholding the constitutionality of the labor law in respect to the provision which forbids the employment of any but citizens of the United States upon contracts for public work. This decision affects practically all of the contracts on the new subways which the city of New York now has outstanding, and which aggregate about \$142,000,000. There are thirty separate contracting firms engaged in the work, which employ about 16,000 men. Two days after the decision was published one of the contractors had suspended work and others were proceeding with reduced forces. It is the contention of the contractors that it is next to impossible to procure American citizens to do the kind of work which in the past has been done by foreigners. The contractors, however, have announced that they will obey the law. It was announced on March 1 that the case would be carried to the United States Supreme Court on an appeal on a writ of error from the decision of the New York Court of Appeals. On March 4 the operation of the alien labor law in New York State was suspended by the United States Supreme Court pending the review of the decision of the Court of Appeals declaring the law constitutional.

Financial and Corporate

ANNUAL REPORTS

United Railways of St. Louis

The comparative statement of income, profit and loss of the United Railways of St. Louis, St. Louis, Mo., for the years ended Dec. 31, 1913 and 1914, follows:

	1914	1913
Revenue from transportation.....	\$12,359,219	\$12,612,787
Revenue from operation other than transportation	91,705	89,857
Total operating revenue	\$12,450,924	\$12,702,644
Operating expenses (depreciation included)	8,644,735	8,573,617
Surplus over operating expenses.....	\$3,806,189	\$4,129,027
Taxes	767,794	653,674
Net income from operation	\$3,038,395	\$3,475,353
Income from other sources.....	87,901	84,350
Gross income (less operating expenses and taxes)	\$3,126,296	\$3,559,703
Deductions from income	2,618,255	2,660,673
Net income	\$508,041	\$899,030
Dividends on preferred stock.....	.....	.....
Surplus	\$508,041	\$899,030

The passenger revenue for the year 1914 was \$12,280,581, a decrease of \$246,791, or 1.97 per cent, compared with the year 1913. During the first six months of the year the passenger revenue showed an increase of \$95,263, or 1.55 per cent, but during the second six months a decrease of \$342,054, or 5.35 per cent. Other revenue from transportation decreased \$6,777. Revenue from operation other than transportation increased \$1,848, and income from other sources increased \$3,551. The gross earnings and other income amounted to \$12,538,825, a decrease of \$248,169. Total operating expenses (including depreciation) increased \$71,118. The taxes applicable to the year 1914 were \$767,794, an increase of \$114,120, or 17.46 per cent, of which \$112,855 was in favor of the city of St. Louis. The average number of employees in the service of the company during the year was 5500. The amount of money paid in wages was \$4,304,408, or 34.57 per cent of the gross earnings.

The total number of passengers carried during the year 1914, as compared with the year 1913, and the car mileage figures in these two years, follow:

	1914	1913
Revenue passengers 5 cents.....	243,133,207	247,936,404
Revenue passengers 2½ cents.....	4,856,826	5,222,072
Total	248,040,033	253,158,476
Transfer passengers	127,444,829	123,266,765
Total passengers	375,484,862	376,425,241
Passenger car mileage	44,355,113	42,409,907
Other car mileage	377,536	380,179
Total car mileage.....	44,732,649	42,790,086

These figures show an increased passenger car service of 1,945,206 car miles, or 4.59 per cent, as compared to the decrease in passenger revenue of \$246,791, or 1.97 per cent. The percentage of revenue passengers using transfers during the year 1914 was 51.38, an increase over the year 1913 of 2.69. This large increase in the percentage of transfer passengers was caused by the more generous transfer system put into effect July 1.

During 1914 there was expended and charged to capital account, for added property, the sum of \$247,876, as follows: real estate, buildings, tools and fixtures, \$27,515; track and roadway construction, \$104,549; electric line construction, \$61,273; power plant—buildings and equipment, \$19,693, and cars and electric equipment of cars, \$105,081—less real estate sold, \$70,235. During the years 1910 to 1914, inclusive, the company spent on its property \$12,841,652—\$1,382,966 for construction and equipment, \$7,251,433 for maintenance and \$4,207,253 for reconstruction and replacement charges. The expenditures so made were 23.24 per cent of the gross earnings during the period, which amounted to \$55,251,087.

The total mileage of single track on Dec. 31, 1914, was 345.52 miles for city track and 112.67 miles for county track, or 458.19 in all. During the year 1.91 miles of track were added, 5.79 miles were removed, 21.77 miles were reconstructed and 12.69 miles of unpaved track were retied and reballasted. In addition to the regular repair and maintenance work, the following cars and equipment were built:

PRESENT INVESTMENT TREND

Now that banking business and credit facilities have been fairly well restored from a domestic point of view, it is the opinion of A. B. Leach & Company, New York, that the present points of interest are the rapid accumulation of capital on account of business far below normal, and the higher trend of security prices on account of low money rates. This banking house looks for an era of unparalleled business activity at the close of the European War, with an increased demand for capital, higher money rates and security prices at a lower level.

As regards the present returns on securities it is said that 5 per cent has fairly represented the value of money for the last twenty years, and the average investor has been able to loan his funds at this rate. During the last ten years public utility bonds have generally carried 5 per cent coupons. This has had its effect in enlisting the interest of the investor as against 3½ to 4 per cent railroad issues, and the investor today looks upon utility issues as the most satisfactory for his surplus funds. Refunding operations, new financing and higher money rates will exert comparatively little effect on prices of public utility issues; they will even hold their place against offerings of 5 per cent railroad bonds.

KANSAS CITY REORGANIZATION

Federal Court Refuses to Sanction the Plan Proposed for Financial Reorganization

Judge William C. Hook in the United States Court at Kansas City, Mo., listened on Feb. 26 to the arguments of attorneys representing stockholders and bondholders and other creditors, in support of their suggestions for the reorganization of the street railway of Kansas City. The court declined to approve the plan, and the session adjourned with the interested parties still at variance, but with confidence prevailing that some method of reorganization could be devised that would avoid foreclosure.

The plan proposed depended chiefly upon a combination of the electric light company with the Metropolitan Street Railway so that the credit of the former could be available as an unincumbered equity in case of later emergencies. Judge Hook insisted that he would, under no circumstances, consent to any arrangement resembling the operation of a holding company, and that the electric light company and the street railway must be kept separate. The court pointed out that the railway owned power houses, while the light company had none, and that the city, interested under the franchise in only the street railway property, would, if the suggested plan were adopted, want to see as large a revenue for current as possible, while the light company would want to obtain its current as cheaply as possible. If the city should wish to sell power to other concerns besides the light company, it would soon be competing with itself.

The court criticised the efforts of the attorneys to insist upon the union of the light and railway interests. He also intimated that heretofore, and in the proposed plan, the bond and stockholders and noteholders were seeking to take the settlement of the affairs of the companies out of the court's hands, and to protect only their own interests. He said that, under the new franchise, the Kansas City Railways, the new company, must start out free of debt and that many obligations must be taken care of, the creditors in which had not yet been heard from. The court would see that all interests and creditors were protected.

Mayor Jost of Kansas City addressed the court after the opinion was delivered. He insisted on strict compliance with the terms of the franchise. The court asked explicitly if the Mayor would insist on the bonds running the full term of the franchise, and the answer was positive that he would so insist. Both Judge Hook and the Mayor expressed the opinion that no better franchise than that granted was obtainable from Kansas City, and the Mayor added that no other franchise would be considered while he was the city's executive.

Sixty-two steel center entrance trailers, one steel bottom motor car (sample design), two motor cars, forty-one combination cars converted into closed cars, 382 cars thoroughly overhauled and converted into the closed rear platform type, and three new work cars. During the year 1690 cars passed through the repair shops for truck repairs, body repairs or painting.

New York State Railways

The statement of income, profit and loss of the New York State Railways, Rochester, N. Y., for the year ended Dec. 31, 1914, follows:

Earnings from operation	\$7,595,001
Expenses of operation (including depreciation)....	4,600,572
Net earnings from railroad operation.....	\$2,994,429
Taxes	496,659
Net earnings	\$2,497,770
Net non-operating revenues.....	165,466
Gross income	\$2,663,236
Income deductions (interest and rentals).....	1,355,466
Net income	\$1,307,770
Schenectady Railway surplus	\$37,985
New York State Railways proportion 50 per cent	18,992
Ontario Light & Traction Company surplus..	\$2,453
New York State Railways proportion 100 per cent	2,453
Total income applicable to dividends.....	\$1,329,215
Dividends preferred stock 5 per cent.....	193,125
	\$1,136,090
Dividends common stock 5 per cent.....	997,350
Balance	\$138,740

The total owned mileage of main track and sidings of the New York State Railways is 439.48 miles, divided as follows: Rochester lines, 227.16 miles; Syracuse lines, 85.5 miles; Utica lines, 114.44 miles, and Oneida lines, 12.38 miles. The total leased mileage is 143.33 miles, separated in this way: Rochester lines, 12.47 miles; Syracuse lines, 9.58 miles; Utica lines, 15.68 miles, and Oneida lines, 105.6 miles (trackage rights only). The total owned and leased is 582.81 miles, but this includes 0.33 miles for a Syracuse line leased but not operated, giving a net figure of 582.48. The total equipment is 1038 cars, divided 554 for the Rochester lines, 253 for the Syracuse lines, 199 for the Utica lines and 32 for the Oneida lines.

The following statement shows the result of operations of the Schenectady Railway for the year ended Dec. 31, 1914:

Earnings from operation	\$1,304,303
Expenses of operation	833,372
Net earnings from railroad operations.....	\$470,931
Taxes	84,803
Net earnings	\$386,128
Net non-operating revenues	5,683
Gross income	\$391,811
Income deductions	107,826
Net income	\$283,985
Dividends—6 per cent.....	246,000
Surplus	\$37,985

During the same fiscal year the earnings from operation of the Ontario Light & Traction Company, Canandaigua, N. Y., were \$53,980 and the expenses \$36,600, leaving net earnings from operation of \$17,380. Taxes and uncollectable bills totaled \$2,678 and \$64 and net non-operating revenues \$5,288, so that the gross income resulting was \$19,925. After making income deductions of \$17,472, there was left a net income of \$2,453.

Binghamton (N. Y.), Railway.—The total revenue of the Binghamton Railway for the year which ended Dec. 31, 1914, was \$485,430, divided as follows: Passenger revenue, \$476,701; chartered car revenue, \$945; mail revenue, \$416; express revenue, \$4,777; advertising revenue, \$2,400, and rent of building, \$191. The operating expenses of \$321,473 were made up of \$90,418 for maintenance expenses, \$4,881 for traffic expenses, \$178,188 for expenses of operation and \$47,986 for general expenses. Taxes accrued amounted to \$16,200, giving income for railway operation of \$147,757. The addition of \$12,974 for electric lighting revenue gave an operating income of \$160,694. Interest accrued totaled \$108,729, making a net corporate income

of \$51,924. The car-miles operated during the year were 1,974,019, the car-hours 226,127, and the car-seat-miles, 72,616,067. The revenue passengers carried during the year totaled 9,524,652, and the transfers 1,772,147. The company now has 48.26 miles of track.

Chicago (Ill.) Elevated Railways.—At the recent annual meeting of the Metropolitan West Side Elevated Railway, the South Side Elevated Railroad and the Northwestern Elevated Railroad, subsidiaries of the Chicago Elevated Railways, the number of directors in each company was reduced from seven to five. The members elected to the boards are the following: Samuel Insull, Henry A. Blair, Britton I. Budd, William H. Fox and G. H. Gulick.

Columbus Railway, Power & Light Company, Columbus, Ohio.—The Ohio Public Utilities Commission has amended its order of Oct. 15, 1914, so as to allow the Columbus Railway, Power & Light Company to extend its issue of first refunding and extension sinking fund 5 per cent gold bonds to retire the following underlying bonds from time to time as the holders thereof may agree: For the \$511,000 of general mortgage 6 per cent gold bonds of the Columbus Light, Heat & Power Company, dated Aug. 1, 1908, \$1,100 in face value of the first refunding and extension bonds for each \$1,000 of these latter general mortgage bonds; and for the \$182,000 of first mortgage 6 per cent gold bonds of the Columbus Public Service Company, dated Feb. 1, 1901, \$1,100 in face value of the first refunding and extension bonds for each \$1,000 of these latter first mortgage bonds.

Fairmount Park Transportation Company, Philadelphia, Pa.—The reorganization committee of the Fairmount Park Transportation Company on Feb. 26 sent out letters to the stockholders who had assented to the reorganization plan, calling for payment of the second subscription installment of \$1 per share by March 15. The first payment of \$1 was made at the time the shares of stock were deposited. As noted in the digest of the reorganization plan appearing in the ELECTRIC RAILWAY JOURNAL of Jan. 16 and Feb. 27, the total amount to be subscribed was fixed at \$3.50 per share. More stockholders assented than was anticipated, however, and this amount has been cut to about \$2.95. The remaining 95 cents will probably be called by Sept. 15. On the 27,174 assenting shares the company will receive about \$80,000 in subscriptions.

Gary & Interurban Railroad, Gary, Ind.—In view of the recent defaults in interest, a protective committee of bondholders composed of Dimmer Beeber, president Commonwealth Trust Company, Philadelphia, David Halstead and Morgan J. Saupp is receiving deposits of \$400,000 of Gary & Connecting Railway first mortgage bonds. A similar committee, including the same chairman, Edward McLain Waters and Edward B. Wilford, is receiving deposits for the \$1,000,000 of Gary & Interurban Railway refunding and first mortgage 5 per cent bonds of 1910. Coupons of Dec. 1, 1914, and Jan. 1, 1915, respectively, are in default. If any financial plan is adopted, dissenting depositors will be given thirty days in which to withdraw, on payment of their share of expenses, not to exceed 2½ per cent on their deposited bonds.

Georgia Railway & Electric Company, Atlanta, Ga.—Charles C. Harrison, Jr., & Company, Philadelphia, have purchased a block of refunding and improvement mortgage forty-year 5 per cent sinking fund gold coupon bonds of the Georgia Railway & Electric Company. The authorization of \$160,000 of these bonds by the Georgia Railway Commission to cover expenditures made from Jan. 1 to June 30, 1914, for extensions and betterments was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 28, 1914.

Holyoke (Mass.) Street Railway.—The Holyoke Street Railway has applied to the Massachusetts Public Service Commission for authority to issue \$850,000 of twenty-year 5 per cent first mortgage bonds to retire \$250,000 of bonds maturing on April 1 and to provide \$600,000 for paying floating indebtedness. This proposed bond issue is the initial amount of a bonded debt of \$2,500,000 authorized at a meeting of the stockholders on Feb. 17.

Kansas City Railway & Light Company, Kansas City, Mo.—John B. Dennis, chairman of the committee of holders of the 6 per cent notes of the Kansas City Railway & Light

Company, due on Sept. 1, 1912, has announced to the holders of certificates of deposit representing these notes that the company has arranged for the payment on March 1 at the New York Trust Company, New York, of interest on the notes from Sept. 1, 1914, to March 1, 1915, at the rate of 7 per cent per annum.

Lake Shore Electric Railway, Cleveland, Ohio.—The Lake Shore Electric Railway has filed a certificate increasing the authorized capital stock of the company from \$7,500,000 to \$8,000,000.

Manila Electric Railroad & Light Corporation, Manila, P. I.—A quarterly dividend of 1½ per cent has been declared on the \$5,000,000 of capital stock of the Manila Electric Railroad & Light Corporation, payable on April 1 to holders of record March 18. This compares with 1¼ per cent from April, 1913, to Jan., 1915, both inclusive.

Massachusetts Electric Companies, Boston, Mass.—Blake Brothers & Company, Hayden, Stone & Company, and Jackson & Curtis are offering at 98 and interest, to yield about 5.75 per cent \$3,000,000 of 5 per cent gold coupon notes of the Massachusetts Electric Companies. These notes, which are of a par value of \$1,000, are dated April 1, 1915, and are due on April 1, 1918. They are issued to take up \$3,100,000 of coupon notes due on May 1 and will then constitute the only debt of the company, except current bills payable.

Mexico Tramways, Mexico City, Mexico.—On Feb. 23, U. de B. Daly, secretary Mexico Tramways, announced that owing to the continued unsatisfactory condition of affairs in Mexico the directors had no alternative but to defer the payment of the half-yearly coupons due March 1 on the general consolidated first mortgage fifty-year 5 per cent gold bonds of the company. As previously reported, the Mexican government has taken over the control of the business of the tramways and is receiving the earnings from the operation thereof. The company, therefore, is not in a position to remit the necessary funds to meet the coupons. With a view to protecting the interests of those holding the company's securities, however, representations have been made to the British and United States governments on behalf of the company.

Montgomery Light & Traction Company, Montgomery, Ala.—Howard R. Taylor & Company, Baltimore, are offering at 105 and interest, to yield 5.25 per cent, a block of the \$350,000 of Montgomery Street Railway first mortgage 6's of 1893, due in August, 1923. These bonds are a closed first mortgage issue on about 30 miles of electric railway, ranking prior to \$1,000,000 of first and refunding bonds of the Montgomery Light & Traction Company, which operates the entire system or street railways and an electric light and power system in Montgomery and suburbs.

New York (N. Y.) Railways.—The amount of interest that is payable upon New York Railways 5 per cent income bonds for the six months ended Dec. 31, 1914, will be submitted to arbitration. The bondholder directors are unwilling to sign the income statement for six months ended Dec. 31, 1914, as recently submitted by the company, and prefer to have the whole matter arbitrated as provided in the mortgage covering the bonds. Under these provisions one arbitrator is chosen by the company, one by the trustee under the mortgage, who is E. S. Marston, president Farmers Loan & Trust Company, and those two choose the third arbitrator. Payment on the bonds for the six months ended June 30, 1914, which was 1.288 per cent, was also decided upon by arbitrators.

Petaluma & Santa Rosa Railway, Petaluma, Col.—The Petaluma & Santa Rosa Railway is asking the holders of \$217,000 of second mortgage 6 per cent bonds maturing on April 1 to extend the same for two years.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—At a hearing before the California Railroad Commission on Feb. 23 Richard Sachse, chief engineer of the commission, fixed the valuation figures of the San Francisco-Oakland Terminal Railways as follows: Reproduction value—operative properties, \$18,959,281; non-operative properties, \$4,564,077; total, \$23,523,358; reproduction value, less depreciation—operative properties, \$16,011,870; non-operative properties, \$4,334,844; total, \$20,346,714. The reproduction value as found by the engineers is about \$32,000,000,

and the company's own book total for all its assets is more than \$50,000,000. Mr. Sachse testified that the element wherein the greatest difference was found as between his and the company's figures was land. He said the company's book figures were not of much value, because they contained "large intangible or non-existent values."

Springfield Railway & Light Company, Springfield, Mo.—Bodell & Company, Providence, R. I., are offering at par and dividends \$750,000 of 7 per cent cumulative preferred stock of the Springfield Railway & Light Company. The stock is redeemable at the option of the company at 115 and dividends. The company has outstanding \$2,183,000 of first lien 5 per cent bonds and \$1,100,000 of common stock. The company controls the entire street railway, steam heating, electric light and power business in Springfield.

Toronto (Ont.) Civic Railway.—The gross revenue of the Toronto Civic Railway for the year ended Dec. 31, 1914, was \$166,994 and the operating expenses \$166,087. The total expenditures, including operating expenses, interest and sinking fund charges, were \$253,698. On the basis of the 1,097,088 car miles traveled during the year, the revenue per car mile was 15.2216 cents, the operating expenses 15.1389 cents per car mile and the total expenditures 23.1246 cents per car mile. Hence the profit over operating expenses was 0.0827 cent per car mile, while the loss on total expenditures was 7.903 cents per car mile. The number of passengers carried was 9,829,765 and the revenue per passenger 1.6988 cents. The passengers per car mile numbered 8.9598 and the cost of power per car mile 4.7764 cents.

United Gas & Electric Corporation, New York, N. Y.—The United Gas & Electric Corporation has sold (1) to Drexel & Company, Philadelphia, \$5,500,000 of three-year 6 per cent gold notes secured by \$7,650,000 of its new thirty-year 6 per cent collateral trust sinking fund gold bonds, and (2) to Bertron, Griscom & Company, New York and Philadelphia, and Reilly, Brock & Company, Philadelphia, the remaining \$2,350,000 of the \$10,000,000 of such thirty-year collateral trust bonds issuable during the life of the notes. The notes are offered at 98½ and interest to yield more than 6.5 per cent. The proceeds are to be used to provide working capital and funds for the payment at maturity of \$7,500,000 of three-year 5 per cent secured notes, due on April 1. It is understood that the holders of the maturing notes will be offered the privilege of exchange on a desirable basis.

Utah Securities Corporation, Salt Lake City, Utah.—The Utah Securities Corporation, which, as noted in the ELECTRIC RAILWAY JOURNAL of Feb. 27, has, through its subsidiary, the Utah Power & Light Company, assumed formal control of the Utah Light & Traction Company, has deposited with the Guaranty Trust Company, New York, as trustees of its ten-year 6 per cent notes, \$500,115 with which to take up on tenders such part of these notes as the money will purchase. In April, 1914, \$7,008,000 of the notes were bought at an average price of 84.881, not including accrued interest, and in July \$1,151,000 were bought at 84.81 and accrued interest.

Winnipeg (Man.) Electric Railway.—G. V. Hastings has been elected a director of the Winnipeg Electric Railway to succeed Sir William Whyte.

DIVIDENDS DECLARED

Brooklyn (N. Y.) Rapid Transit Company, quarterly, 1½ per cent.

California Railway & Power Company, San Francisco, Cal., quarterly, 1¼ per cent, prior preferred.

Connecticut Valley Street Railway, Greenfield, Mass., 3 per cent, preferred.

El Paso (Tex.) Electric Company, quarterly, 2¼ per cent, common.

Frankfort & Southwark Passenger Railway, Philadelphia, Pa., quarterly, \$4.50.

Galveston-Houston Electric Company, Galveston, Tex., 3 per cent, preferred; 3½ per cent, common.

Louisville (Ky.) Traction Company, 2½ per cent, preferred; quarterly, 1 per cent, common.

Manhattan Bridge 3-Cent Line, Brooklyn, N. Y., quarterly, 1½ per cent.

Manila Electric Railroad & Light Corporation, Manila, P. I., quarterly, 1½ per cent.
 Second & Third Streets Passenger Railway, Philadelphia, Pa., quarterly, \$3.

ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS, PHILADELPHIA, PA.					
Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Jan., '15	\$431,113	.....	.....	.....	.....
1 " " '14	429,018	.....	.....	.....	.....
ATLANTIC SHORE ELECTRIC RAILWAY, SANFORD, MAINE					
1m., Jan., '15	\$22,527	\$20,360	\$2,177	.....	.....
1 " " '14	22,657	*20,779	1,878	.....	.....
CITIES SERVICE COMPANY, NEW YORK, N. Y.					
1m., Dec., '14	\$404,808	*\$12,045	\$392,763	\$40,833	\$351,929
1 " " '15	413,862	*3,897	409,964	29,166	380,797
12 " " '14	3,934,453	*116,908	3,817,545	420,000	3,397,545
12 " " '13	2,170,411	*85,348	2,087,063	123,062	1,964,000
COLUMBUS (GA.) ELECTRIC COMPANY					
1m., Dec., '14	\$59,937	*\$27,603	\$32,334	\$28,791	\$3,543
1 " " '13	56,904	*19,446	37,458	25,099	12,359
12 " " '14	681,606	*298,335	383,271	324,637	58,635
12 " " '13	608,636	*294,652	313,983	272,680	41,303
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.					
1m., Dec., '14	\$278,561	*\$151,427	\$127,134	\$43,463	\$83,671
1 " " '13	276,016	*118,831	157,185	107,525	49,660
12 " " '14	3,066,298	*1,886,746	1,179,552	520,438	659,114
12 " " '13	3,003,454	*1,939,520	1,063,934	.....	.....
DALLAS (TEX.) ELECTRIC COMPANY					
1m., Dec., '14	\$186,415	*\$96,203	\$90,212	\$33,390	\$56,822
1 " " '13	203,917	*118,832	85,085	26,670	58,414
12 " " '14	2,208,879	*1,287,660	921,219	370,961	550,258
12 " " '13	2,193,500	*1,280,057	913,443	302,971	610,473
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.					
1m., Dec., '14	\$55,656	*\$31,445	\$24,211	\$8,773	\$15,438
1 " " '13	55,001	*32,903	22,098	8,244	13,854
12 " " '14	673,095	*401,932	271,163	101,639	169,525
12 " " '13	440,442	*270,592	169,850	71,177	98,673
EL PASO (TEX.) ELECTRIC COMPANY					
1m., Dec., '14	\$88,387	*\$42,957	\$45,430	\$4,191	\$41,239
1 " " '13	87,721	*47,452	40,269	4,210	36,059
12 " " '14	1,041,792	*575,472	466,321	51,356	414,965
12 " " '13	886,880	*478,359	408,521	48,015	359,506
FORTY-SECOND STREET, MANHATTAN & ST. NICHOLAS AVENUE RAILWAY					
3m., Sept., '14	\$481,951	\$237,723	\$244,228	\$148,028	†\$96,623
3 " " '13	477,501	228,662	248,839	.....	†104,828
GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEXAS					
1m., Dec., '14	\$192,136	*\$102,226	\$89,910	\$36,209	\$53,701
1 " " '13	203,561	*115,341	88,220	36,549	51,671
12 " " '14	2,424,120	*1,310,859	1,113,261	441,125	672,136
12 " " '13	2,373,066	*1,352,374	1,020,692	421,213	599,479
NEW YORK CITY INTERBOROUGH RAILWAY, NEW YORK, N. Y.					
3m., Sept., '14	\$171,425	\$106,795	64,630	\$43,063	†\$21,904
3 " " '13	160,705	109,372	51,333	.....	†12,746
NEW YORK & LONG ISLAND TRACTION COMPANY, HEMPSTEAD, N. Y.					
3m., Sept., '14	\$130,708	\$81,995	\$48,713	\$24,549	†\$25,344
3 " " '13	126,489	93,345	33,144	.....	†9,556
NEW YORK & QUEENS COUNTY RAILROAD, NEW YORK, N. Y.					
3m., Sept., '14	\$381,879	\$357,422	\$24,457	\$86,410	†\$61,936
3 " " '13	383,444	309,464	73,980	.....	†\$12,503
RICHMOND LIGHT & RAILROAD COMPANY, NEW YORK, N. Y.					
3m., Sept., '14	\$131,555	\$93,638	\$37,917	\$38,121	†\$41,517
3 " " '13	131,225	115,193	16,032	.....	†19,286
SAVANNAH (GA.) ELECTRIC COMPANY					
1m., Dec., '14	\$71,678	*\$45,578	\$26,099	\$23,420	\$2,679
1 " " '13	74,505	*49,864	24,642	22,967	1,675
12 " " '14	842,639	*552,987	289,652	275,333	14,319
12 " " '13	827,780	*557,921	269,859	263,264	9,595
SECOND AVENUE RAILROAD, NEW YORK, N. Y.					
3m., Sept., '14	\$260,724	\$155,953	\$104,771	\$63,393	†\$39,377
3 " " '13	287,167	165,647	121,520	.....	†63,356
STATEN ISLAND MIDLAND RAILWAY, NEW YORK, N. Y.					
3m., Sept., '14	\$121,352	\$69,244	\$52,108	\$18,333	†\$33,972
3 " " '13	117,975	85,590	22,385	.....	†14,808
THIRD AVENUE RAILWAY, NEW YORK, N. Y.					
3m., Sept., '14	\$1,005,281	\$584,807	\$420,474	\$612,605	†\$36,577
3 " " '13	1,035,830	534,027	501,803	.....	†87,097
UNION RAILWAY, BRONX, N. Y.					
3m., Sept., '14	\$773,591	\$490,896	\$282,695	\$157,680	†\$132,153
3 " " '13	762,489	538,972	223,517	.....	†74,371
YONKERS (N. Y.) RAILROAD					
3m., Sept., '14	\$194,066	\$123,272	\$60,794	\$49,025	†\$11,904
3 " " '13	194,013	123,234	70,779	.....	†21,490

*Includes taxes. †Deficit. ‡Includes other income.

Traffic and Transportation

THE "JITNEY" BUS

Trend of Recent Legislation—Companies State Their Attitude—Automobile Man Sanguine

History in regard to legislation covering the operation of buses is being made rapidly. On Feb. 18 the City Commission of Ogden, Utah, passed an ordinance abolishing licenses for automobiles used for carrying passengers where charges for hire were made. Under this ordinance the operation of 5-cent auto buses in Ogden is impossible unless a franchise similar to that of the street railways is granted to the motor-bus operators. On Feb. 17 the City Commissioners of Port Arthur, Tex., passed an ordinance governing the operation of "jitney" cars. That measure places the "jitneys" under bond, and permits their use only on certain streets of the city. The ordinance became operative three days after its passage and on the day that it went into effect the owners of the "jitney" buses decided to discontinue operation. A petition is being circulated asking for a referendum vote on the measure.

On Feb. 19 the City Council of Beaumont, Tex., passed unanimously an ordinance governing the operation of the "jitney" cars. The new measure requires the operators to apply to the City Council for a franchise and makes it an offense punishable by a fine of not more than \$200 to operate a "jitney" without a franchise. Up to that date the members of the City Council had not decided on the terms that should be incorporated in the "jitney" bus franchise ordinance. The "jitney" bus ordinance that was passed in Fort Worth, Tex., went into effect on Feb. 22. An effort was made by the operators of "jitney" buses to secure an injunction against the further publication of the ordinance, but the petition was not allowed. Here also a petition for referendum election is being considered. In the Texas Legislature the Mendell bill to regulate "jitney" automobile lines in cities of 10,000 or more has been killed by the committee on judiciary on the ground that under the home rule act cities are empowered to regulate the operation of such transportation lines.

An ordinance regulating "jitney" automobiles was adopted on Feb. 9 by the City Commission of Tulsa, Okla., and is being enforced. The main features of the ordinance are that it prohibits the "jitneys" on streets where street cars are operating, makes them adopt routes and schedules of their own not used by the car lines, and requires them to operate continuously for sixteen hours each day; in other words, to have their own routes and give dependable public service. A conviction has already been secured for violation of this feature of the ordinance. The City Commission of Tulsa took the view that duplication of service was of no advantage to the city, but that they would welcome the "jitney" bus provided operators selected fixed routes and rendered the public proper service by maintaining schedules. As burdens in the way of licenses, assessments, etc., the only fee required is one of \$5 a passenger seat a year, with a credit for the regular license charged automobiles, so that in the case of a Ford, for instance, seating four passengers, the extra fee charges is only \$5 a year. On March 1 only two "jitney" routes were being operated in Tulsa. They were on streets paralleling the Tulsa Street Railway one block away.

Up to Feb. 24 neither Los Angeles nor San Francisco had taken final action with regard to the traffic measures to regulate the "jitney bus" service. Previous to that date, however, City Attorney Albert Lee Stephens, of Los Angeles, had completed the draft of a proposed ordinance for that city and it was expected that action on the matter would be taken within a few days. The proposed ordinance in the main follows the recommendation of the utilities committee. It contains eighteen sections and approximately 1800 words. The ordinance does not apply to street or inter-urban railway cars, sight-seeing vehicles, hotel buses, vehicles operated from a fixed stand in the street or from a private or public garage, the destination and route of which are under the direction of a passenger or passengers being carried.

There has been introduced in the Indiana Senate a bill providing that any person, firm or corporation engaged in

the business of transporting passengers for hire by automobile shall constitute a "public utility" and be subject to all the provisions of the utility commission act, and that such person, firm or corporation shall not engage in or continue in such business except under a license granted pursuant to an ordinance which must be passed by the municipality wherein such utility is operating, fixing the terms and conditions and providing for a satisfactory bond. The Public Service Commission to have the right, on petition, to review and modify the term of any such ordinance.

The commissioners of Spokane, who have been considering the matter of the regulation of the "jitney" bus, have decided on the general terms of the franchise which it is likely will be passed in that city. Under the measures as tentatively drawn "jitney" buses will be placed in a class by themselves, required to run over a stated route on a fixed schedule, secure a Councilmanic permit, give a bond of \$5,000, have lights in the cars, collect no fares when in motion and allow no riding on the running boards or undue crowding on the cars.

The City Council of San Diego has taken a tack different from that employed in most of the other cities. It is seeking an injunction to prevent the Red Star Auto Line from operating on city streets, claiming that the "jitney" is a common carrier and that it must apply to the city for a franchise to use the streets.

The question of an ordinance to govern the "jitney" bus at Pueblo, Col., having come up, City Attorney Alva P. Adams, in a formal report to the City Council said that while the city could not prohibit the operation of buses it did hold the power to license and regulate the cars in such a manner as to insure the safety, welfare and convenience of the city and its inhabitants. He said he reached his conclusion reluctantly, and that his opinion was at least at variance with what seemed the opinion of certain public organizations in the city and with the conclusions reached upon the subject at Denver.

In the city of Memphis the question of the regulation has been passed on to the city attorney with instructions for an opinion. On Feb. 21 Director of Streets and Sewers Talbert of St. Louis began preparing amendments to the pending taxicab bill to regulate the operation of the "jitney" as a common carrier in that city.

A great deal has been printed about the proposed ordinance to be introduced in the Council of Kansas City. It was said a few days ago that this ordinance would provide for a bond of \$10,000 for each car, an occupation license tax of about \$5 a car annually and a vehicle tax of \$10 a car annually. The bond requirement would compel each "jitney" driver to put up \$10,000 security himself, as the bonding companies have refused to assume "jitney" risks.

From all parts of the country come stories of the organization of the "jitney" bus owners and operators for their own protection. Some of these organizations are showing a considerable amount of strength. In one city in Texas the city officials at present holding office were loath to put themselves on record, fearful of the consequences at the impending election.

John N. Willys, of the Willys Overland Automobile Company, and Henry Ford are said to have expressed themselves freely recently in regard to the "jitney" bus. Mr. Ford was quoted in the papers in the East on Feb. 27 as stating that he contemplated putting into service in Chicago Ford cars with a seating capacity of sixteen persons each. Mr. Ford subsequently denied this. Mr. Willys is reported to have said:

"The tremendous political influences exerted by the electric street railway interests may succeed for a short period of time in retarding the sudden and great development of the automobile transportation property known as the 'jitney' bus, but it will never be able to suppress the new and popular means of locomotion. The public in this country is just awakening to the possibilities and advantages of motor transportation. The promise of cheap, satisfactory transportation for the American public has been made possible by the wonderful strides in this country in the construction of good, serviceable automobiles at only about half the price at which they can be produced abroad. This means more to the 'jitney' bus business than might at first be supposed, when one thinks only of first cost or the original investment carried as a fixed charge."

Among the electric railways that have gone on record recently in regard to the 'jitney' are the Louisville Railway, the United Railways of St. Louis, the Georgia Railway & Power Company, the Birmingham Railway, Light & Power Company and the Capital Traction Company. The attitude of the Louisville Railway is discussed in its publication, *Trolley Topics*. The company says:

"Should an attempt be made (to operate 'jitney' buses) they should be regulated in as substantial a way as is the Louisville Railway, in that the rate of fare, the tax to be paid, the route to be followed, should be prescribed; also the routes should be sufficiently long to be a benefit to the riding public and not merely operated in the congested districts, which are already thoroughly covered by street car lines; for, unless so regulated, they can be of no real benefit to any class of citizens, but, on the contrary, would be a detriment to the entire city and cause increased taxation on every citizen in the city. Indeed, it is by no means certain that the 'jitney' buses can be legally operated in Louisville, as it seems there is a city ordinance, which has been in effect for many years, prohibiting the operation of a bus or other vehicle to carry passengers in competition with established street railroads, carrying a penalty of \$5 to \$50 for each offense."

The article which appeared in the February issue of the *United Railway Bulletin*, published by the United Railways, St. Louis, reviewed the "jitney" situation in general and more particularly the ordinances and regulatory measures which have been adopted in various cities in which the "jitney" has been placed in operation. In conclusion the article said:

"If any evidence of the viciousness of this lack of inspection is needed it is only necessary to tabulate the automobile accidents any Sunday during the summer, when the streets are full of automobiles run by amateur drivers. The street railways pay a large part of their gross earnings as taxes and also are required to maintain the pavement between their rails and tracks. It is hardly likely that the municipalities will allow automobiles conducting a similar business to go free of license and taxes."

J. P. H. de Windt, vice-president and general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., stated the attitude of his company recently to the members of the city commission. He is quoted as having said among other things:

"All I ask is a square deal. I am willing to meet competition any time. I will turn over the books of my company to any member of the commission or to any man of fair principles to show him whether or not we are making any improper profits. The 'jitneys' have cut our gross revenues perhaps \$700 a day."

George E. Hamilton, president of the Capital Traction Company, Washington, D. C., in a letter to the Public Utility Commission of the District, protested against "jitney" bus operation without regulation. He said that it was essential for the commission in the true performance of its duties to protect common carriers in the enjoyment of their legal rights and charter privileges, and that the progress and development of the District depended in a considerable measure on the service given by the street railways and the development and betterment of that service. To allow the "jitney" to enter the field as a free lance without franchise, without regulation and without responsibility and compete under such unequal conditions with the street railroad would probably cripple and might destroy a service that was good and dependable. This, he thought, was the last thing that the public utilities commission would desire.

The Georgia Railway & Power Company recently carried in the papers of Atlanta a long advertisement in which it gave seven reasons why Atlanta should proceed in the matter of the "jitney" bus regulation with full thought of future consequences. It said frankly that the company's profits were concerned with the proposed inauguration of the "jitney" buses. In conclusion the company said:

"'Jitney' buses were novelties. Now the novelty is wearing off. Regulations to control the buses are being shaped in many cities—but with more difficulty than if those regulations had been prepared in advance. Will Atlanta look before she leaps?"

The Fort Wayne *News* of Feb. 20 sounded an editorial

note of caution in regard to the "jitney" bus. The paper said in part:

"The city authorities will do well to go slow, very slow, in the matter of 'jitney' bus lines in Fort Wayne. While justice demands that a corporation that has invested an immense sum of money here be given decent consideration, the claims of the people are, after all, paramount, and it is certain that 'jitney' bus lines are decidedly inimical to their interests. There always has been fault-finding—most of it captious—and there always will be, yet we all know that the street car is a pretty dependable proposition and that its management is responsible. It is really a pretty good thing to have about the municipal house. The same cannot be said, however, for the owners of the 'jitney' buses whose operation increase the probability of accidents to passengers and pedestrians fourfold. These people are practically irresponsible in a financial way. The 'jitney' bus has no proper place in our social economy."

The Puget Sound Traction, Light & Power Company, operating in Seattle, estimates from January business that it will carry 20,736,000 fewer passengers in 1915 than it hauled in 1914, if the competition of 5-cent motor buses continues unabated. The company has placed stub cars on the outer portions of the suburban lines, transferring passengers to downtown cars.

In Tucson, Ariz., "jitney" drivers have been arrested under the old "hack stand" ordinance. Injunction proceedings are threatened. E. N. Sanderson, New York, president of the Federal Light & Traction Company, protested against the operation of the "jitneys."

The special "jitney" service feature is being used more generally in Kansas City with large passenger cars, the charge being 10 cents, however, and the machine gathering its passengers from hotels and apartment houses for boulevard rides downtown. The use of automobiles is being welcomed by residents of suburban districts as the solution of their transportation problems in respect to lines where street railways would not be profitable for several years to come.

T. F. Grover, general manager of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company, took the "jitney" bus for his subject at the regular monthly meeting of the employees of the company on Feb. 24. His remarks were published practically in full in the Terre Haute *Star* and by the other daily newspapers in Terre Haute. He has had the statement printed in pamphlet form. He replied in his remarks to the questions of the effect of the "jitney" on the future of the company, whether there would be a war between the company and the "jitney," and what effect the "jitney" would have on the city of Terre Haute should it continue to operate under present conditions. He included in his remarks a very interesting summary of the cost of "jitney" operation. On Feb. 18 there were about seventy-five "jitneys" in operation in Terre Haute, while on Feb. 25 Mr. Grover estimated that there were not more than fifteen in operation.

HEARING IN INDIANAPOLIS-LOUISVILLE I. C. C. CASE

A supplemental hearing was held at Indianapolis on Feb. 23 and 24 before Examiner Fleming of the Interstate Commerce Commission on Interstate Commerce Commission docket No. 5217, originally brought in the name of the Louisville Board of Trade vs. Indianapolis Columbus & Southern Traction Company, et al, in the matter of through freight service between Louisville and Indianapolis. As a result of the original hearing the Interstate Commerce Commission ordered that through freight service be established between Louisville and Indianapolis and intermediate points, which service was instituted on Sept. 15, 1914. The participating carriers, the Interstate Public Service Company, Indianapolis & Louisville Traction Railway, Louisville & Northern Railway & Light Company and Louisville & Southern Indiana Traction Company, were, however, unable to agree on the basis of divisions of the resulting revenue, and finally the Louisville & Northern Railway & Light Company petitioned the commission for a supplemental hearing for the purpose of having the basis of divisions of freight revenues fixed by the Interstate Commerce Commission. A great deal of testimony was introduced bearing upon the equitable divi-

sion of freight earnings, and many traffic managers of Indiana interurban lines appeared before Examiner Fleming. As there are still a number of briefs and arguments to be filed with the commission, it is probable that three or four months will elapse before any decision will be handed down.

CHICAGO SERVICE QUESTIONS

Several points to be considered in seeking relief from congestion in the Chicago downtown loop district were brought out by L. A. Busby, president of the Chicago Surface Lines, at the recent hearing before the Illinois Public Utilities Commission. Mr. Busby stated that the basis for calculating the regular rush-hour schedules was eighty passengers to each car seating fifty-two persons. He considered it advisable to allow about 3½ sq. ft. for each passenger after deducting reasonable space for entrances, exits and the car crew. It should be borne in mind that the physical capacity of certain lines in the downtown district was greatly exceeded during the rush hours by the number of passengers demanding service and that the problem of meeting the labor agreement has to be taken into consideration. He laid stress on the relief that could be obtained by the immediate elimination of teams from the tracks in the loop district. Relief could not be secured through the use of trail cars, as their operation on lines passing through the loop was prohibited under the present franchise ordinance. Mr. Busby expressed the opinion that the public would object to the walk which would be involved if the present downtown terminals of the surface lines were changed by turning back cars before they reached the center of the business district. The police would be impotent to enforce service standard regulations such as obtain in some foreign cities.

While before the commission R. F. Kelker, Jr., city traction supervisor, submitted a plan for rerouting cars in the Chicago loop district in order to reduce the number of double-track crossings and thereby speed up schedules. Under the present routing there are twenty-five double-track crossings in the loop district, and if Mr. Kelker's plan was adopted this number would be reduced to the equivalent of six double-track crossings by turning back east and west lines at Clark Street, or at a point where they would not intersect the heavy north and south lines.

SERVICE STANDARD ORDINANCE

The local transportation committee of the City Council of Chicago, Ill., with the aid of the Bureau of Public Service and Prof. E. W. Bemis, the city's representative on the Board of Supervising Engineers, has drafted a service standard ordinance. In preliminary form this ordinance requires that all lines must operate on a written schedule, a copy of which must be filed with the commissioner of public service in Chicago. In case schedules are changed the revisions must be submitted to the commissioner of public service at least three days before the new schedules are put into effect. All cars are required to carry run numbers which will fix their position in the schedule, and extra cars are also to be indicated.

The non-rush-hour service standard requires that the aggregate number of seats within the cars passing any point in any one direction shall not be less than the aggregate number of passengers carried during any period of fifteen consecutive minutes. It is provided, however, that if less than three cars of any line or lines pass any point at which a check is made during the fifteen-minute period, then the aggregate number of seats carried by three consecutive cars passing in any one direction shall not be less than the aggregate number of passengers carried. The service standard also requires that at no time or place on any line operating within the city of Chicago shall there be scheduled less than one car during each twenty-minute period of the entire twenty-four hours, the four hours between 1 a. m. and 5 a. m. being excepted. The right to designate checking points is retained by the commissioner of public service, who is required to notify the railway company of its location. Exceptions are made in cases where it is physically impractical to comply with the standard of car loading, or where the elements interfere, but the burden of proof is on the railway. A fine of \$200 for each violation of this ordinance is included.

SAFETY ARTICLES FOR SCHOOL CHILDREN

In connection with a systematic and permanently-organized safety movement the Chicago & Joliet Electric Railway, Joliet, Ill., has prepared a set of twenty printed articles with the assistance of the superintendent of the city schools and heads of the city departments. These articles were written for children of different ages and vary in length from 300 to 750 words. J. R. Blackhall, general manager, and W. H. Heun, superintendent transportation and claim agent of the company, have experienced no difficulty in obtaining the co-operation of the parochial and public school teachers and superintendents in the distribution of these leaflets. They are given to the teachers in sets, each set being contained in an envelope appropriately indexed. The titles follow: "Meaning of Safety"; "Fire Facts by the Fire Chief"; "Health and Happiness"; "Suggestions by Chief of Police"; "Danger from Live Wires"; "Keep on the Sidewalk"; "Keep Away from Wagons and Automobiles"; "Trolley Cars are Dangerous"; "Better Safe Than Sorry"; "Help Others"; "Dangerous Fun"; "Be Thoughtful" (for younger children); "Thoughtfulness" (for older children); "Those Who Seek Excitement Court Danger" (for older children); "The Cruel Giant"; "Ed's Mishap"; "The Safety Button Soliloquy"; "Safety Everywhere"; "First Aid"; "Fair Play."

DEALING WITH THE SPITTER

Officers of the Louisville & Interurban Railway and the county health authorities have agreed upon a plan by which they hope to help keep down disease and improve the appearance of the cars on the several electric lines running out of Louisville, Ky. In future when conductors or motormen of the company remonstrate with those who spit in the cars they will speak with authority, for they will be State officers, with the titles of sanitary inspectors. The officials of the company have been exerting themselves to keep down the filthy practice, and they readily assented to the plan when it was suggested by the health authorities.

When a conductor or motorman discovers a passenger violating the law against spitting he will fill out a blank which he will carry and which will rank as a legal notice. These blanks will be handed to the violators and warn them that repetition of the offense will mean arrest, the train men being empowered, even charged, to swear out warrants so providing. The names of all the trainmen on the cars running out of Louisville have been furnished to the State board of health and the appointments are to be issued immediately. The Louisville & Interurban Railway and the Louisville Railway are co-operating with the health authorities, city, county and State.

Accident Record in Louisville, Ky.—The Louisville Railway has carried a total of 417,449,000 passengers and the Louisville & Interurban Railway 17,812,000 since there has been a fatal accident to any of their passengers.

Mileage Books Discontinued.—The Cortland County Traction Company, Cortland, N. Y., has announced that the sale of interchangeable ticket or mileage books at \$10 per book will be discontinued after April 1. Books outstanding after that date will be honored in accordance with the terms and conditions under which they were sold.

Service Hearing in St. Louis.—The final hearing before the Public Service Commission of Missouri in connection with the inquiry into the adequacy of the service of the United Railways, St. Louis, was held in that city on Feb. 24. Henry S. Priest and Morton Jourdan represented the company as counsel. Each side has been given ten days in which to file briefs.

Testimony Completed.—Testimony has practically been completed in the arbitration proceedings which have been under way for some weeks, involving the differences between the Kentucky Traction & Terminal Company and the union trainmen. F. W. Bacon, vice-president of the company, was the last witness for the company, after which rebuttal testimony was offered by the union. Arguments are to be heard in conclusion by Charles C. Bagby, Danville, the umpire.

Safety Work to Continue.—The Ontario Safety League will continue its work in 1915. The officials hope to be able

to take up the question of industrial safety and co-operate with employers of labor in an endeavor to reduce accidents in factories, workshops, etc. The help of the General Ministerial Association was enlisted on Feb. 22 when a deputation appeared before the association and asked for its assistance in forwarding the objects of the league. The association has arranged for an announcement to be made in the churches of Toronto to bring the matter before the whole public.

Welfare Work in New York.—H. H. Vreeland, director of welfare of the Interborough Rapid Transit Company and the New York Railways, has contributed to the February issues of the magazines published in the interest of the employees of the companies reviews of the work of his department as it relates to each company. He says the work reflects progress, reveals the wisdom of the officials in thus co-operating with the employees and sustains the most sanguine expectations of both officials and employees. The figures which are included in the reviews are especially significant of the activities carried on.

Toronto Civic Fares.—The proposal to increase the fare on the civic railway lines in Toronto, Ont., has been revived by Alderman McBride. The plan has the support of Works Commissioner Harris, who suggests selling nine tickets for 25 cents. The present charge of 2 cents or six tickets for 10 cents is not sufficient to make the system self-supporting. On Feb. 26 the works committee of the City Council adopted the recommendation of Commissioner Harris to increase the cash fare to 3 cents, with nine tickets for 25 cents. An amendment to make it ten tickets for 25 cents was voted down, seven to five.

Safety Council at Columbus.—On Feb. 26 Columbus Council No. 19, National Safety Council, was organized at Columbus, Ohio. Thirty representatives, superintendents and safety directors of local industries were present, including those from the Columbus Railway, Power & Light Company. Victor T. Noonan, safety director of the Industrial Commission, said that, through educational work, the accidents in the State may be reduced 50 per cent. E. E. Watson, actuary of the commission, spoke on the economic phases of the work. Secretary Babbitt of the Columbus Railway, Power & Light Company explained the results of the safety work that has been done by his company.

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

Health Commissioner Seeks to Fix Car Capacity.—On March 1 Commissioner of Health Goldwater of New York affirmed his intention of strictly enforcing his order limiting the number of passengers to 150 per cent of the seating capacity of the Fifty-ninth and Eighty-sixth Street cars. He also announced that similar orders affecting several Brooklyn car lines will soon be issued. Dr. Goldwater said in part: "If the Board of Health is compelled to take its case into court we shall be able to present not only the testimony of our own inspectors but that of numerous citizens who have volunteered to join us in the effort to obtain their rights, and we shall keep right on until we get results. The order issued by this department, largely because of its unprecedented character, has aroused varied comment and has given rise to some misunderstanding. It is to be observed that the order is not general, but relates to specific nuisances which the railroad companies are requested to abate." On March 2 the New York Railways obtained a stay of the order of the Board of Health until March 16. A public hearing will be held on March 15.

Personal Mention

Mr. A. M. Nanton has been elected vice-president of the Winnipeg (Man.) Railway to succeed Sir William Whyte.

Mr. A. T. Davidson has been appointed purchasing agent of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., to succeed Mr. Lewis Keim.

Mr. C. Nesbitt Duffy, vice-president in charge of operation of the Manila Electric Railroad & Light Company, Manila, P. I., has been elected vice-president of the Manila Merchants' Association.

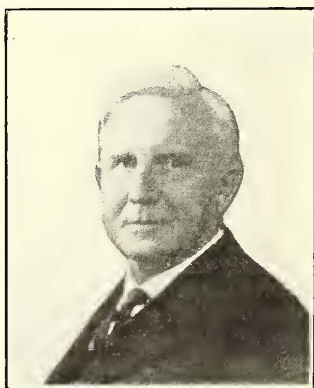
Mr. John S. Moore, formerly assistant traffic manager of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has been appointed traffic manager of the company to succeed Mr. W. O. Woodward, resigned.

Mr. Lewis Keim, who has been purchasing agent of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., for the last four years, has been appointed general inspector of the company, with duties corresponding to those of the position of assistant general manager.

Mr. C. T. Chapman, whose resignation as traffic manager of the Interurban Railway, Des Moines, Ia., was announced in the *ELECTRIC RAILWAY JOURNAL* of Feb. 27, was the guest of honor at a banquet of the traffic men of Des Moines on Feb. 23. Mr. William Clapper, who has succeeded Mr. Chapman, was also present.

Gen. George H. Harries, who was recently elected president of the Omaha Electric Light & Power Company, Omaha, Neb., and who continues to serve as president of the Louisville Gas & Electric Company, Louisville, Ky., will in the future take active charge of the Omaha property and devote only a portion of his time to the Louisville property, according to an announcement made by H. M. Bylesby & Company, Chicago, Ill., by which company both of these properties are controlled.

Mr. Charles L. Henry, president and general manager of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., was elected president of the Central Electric Railway Association at the annual meeting held in Indianapolis on Feb. 25 and 26. Mr. Henry was educated as a lawyer. He became interested in railways in 1891, when he purchased the horse car line in Anderson, Ind. Under his direction the line was electrified. In 1897 Mr. Henry built an electric railway from Anderson to Alexandria, which in the year following was extended to Summittville. This was the first interurban line in Indiana and became a part of the Union Traction Company of Indiana when that organization was formed in 1899. Mr. Henry, as general manager of this company, constructed the lines from Muncie to Indianapolis via Anderson. Several years ago Mr. Henry sold out his interest in the Union Traction Company and interested himself in the Indianapolis & Cincinnati Traction Company. Mr. Henry was born on a farm in Hancock County, Ind., on July 1, 1849, and received his education in the common schools, in the literary department of Asbury (now De Pauw) University, and graduated from the law school of Indiana University in 1872, practising law in Pendleton and Anderson until he began his connection with the electric railway industry. Mr. Henry served in the Indiana State Senate from 1881 to 1885, and as a Representative in Congress from 1895 to 1899. He was made fourth vice-president of the American Electric Railway Association in 1911, third vice-president in 1912, second vice-president in 1913 and first vice-president in 1914. Mr. Henry is credited with having been the pioneer builder of interurban electric railways in Indiana and with having originated the word "interurban," as applied to electric railways.



C. L. HENRY

Mr. C. S. Banghart, who has been elected second vice-president and a director of the Binghamton (N. Y.) Railway in addition to general manager, became connected with



C. S. BANGHART

the company as general manager on Aug. 1, 1914. Previous to that he had been superintendent of the New York & Queens County Railway, operating about 75 miles of electric railway in Long Island City and elsewhere in the Borough of Queens. He was appointed to that position in 1908, having served for five years previously as master mechanic of the company. In all Mr. Banghart has been engaged in electric railway work about twenty-five years. His first position was with the line department of the Allentown & Bethlehem Traction Company. After leaving that company he entered the service of the Thomson-Houston Company during the electrification of the Union Railway, New York. On the completion of that installation he became connected with the M. A. Greene Engine Company, Altoona, Pa., with which he remained about eighteen months. Mr. Banghart then accepted the position of chief electrician with the Flushing & College Point Railway & Lighting Company, with which he remained until he was appointed master mechanic of the Union Traction Company, Reading, Pa. He was with that company from 1895 to 1903 and then accepted the position of master mechanic of the New York & Queens County Railway. The Binghamton Railway operates 31 miles of line and controls the Scranton & Binghamton Railroad which has under way the construction of an electric railway to connect Binghamton with Scranton, Pa.

Mr. F. L. Fuller has been elected president of the Binghamton (N. Y.) Railway to succeed Mr. G. Tracy Rogers, resigned. Mr. Fuller was formerly, up to 1909, president and general manager of the New York & Queens County Railway, Long Island City, N. Y., and before taking charge of that property was general manager of the United Power & Transportation Company, which controlled electric railway and light properties in the neighborhood of Philadelphia and Wilmington, Del. Mr. Fuller entered street railway work in 1888 as foreman of the Selby Avenue Cable Line of the St. Paul City Railway. The following year electricity was installed in St. Paul and Mr. Fuller acted as assistant superintendent. On the consolidation of the St. Paul and Minneapolis systems in 1893, Mr. Fuller became connected with the West Chicago (Ill.) Street Railway as assistant superintendent. The Chicago company's system was then divided between cable and horse lines, and in 1894 the work was begun of equipping the horse lines with electricity, with Mr. Fuller as superintendent. In 1899 Mr. Fuller became connected with the United Power & Transportation Company, Philadelphia, going from there to Long Island City.

OBITUARY

Edgar Allen, the founder and chairman of Edgar Allen & Company, Ltd., London, England, died at Sheffield on Jan. 28. He was seventy-seven years of age.

Col. N. H. Heft, formerly head of the electrical department of the New York, New Haven & Hartford Railroad, is dead. Colonel Heft had for years been the electrical expert for the company and it was under his supervision that the Nantasket Beach line was equipped with the third-rail, the first application of its kind in the United States. Colonel Heft had been president of the Bridgeport (Conn.) Traction Company, the Greenwich Tramway, the Meriden Street Railroad, and the Stamford Street Railroad. He was formerly president of the Bridgeport Board of Trade. He had not been active in electric railway work for a number of years. In 1901-02 Mr. Heft was second vice-president of the American Street Railway Association. He also presented several papers before that association on heavy electric traction subjects.

Construction News

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

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

RECENT INCORPORATIONS

***Richwood-Hamilton Traction Company, Hamilton, Ohio.**—Incorporated in Ohio to build an electric railway between Richwood and Hamilton. Capital stock, \$10,000. Incorporators: Eugene Purtelle and others.

McConnellsburg & Fort London Railway, McConnellsburg, Pa.—Chartered in Pennsylvania to build a 9-mile electric railway between McConnellsburg and Fort London. Capital stock, authorized, \$60,000. Incorporators: Edward J. Post, D. H. Patterson, George A. Harris and B. C. Lamberston. [E. R. J., Feb. 6, '15.]

FRANCHISES

Fresno, Cal.—The Railroad Commission has issued an order approving a lease between the Fresno Traction Company and the Southern Pacific Company, by which the latter company will operate the traction company's line from Muscatel Station eastward, a distance of 8.1 miles.

Webster, Mass.—Worcester & Webster Street Railway has asked the Council for a franchise in Webster.

Worcester, Mass.—The Worcester Consolidated Street Railroad has received a franchise from the Council to extend its tracks on Adams Street in Worcester to the site selected for the new distributing station.

Cleveland, Ohio.—The Cleveland Railway has received a franchise from the Council to extend its double track line in Clark Avenue from the intersection with West Sixty-fifth Street thence in West Seventy-third Street to its intersection with Denison Avenue in Cleveland.

Columbus, Ohio.—Philip B. Gaynor, New York, president of the East Linden Electric Railway, has made application to the Columbus City Council for franchises for two new routes. One of them would extend north from the intersection of Joyce and Leonard Avenues to the corporation line and thence to Linden. The other would begin at the terminus of the present Leonard Avenue line and pass through the village of Shepard to the west bank of Alum Creek. The latter line would be a competitor of the Columbus, New Albany & Johnstown Railway, on which the fare between Columbus and Shepard is 15 cents. It is understood that Mr. Gaynor proposes to make the fare 5 cents, which would probably be added to the fare on the lines of the local company to reach the central portion of the city. [E. R. J., Jan. 6, '15.]

Columbus, Kenton & Toledo Traction Company, Kenton, Ohio.—Surveys have been completed by this company over 88 miles of its line between Columbus and Findlay. No definite plans have been made when construction will be begun. This 138-mile line will connect Columbus and Toledo. J. W. Caine, Kenton, vice-president. [E. R. J., Aug. 16, '13.]

Toronto, Ont.—The Eastern Ontario Electric Railway has asked the Ontario Parliament for an extension of time on its franchise to build its line from Toronto to Cornwall via the counties along Lake Ontario. The Board of Control is opposed to granting the extension of time to the company.

Portland, Ore.—The United Railways has filed an acceptance of the provisions of a franchise granted on Feb. 10, 1915, by the Council, for the construction for a line along Front Street and in North and South Portland. By the terms of the franchise the company will remove its tracks on Stark Street in Portland.

Phoenixville, Pa.—The Phoenixville, Valley Forge & Strafford Electric Railway has received a franchise from the Council to lay tracks across Gay Street Bridge in Phoenixville, but only under certain conditions.

Collegeville, Pa.—The Perkiomen Traction Company has received a renewal of its franchise in Collegeville from the Council. This is part of a plan to build an electric line from Collegeville to Schwenkville and vicinity. [E. R. J., Jan. 23, '15.]

TRACK AND ROADWAY

Alabama City, Gadsden & Attalla Railway, Gadsden, Ala.—Work has been begun by this company raising its tracks on North Fourth Street between Town Creek and the Southern Railway in Gadsden.

***Buffalo, Ark.**—G. T. Uplegraff, Helena, and Phillip DeWolf, Bristol, R. I., are considering plans to build an electric railway from Buffalo to Yellville, via the Buffalo River. Power would be secured from the Buffalo River. This line would furnish transportation to all the zinc mines in the Buffalo River zinc district.

Lone Pine Utilities Company, Big Pines, Cal.—Work on the construction of the trackless trolley up Swarhout canyon by this company will be begun soon, according to Manager Denton, who is getting ready to put a force in the mountains to finish the project started last spring. The right-of-way for the power line has been secured. The line will be 9 miles long from Grava, on the Santa Fé, south and southeast up the canyon to Lytle Creek, where the company has a tract. It is stated that \$50,000 will be spent on the project during the coming months. It is planned to have it completed before the opening of the summer season. [E. R. J., Feb. 28, '14.]

Northern Electric Railway, Chico, Cal.—Plans are being made to rebuild the section of this railway between Meridian and Colusa recently damaged by floods. One abutment of a steel bridge crossing the Sacramento River was carried away and 3 miles of track washed away. The cost of repairs will be approximately \$50,000.

Humboldt Transit Company, Eureka, Cal.—Right-of-way is being secured by this company for an extension around the bay to Arcadia and out on Mad River bottom in Arcata.

Fresno (Cal.) Interurban Railway.—During the next six weeks this company expects to award contracts to build 6½ miles of electric railway from Barton to Clovis. Also 1½ miles of new track in Fresno.

Marin County Electric Railway, Mill Valley, Cal.—Contracts will soon be awarded by this company to build the Cascade Canyon unit of this railway. [E. R. J., Feb. 13, '15.]

San Francisco (Cal.) Municipal Railway.—Mayor Rolph has signed a resolution of the Board of Supervisors directing that the Church Street municipal railway be constructed according to plan No. 9. This plan provides that between Eighteenth Street and Twentieth Street the railway shall extend through Mission Park, and that a right-of-way shall be acquired for it through private property between Twentieth Street and Twenty-second Street in San Francisco.

Stockton Terminal & Eastern Railway, Stockton, Cal.—This company has requested authority to issue \$319,500 of bonds to be used in completing its line to Jenny Lind, Calaveras County. The company asks, if the commission should not grant its application in full, that it be allowed to sell sufficient bonds to construct 2 miles of railway in order to reach certain gravel beds, from which it is expected considerable traffic can be secured.

Connecticut Company, Bridgeport, Conn.—Work on the new line from Hollister Avenue, Bridgeport, Conn., to Lordship Manor will be begun soon. The first work to be done will be the erection of five new bridges. The Fred T. Ley Company, which has the contract for the laying of the tracks, expects to begin the work on the railway as soon as the weather permits.

Washington Railway & Electric Company, Washington, D. C.—Formal notice was given this company recently that its application for permission to issue bonds to cover certain improvements, including the building of an extension on Fourteenth Street from F Street to Pennsylvania Avenue, will be considered by the Public Utilities Commission. The total amount of the issue for which authority is sought is \$207,000. In addition to the Fourteenth Street improvement, the bonds will provide for placing under ground electric connections of the Anacostia line, between Anacostia Bridge and Talbert Street, and an extension of the line on Nichols Avenue. The commission also notified the company that it will consider an application for bonds to cover certain expenditures for equipment authorized by Congress and the orders of the commission.

St. Petersburg & Gulf Railway, St. Petersburg, Fla.—Work will soon be begun by this company on the extension on Twenty-second street to the ball park at Coffee Pot Bayou in St. Petersburg.

Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.—Improvements of its lines in Augusta are being planned by this company.

Southern Illinois & St. Louis Railway, Harrisburg, Ill.—Preliminary arrangements are being made by this company to build its line between East St. Louis and Harrisburg, via Belleville, Duquoin, Herrin and Johnston City. [E. R. J., Feb. 20, '15.]

Lee County Central Electric Railway, Lee Center, Ill.—Possible early extensions planned by this company include a branch northerly to Ashton or Rochelle or DeKalb and a branch southwesterly to Princeton, Ill.

Peoria & Chillicothe Electric Railway, Peoria, Ill.—This company has awarded the contract to the Allen Engineering Company to make the surveys for the proposed electric railway from Peoria to Chillicothe via Mossville and Rome, and terminating at the Santa Fé Railroad depot in North Chillicothe. Work will be begun at once on this line. Among those interested are: Arthur C. Black, E. A. Mitchell and E. V. Mattice.

Rockford & Interurban Railway, Rockford, Ill.—Plans are being considered by this company to build a new bridge over Rock River in Rockford.

Lafayette & Northwestern Railway, Lafayette, Ind.—Surveys are being made and construction will be begun in April on this line to connect Lafayette and Chicago, via Rensselaer, Hammond, Princeton, Round Grove and West Point. It is stated that contracts are about to be closed for 250,000 ties for the line. O. L. Brown, general manager. [E. R. J., Nov. 7, '14.]

Keokuk, Ia.—Preliminary work on the proposed Keokuk, Ia., to Jefferson City, Mo., interurban railway is progressing. This line will extend to Argyle where connections with the Santa Fe Railroad will be made direct to Keokuk. At Melrose this railway will turn south into Missouri territory, and cross the Des Moines River at Francisville. H. W. Knight and Thomas Pettersen, Chicago, are interested. [E. R. J., Nov. 21, '14.]

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—During the next two weeks this company will award contracts to build 23 miles of new track. It also expects to build a 1500-ft. steel bridge and a 1200-ft. pile trestle.

Manhattan City & Interurban Railway, Manhattan, Kan.—During the next few weeks this company plans to build 1 mile of new track in Manhattan.

***Louisville, Ky.**—A syndicate of Louisville, Jeffersonville and Glasgow, Ky., men have purchased the property of the Olympian Springs Hotel Company, in Bath County, and the plans for improvement include the construction of a 3-mile electric railway to connect the hotel and the Chesapeake & Ohio Railroad. G. W. Armes, who will be manager of the property, said that an Eastern syndicate is considering the plan to build the lines and that the construction would probably begin this spring or early summer. M. H. Thatcher, Dr. Armes, John P. Haswell and J. T. Doores, Louisville; Frank A. Best, Jeffersonville, Ind., and William Henry H. Jones, Glasgow, are the proposed incorporators of the projected company, which is to be capitalized at \$200,000.

Southwestern Traction & Power Company, New Iberia, La.—Plans are being considered by this company to build a 12-mile line between New Iberia and Jeanerette.

New Orleans Railway & Light Company, New Orleans, La.—The new South Claiborne Avenue and Broadway line of this company in New Orleans has been placed in operation.

Shreveport (La.) Traction Company.—Work has been begun at once by this company on the extension of the Fairfield line from the present terminus at a point a few blocks beyond King's highway to Delaware Street in Shreveport, a distance of 1 mile.

Saginaw-Bay City Railway, Saginaw, Mich.—During the next few weeks this company will award contracts to build a ½-mile extension of its tracks in Saginaw.

***Benton Harbor, Mich.**—Plans are being considered to build an electric railway to connect Benton Harbor, Sister Lakes and Keeler and later to extend it to Paw Paw. Among those interested are: Henry D. Deam, Charles Sutherland, Sister Lakes, and N. Simpson, Jr.

***Libby, Mont.**—Amos L. Thompson, one of the directors of the First State Bank of Libby, is reported to have stated that plans are under way to build an electric railway from Spokane to Kalispell by way of Kootenai valley.

New York & Long Island Traction Company, Brooklyn, N. Y.—This company is asked to consider plans to double-track its line on the Rockaway Road and Rockaway Turnpike from Broadway, Ozone Park, to City Line, at Rosedale, a distance of 7 or 8 miles. The line extends from the Brooklyn city line to Freeport, in Nassau County.

Buffalo & Depew Railway, Depew, N. Y.—During the next few weeks this company expects to award contracts to build about 2 miles of extensions. It will also award contracts for 200 30-ft. and 35-ft. poles and 4000 6-ft. x 8 ft. ties.

Grand Forks (N. D.) Street Railway.—During the next two weeks this company expects to award contracts to build about 1 mile of new track in Grand Forks.

Cleveland, Alliance & Mahoning Valley Railway, Cleveland, Ohio.—The extension of this railway between Newton Falls and Warren will be completed and ready for operation by April 1.

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—The tracks of this company have now reached a point within the corporate limits of Athens, Ohio. When ready for operation on this end of the line there will be a complete connection between Nelsonville and Athens.

Toledo, Bowling Green & Southern Traction Company, Toledo, Ohio.—Since the City Council of Findlay has granted a franchise that this company will accept, an announcement has been made that the company will spend \$116,000 in Findlay upon its property during the coming summer. New rails, ties and other changes will be made on the city line to cost \$38,000, while the company's share of repaving the streets will cost \$48,000.

Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio.—This company has purchased 22 miles of 3/0, figure-8 trolley wire to be installed in a two-wire electric line between Willoughby and Nottingham on its Shore Line Division.

Cushing (Okla.) Traction Company.—This company is now operating about 17 miles of its line between Cushing and Drumright and has construction work under way for the electrification of 17 miles of steam track between Drumright and Jennings. Frank Brown, Independence, president. [E. R. J., Dec. 19, '14.]

Toronto, Ont.—Bids are desired until March 16 by T. L. Church (Mayor), chairman Board of Control, for furnishing material for the Lansdowne Avenue line in Toronto as follows: (a) track material, Contract "A" (rails, plates, bolts, spikes, etc.); (b) overhead line material Contract "B" (wire, fittings, etc.); (c) oak ties, Contract "C."

Toronto, Ont.—The new car line on Bloor Street from Dundas Street to Quebec Avenue in Toronto has been placed in operation. Plans are being contemplated to extend this line to Jane Street in Toronto.

Conestoga Traction Company, Lancaster, Pa.—Surveys have been completed by this company for a new 13-mile branch which will be an extension of the Lancaster & Coatesville division. The new line will begin about a mile east of Conestoga Park, near Mellinger's Church, follow the old turnpike to the Horseshoe Road, and along it to Witmer, from which place it will cross the country to Bird-in-Hand, and thence along the old Philadelphia turnpike to Intercourse.

Pennsylvania & Maryland Street Railway, Elk Lick, Pa.—This company is building a new steel bridge across the Elk Lick Creek in Elk Lick.

Montoursville (Pa.) Pass Railway.—During the next few weeks this company plans to rebuild its bridge on park section in Montoursville.

Carolina, Greenville & Northern Railroad, Greenville, Tenn.—Contracts will be awarded on May 1 by this com-

pany to build an electric line from Kingsport southwest to Newport, 75 miles. There will be five steel bridges on the line. H. S. Reed, 205 Grant Building, Los Angeles, president. [E. R. J., Jan. 30, '15.]

SHOPS AND BUILDINGS

Boston & Worcester Street Railway, South Framingham, Mass.—This company is preparing plans for the construction, at an early date, of a new carhouse and a large repair shop. It has not yet been decided definitely just where these new buildings will be located.

New York Municipal Railway Corporation, Brooklyn, N. Y.—The Public Service Commission, First District, has approved the proposed award by the New York Municipal Railway Corporation for the construction of nine stations on the Sea Beach line to Post & McCord, Inc., the lowest bidders, for \$331,163. The Sea Beach line is a reconstructed four-track railroad, which will join the Fourth Avenue subway at Sixty-fifth Street, Brooklyn, and extend from there to Coney Island. The reconstruction of this line is about completed, with the exception of the stations, tracks and other equipment. The stations to be constructed are at Eighth Avenue, Fort Hamilton Avenue, New Utrecht Avenue, Eighteenth Avenue, Twentieth Avenue, Twenty-second Avenue, Kings Highway, Avenue U and Eighty-sixth Street.

Oklahoma Interstate Railroad, Miami, Okla.—This company has opened an office in Miami.

POWER HOUSES AND SUBSTATIONS

United Railroads of San Francisco, San Francisco, Cal.—This company will add to its substation equipment a 1500-kw synchronous converter, three 525-kva transformers and switchboard ordered from the General Electric Company.

Arkansas Valley Railway Light & Power Company, Pueblo, Col.—This company has placed an order with the Westinghouse Electric & Manufacturing Company for three 150-kva, single-phase, thirty-cycle, 22,000-volt high tension, 460-volt low tension outdoor O. I. S. C. transformers.

Danbury & Bethel Street Railway, Danbury, Conn.—This company will place in operation in its power house a new 937-kva Curtis turbo-generator and has awarded the contract to build and install the unit to the General Electric Company.

Morris County Traction Company, Morristown, N. J.—During the next few weeks this company expects to build a new substation. Machinery for this structure has already been contracted for.

Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio.—This company recently purchased a new, all-steel, portable substation with complete electrical equipment from the Westinghouse Electric & Manufacturing Company to replace its Ashtabula substation which was destroyed by fire. The electrical equipment includes a stepdown transformer and a 300-kw, 650-volt rotary converter.

Toronto (Ont.) Suburban Railway.—This company's new substation at Thistledown, which has been in course of erection for several months, has now been completed and will be in operation in a few days. The station was built in connection with the extension of the railway to Woodbridge. A telephone system of dispatching the cars has also been installed.

Carbon Transit Company, Mauch Chunk, Pa.—During the next six weeks this company expects to purchase substation equipment including two 300-kw, sixty-cycle, rotaries with transformers, etc., to convert 11,600-volt, three-phase to 600-volt direct current for railway work.

Scranton & Binghamton Railroad, Scranton, Pa.—During the next four weeks this company expects to build a new substation at Foster, Pa. It plans to purchase transformers for its power plant to step up the voltage to 66,000 for transmission.

Chattanooga Railway & Light Company, Chattanooga, Tenn.—This company has placed an order with the Westinghouse Electric & Manufacturing Company for one 300-kva, three-phase, sixty-cycle, 11,400-volt high tension, 440-volt low tension, O. I. S. C. transformers.

Manufactures and Supplies

ROLLING STOCK

Scranton & Binghamton Railway, Scranton, Pa., has ordered four cars from The J. G. Brill Company.

Binghamton (N. Y.) Railway has ordered twenty double-truck cars from the Cincinnati Car Company, through W. R. Kerschner, its eastern agent.

Consolidated Street Railway, Cottonwood Falls, Kan., expects to purchase within the next twelve weeks one storage-battery car complete.

New York State Railways, Rochester, N. Y., has issued specifications for forty prepayment center-entrance cars for its Rochester lines.

Fresno Interurban Railway, San Francisco, Cal., expects to purchase within the next six weeks one suburban and one interurban passenger car.

Manhattan City & Interurban Railway, Manhattan, Kan., will purchase six open bench trailers and about two or three good second-hand, single-truck motor cars.

Wilkes-Barre & Hazleton Railway, Hazleton, Pa., has issued specifications, through L. B. Stillwell, consulting engineer, New York, N. Y., for ten all-steel interurban cars.

Carolina, Clinchfield & Ohio Railway, Johnson City, Tenn., has purchased from the McKeen Motor Car Company one 40-ft. 200 hp gasoline motor concrete mixing car for lining tunnels.

Chicago, Waukegan & Fox Lake Traction Company, Chicago, Ill., has purchased one 55-ft. 200 hp combined passenger-baggage gasoline motor car from the McKeen Motor Car Company.

Empire United Railways, Syracuse, N. Y., is considering the purchase of ten light interurban cars. Specifications have not yet been issued. It is reported that the company is also contemplating the purchase of about eighty additional cars at a later date.

Chicago & Milwaukee Electric Railway, Highwood, Ill., noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 2, 1915, as expecting to buy fifteen cars, has ordered this equipment from The J. G. Brill Company. The cars will be all-steel. The railway company retains an option of ordering fifteen more cars of the same type.

Yonkers (N. Y.) Railroad will soon go into the market for some new cars, probably a large-sized order. The Third Avenue Railway's new radial axle car was tried out in Yonkers recently and was operated very successfully on the steep hills with which the city abounds. Quite likely this will be the type ordered.

Boston & Worcester Street Railway, South Framingham, Mass., will probably order within a few days six closed and six open cars, twelve trucks and electrical equipment for same, to replace the eleven open cars and one closed car which were destroyed in its recent Westboro carhouse fire. E. P. Shaw, general manager of the company, advises that the railway may possibly decide to purchase good second-hand open cars instead of new cars, if the former are available in first-class condition.

TRADE NOTES

The J. G. Brill Company, Philadelphia, Pa., has received an order for forty auto buses from a concern in Chicago.

Quasi-Arc Company, New York, N. Y., dealer in Quasi Arc weldtrodes and electric welding accessories, has removed its offices from 111 Broadway to 61 Broadway.

Ed. Elson, of the Walter A. Zelnicker Supply Company, Universal Iron & Supply Company and the Zelnicker Crayon Works, St. Louis, who formerly made his headquarters in New Orleans, La., is now making his headquarters in Chicago at the Hotel Morrison.

Tool Steel Gear & Pinion Company, Cincinnati, Ohio, announces that it has again been awarded the exclusive gear and pinion contract for the Stone & Webster Engineering Corporation, this being the fourth year that the Stone & Webster companies have purchased tool steel gears and pinions under contract.

Sangamo Electric Company, Springfield, Ill., has received an order from the Pullman company for several thousand ampere-hour meters. This is the second large contract between the two companies for this type of meter. As rapidly as possible each and every Pullman sleeping and parlor car is being equipped with these ampere-hour meters to control the battery charge by the method developed by Ernest Lunn, chief electrician of the Pullman company.

General Electric Company, Schenectady, N. Y., has received orders for the following equipment: Norfolk & Bristol Street Railway, four GE-200, 40-hp four-motor car equipment; Chicago & Joliet Electric Railway, four GE-240-hp four-motor car equipment; Pacific Electric Railway, twenty-four GE-254, 135-hp four-motor car equipment; Empire United Railways, Syracuse, N. Y., twelve GE-200 40-hp two-motor car equipments and twelve straight air-brake equipment; Metropolitan Street Railway, Kansas City, Mo., fifty 50-hp, four-motor car equipments and fifty control and air-brake equipments; Sheboygan Railway & Electric Company, Sheboygan, Wis., two GE-247, 35-hp, four-motor car equipments; two CP-25 straight air-brake equipments and four GE-201 60-hp motors.

William Wharton, Jr., & Company, Inc., Philadelphia, Pa., now a subsidiary to the Taylor-Wharton Iron & Steel Company, are building a new and extensive plant at Easton, Pa., having begun work about June 1 last. The plot of ground on which the plant will be situated comprises fifty acres and is located just west of the city of Easton, with direct connections with both the Lehigh Valley Railroad and the Central Railroad of New Jersey, through which five other railroads entering Easton are reached. Nearly ten acres will be under roof when all the buildings are completed. The main shop, which will be devoted entirely to the manufacture of special track work for electric railways and steam railroads, will be more than 450 ft. square, consisting of seven bays and one cross-bay, and one bay for storage of supplies and partly finished material. Other buildings are the power house, a fine office building, a foundry for both steel and iron castings, a large pattern shop with laying-out floor and a forge shop. The Wharton company expects to combine the business of its present Philadelphia plant and Jenkintown plant at the new works, and in the forging department the business in all kinds of steel and iron forgings of the Tioga Steel & Iron Company, another subsidiary of the Taylor-Wharton Iron & Steel Company will be handled. The works will be equipped throughout with the most modern and improved machinery for the purpose. The plant will be in operation early next summer. As it is within 20 miles of the large foundry plant of the Taylor-Wharton Iron & Steel Company at High Bridge, N. J., where are made all the manganese steel castings for the special track work manufactured and sold by Wm. Wharton, Jr., & Company, a concentrated organization is possible.

ADVERTISING LITERATURE

Zelnicker Crayon Works, St. Louis, Mo., has issued a folder on its railroad crayons.

Keystone Varnish Company, Brooklyn, N. Y., has issued a catalog describing its washable linseed oil paint for interior painting.

Railway Supply & Curtain Company, Chicago, Ill., has issued a folder describing its car curtains, curtain fixtures, curtain rollers, vestibule curtains, vestibule curtain fittings, and curtain material.

Stow Manufacturing Company, Binghamton, N. Y., has issued a catalog describing its combination of flexible shaft and electric motor for drilling, grinding, buffing, die-sinking and screw-driver work.

The Automatic Shovel Company, Lorain, Ohio, has issued a catalog describing its electric railway shovels. The catalog contains illustrations of the shovel in actual operation in St. Louis, Cincinnati, Indianapolis and Cleveland, and also includes data on the results obtained.

Street Railway Signal Company, Inc., Philadelphia, Pa., has issued a catalog which describes and illustrates its contactor signal for either single or double track. These signals, "Model E," are of the all light trolley-contact operated type, having the three-position aspect for single track opposing protection, but permitting following movements. The catalog shows photographs of installations of

these signals on several electric railways, including the New York & Queens County Traction Company, Wilkes-Barre (Pa.) Railway and Terre Haute, Indianapolis & Eastern Railway.

Railway Improvement Company, New York, N. Y., has issued a very attractive and clearly-planned book entitled "The Clock Trust." The book contains a series of pages which show the brakeshoe, power and coal savings effected by twelve prominent electric railways, through the use of coasting recorders supplemented by the system of inducing motormen to use current economically by offering rewards and by ranking them. The book also includes reproductions of letters which contain operating engineering data on the saving of coasting recorders on about thirty different railways.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued Catalog No. 22 which describes its type AR single-phase motor, in sizes of $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3, 5, $7\frac{1}{2}$ and 10 hp for 60-cycle circuits, 110 and 220 volts. This motor is designed for starting heavy loads with minimum starting current. It starts as a repulsion motor and operates as an induction motor with constant speed characteristics. It is constructed for hard service under severe operating conditions, especially where the starting current must be kept at a low value. The company has also issued a catalog on its electric fans and data sheets on its current-limiting reaction coils and cam limit switches.

Cambria Steel Company, Johnstown, Pa., has issued a catalog describing its "Slick" steel mine ties for mine and industrial railroads. These ties are of rolled steel section, combining light weight with sufficient strength. The necessary rail fastenings, which consist of flanged buttons, are always in place, ready for use and cannot become lost or misplaced. The fastening buttons are adapted to be turned with comparative ease by means of an ordinary adjustable or solid wrench. One of the greatest advantages of the tie as used in mine room is due to the fact, illustrated by photographs in the catalog, that it is only $\frac{1}{2}$ in. high, as compared with a wooden tie, which is at least 3 in. in height.

General Electric Company, Schenectady, N. Y., has issued as a supplement of the *General Electric Review* a remarkably beautiful reproduction of two pages which were included in resolutions, contained in highly artistic book form, of appreciation on the occasion of the retirement of C. A. Coffin and the election of E. Wilbur Rice as president of the company. These resolutions were adopted at the twenty-ninth annual convention of the Association of Edison Illuminating Companies, Cooperstown, N. Y., 1913. The resolutions express deep appreciation of the constructive thought and effort of Mr. Coffin in furthering the development of the electrical industry, and tender congratulations to Mr. Rice on his appointment as a well-deserved recognition of his abilities and service.

Graphite Lubricating Company, Bound Brook, N. J., has issued an unusually complete catalog on the subject of oil-less bearings, which have special application as trolley wheel bushings for electric cars. As stated in a chapter in the catalog entitled "The Story of the Trolley Wheel Bushing" this company received its first order for twelve trolley bushings in 1889. It is now producing over a million per year. A remarkable instance of wearing quality is shown by an illustration of a trolley bushing which was recently returned to the company by the Colorado Springs & Interurban Railway, Colorado Springs, Col. This particular bushing, still in fine condition, had been removed from a worn-out 4-in. trolley wheel, after having run 27,633 miles. The catalog also contains ample testimony as to the excellent service of the "Bound Brook" bushings when used in connection with various other types of machinery.

The following significant editorial comment on the attitude of the Georgia Railway & Power Company in connection with the "jitney" bus appeared in the Charleston (S. C.) *News and Courier*:

"Incidentally, the plan taken by the street car people of arguing this matter out with the public on its merits is significant of the new attitude of capital in such matters. Such a move even ten years ago would have been regarded with amazement. Now it is accepted as a matter of course."