Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Minutes Saved in Transportation a Gain to All

FROM time to time we hear of plans for improvement of traffic conditions in this or that city—recommendations for double-berthing of cars, clearing the tracks of other vehicles, prohibition of automobile parking, etc. Less frequently we find that such recommendations become effective. We are sufficiently familiar with the obstacles that have to be overcome by railway managements to refrain from criticising when the ideals mentioned as possible do not become real.

However, the failure to take advantage of such recommendations does not lessen their value. At the October convention of the T. & T. Association, the committee on code of traffic principles presented a comprehensive report on this subject, and the discussion which followed indicated a real interest on the part of railway officials and city representatives. Many of the former had been discouraged by their inability to secure effective traffic ordinances or to have them enforced by local authorities. All knew the importance of a clear right-of-way in saving minutes that go to make up the car-hours which are now so costly.

A utility management can only do its own part in securing such improvements. The live operator knows that he has a better case in seeking help from a public service commission if he can point to a list of accomplishments indicating plain evidence of intensive development of the facilities at hand. Where he can show that further development has been prevented by opposition or by lack of co-operation on the part of the authorities or the public, his appeal is not likely to be made less effective thereby. Taking the other side of the question, the public can delay the coming of higher fares by insisting on just treatment for the local utility. The rights which are conceded when the municipality takes hold of a railway company should not be denied because the management is in private hands.

Who Says "Novelty Riding" to This?

THE other day we showed an Eastern railway man some up-to-date one-man car operation on the main street of a New England city and remarked cheerfully: "In one week these cars have increased patronage 60 per cent. What do you think of that?" "Oh well," was the owlish reply, "I guess most of that is novelty riding. Yankees like new toys. Wait a year and see what happens."

We went away from there with our head in our hands. As luck would have it, Mr. Burleson had just delivered a letter from the Terre Haute, Indianapolis & Eastern Traction Co.—safety car system *par excellence*. Terre Haute has had its year of that kind of operation, thought we. Let's see if there's any "novelty riding" gloom in the report of Brother Walker. Well, there was anything but gloom. The letter contained some riding and revenue figures in each case after just one year of operation up to Dec. 18. They are given below with statistics for the whole system for the first twelve days in January:

Line	Period	Per Cent Increase over Previous Year: In Service	In Revenue
South Seventh St.-Third St.	Dec. 1 to 18	20	36
North Eighth St.	Dec. 11 to 18	12½	14
South Seventeenth St.	Dec. 15 to 18	50	60
For all lines	Jan. 1 to 12	20	25

The industry knows that at Terre Haute "Business Follows Service" just as Mr. Walker believed it would. However, it is gratifying to be able to show the crape-hangers that not only do the American people appreciate the substitution of modern cars for ancient right away, but that the appreciation continues and grows into a most desirable habit. Here we have pitted safety car service after one year against safety car service as a novelty. If this be "novelty riding" let us have more of it to the confusion of the wiseacres who can see nothing but a hearse in any kind of trolley car and to whom anything less than a dime looks like a most contemptible form of money for a car ride!

Choice of Transportation by Plebiscite

THOSE students of American civics and economics who have expressed their amazement—and amusement—at the variety of strictly technical questions placed before American electors for decision will have new cause for wonder at our temperament when they read of such a poll as that of the Broadway (New York) Association in which the vexed question of car versus bus was up for consideration. We could put up a fairly sound argument for allowing the taxpayers to decide almost offhand upon transport questions that hit their pockets directly, such as constitutional amendments relating to enlarged canals; but how can we excuse the action of a body of so-called "hard-headed business men" who, without any thought of investigation whatsoever, blithely decide that they want the tracks removed and buses substituted for cars. If this be hard-headedness, it hath an osseous basis.

This is no place to discuss the morality of wiping out the present actual investment in the Broadway surface car routes—an investment that is enormously greater than it should have been, because the city of New York forced the railways to build the extremely costly conduit system instead of the economical overhead trolley. Let us forget the past for a moment and get down to the unescapable facts of today.

Car Versus Bus as to Speed and Obstructiveness

IT IS to be presumed that the majority of the members voted for the bus because they thought it would be faster, would be less obstructive, would carry more people and would charge less fares than the electric car. Let us take up these factors in order and see what the *facts* are.

First, as to speed: In London, where the buses, after leaving the congested section, spread out over a large number of routes, the average schedule speed of a thirty-four-seat vehicle is but 8.5 m.p.h. It is true that the operating company believes that a higher schedule speed would be attainable if it was permitted to have a free running speed higher than 16 m.p.h., but the same thing would be true if the London tramcars were permitted to have any free running speed they pleased. Now, actually, the seventy-eight-seat London car shows a schedule speed of 8.5 to 9 m.p.h. in spite of the fact that it is tied down to the rails. Anyone who has studied car operation knows that a smaller car averages fewer stops per mile. Therefore, it needs little perspicacity to see that if London's cars were thirty-four-seaters they would be substantially faster than the buses of equivalent capacity. It is significant that even the latest London bus does not seat more than forty-six passengers.

Coming right down to Manhattan Island, New York, we find that the Fifth Avenue Coach Co., which operates over New York's widest, and trackless highways, has a schedule speed of but 8.2 m.p.h. This is the average speed, so it goes without saying that it is less than 8.2 miles on the busier sections. On narrowest and busiest Broadway below Forty-second St., the fifty-one-seat cars average only 6 m.p.h., but on Broadway above Forty-second St., also with fifty-one-seat cars, the average schedule speed is 8 to 10.6 m.p.h. This gives a non-weighted average speed slightly in excess of 8 m.p.h. Obviously there would be no superiority of buses on a seat-for-seat basis, for the buses on Broadway would surely be slower than those running over a combination like Fifth Ave. and Riverside Drive. New York's jitney buses of small single-deck type are as slow as 6 to 7 m.p.h. on the really congested lines. It is significant also that in its recent proposals, the Detroit Motorbus Co. figured on no better speed than 9 m.p.h. for routes to include quite a lot of fairly open boulevards.

As a matter of long observation, both here and abroad, it would appear that on any long thoroughfare where traffic police control is exercised at almost every intersection, there is no noteworthy difference in the schedule speed of a large car and a middle-size bus. The only buses that usually are faster are those of the twelve to sixteen-seat jitney type which, because of their smaller size, make fewer stops and can also "worm their way" in and out of a traffic snarl better than a bus of street-car width.

Second, as to obstructiveness. Again, we may appeal to the far greater experience of the English. In a paper read late last year before the Institute of Civil Engineers of Great Britain, H. H. Gordon noted that the very failure of the buses to *keep in line* over London Bridge gave only 41 per cent efficiency in the use of that highway. He quotes the traffic branch of the Board of Trade (the body whose transit work has been taken over by the Ministry of Transport) as rating the obstructiveness of the car at 9 and the bus at 4 as individual vehicles; but if this is worked out on the basis of seats, the ratio is 9.2 to 9 in favor of the car in fair weather when all the bus seats are available. In wet weather, of course, the open-top London bus, like the open-top New York bus, loses half of its seating capacity. Hence in wet and cold weather, the bus is twice as obstructive as the car. The advantage of ability to run up to the curb to take on and discharge passengers is not particularly great with larger, wider buses, as they cannot pull up even to a fixed stopping place without delaying following traffic. It must be borne in mind, also, that every time a slow-moving bus turns out of the general line of traffic to make the curb, it slows up all traffic behind and does an accident-breeding thing besides. A bus of Fifth Ave. type is too wide to pull up to the curb on lower Broadway without slowing up following traffic.

Other Things the Broadway Association Overlooked

NOW, as to carrying more people: It is obvious that if the forty-four-seat Fifth Ave. buses do no better than 8.2 m.p.h. over their entire route and less than that on congested Fifth Ave., they would certainly do no better on narrower Broadway with its enormous commercial trucking and frequent obstruction of vehicles standing at the curb. Single-deck buses seating up to twenty-four and possibly thirty passengers would be faster, but not enough faster to make up for their smaller capacity. The real advantage of the bus is not superior capacity over a street already supplied with trackways, but ability to develop new routes where the traffic is insufficient to warrant the construction of tracks and usually at higher fares. The only way to get bus capacity even approximating that of a car is to use a double-deck; but the double-deck in turn slows down the time of interchanging passengers, as the most amateur observer can see for himself.

Last of all, we come to the matter of fares: Has the Broadway Association any idea that the motor bus will carry people for 5 cents up and down the only street that runs through Manhattan Island from stem to stern? It can't be done! Has the Association overlooked the trifling fact that the Fifth Avenue Coach Co. operates on a 10-cent fare with a much shorter haul?

The operating expenses per bus-mile (exculsive of 6.02 cents for taxes) of that company were 29.03 cents for the fiscal year ended June 30, 1919. In view of the fact that the Fifth Avenue Co.'s platform wages have been heavily increased since, and that gasoline is still going up, there is no magic cheapness about the operation of even this highly-efficient company. Or is it possible that the Broadway Association, like Grover A. Whalen, New York's Commissioner of Plant and Structure, thinks that one-man operation is peculiar only to the motor bus? Hardly, with some 125 to 150 cities already using the safety car! We do know that a thirty-two to thirty-five-seat one-man safety car is entirely practicable, but so experienced a bus operator as Harold B. Weaver of the Chicago Motor Bus Co. stated at the January, 1920, Highways Transport Conference in New York that a thirty-seat bus could not be run by one man on anything like a decent schedule. On the other hand, it is a fact that one-man safety cars negotiate busy streets at the same speed as a bus of three-fourths the capacity. Facts, such as quicker ingress and egress,

stubborn things. We do not intend in this connection to discuss the question of whether one-man safety cars are suitable for the north and south line traffic in the city of New York; but we do know that with such operation their over-all cost of carrying a passenger most comfortably and most speedily would be far below the true cost of operation by means of any motor bus now available.

There is an old saying that we should not throw the dirty water out of the window until we are assured of clean; neither should we rush to the new ills and sorrows of the motor bus until we have actually exhausted the resources of the trolley car. Let us repeat that there are many wise and legitimate uses for motor buses; but the substitution of the bus for the car on long straightaway routes where track is already in place is not one of them. There was a reason for the supersession on Broadway of the horse bus by the horse car, and that reason still holds good.

May we not hope that on sober second thought the Broadway Association will go into a subject so vital to itself on a truly business basis and not permit its members to be misled by the same enthusiasms that in an earlier day built many a mile of useless track to be paid for in the higher fares and receiverships of today?

The Negro Bugaboo and the Safety Car

ALL THROUGH the South there has been a great supposed barrier to the more extended adoption of the one-man safety car; namely, the handling of negroes and white passengers in and out at the same entrance-exit. The feeling that this problem was a real obstacle to the use of the small cars has been so keen and so generally prevalent in the South that we recently took special pains to investigate this through personal observation and interview of the railway operating officials through the Southeast, South and Southwest.

In the Southern cities which are not yet using one-man cars, one of the first reasons given for the delay, usually, is fear of race trouble. In those cities which have undertaken the use of safety cars, the first installation has been hesitatingly made on a line having the least negro travel and with full expectancy that something would happen and with everything in readiness to pull off the trouble-making cars.

But these apprehensions have never become realities. So the initial installations have been extended to other lines having more and more negro passengers. And always this apprehension of trouble has been present to cause much uneasiness, but it has never materialized. Thus while nearly all Southern managements feel that herein lies a great potential source of trouble which might break out to bring complete discredit to the safety car and perhaps force its abandonment, the actual results of the roads having experience is causing this feeling gradually to be dispelled.

The conclusions we have reached are that the negro problem is largely mental, that it does not form a real barrier to the adoption of the safety car, but that judgment should be used in introducing the cars to the public, starting on those lines having light negro travel and working to the heavier ones. If this simple sound procedure is followed, there is no need for fear nor is this potential trouble ever likely to become seriously a reality.

Go After the Commercial Traveling Man

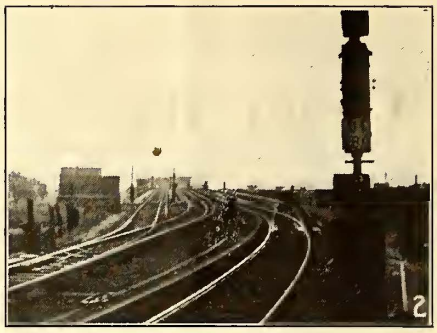
MANAGERS and operators of interurban lines should not overlook any good opportunity to advertise their service in such places and manner that it will be brought forcefully to the attention of the commercial traveling man. Here is a class of patronage which, if attracted and held, may bring into the railway coffers many needed dollars. At present there is more traveling being done than ever before in the history of the country. Everywhere hotels are crowded to capacity and prospective guests are being turned away, yet the railroad facilities for handling this increased travel are below normal.

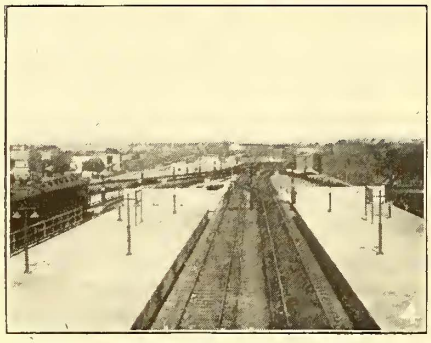
Most interurban lines pass through many small or medium-sized towns where the average traveling man is limited to a very few calls. His ambition is to make as many of these towns as possible in a day, yet complete his business in each. If he depends upon the steam railroad, he is probably limited to one town, but he often uses it because he knows little or nothing about the interurban, and when he makes inquiry concerning trains from the hotel porter, he generally receives from this functionary information concerning steam trains only.

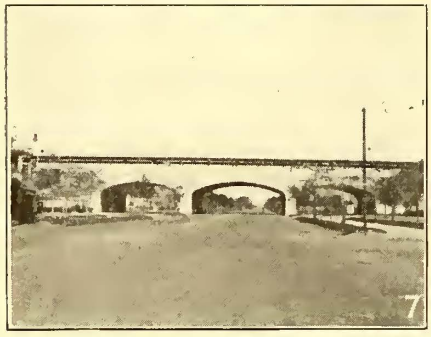
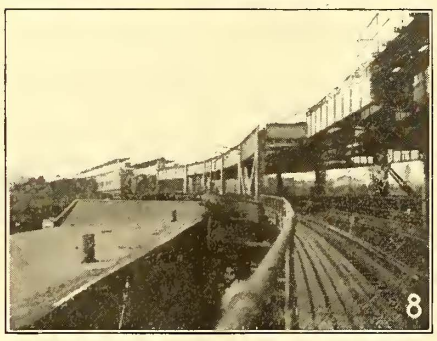
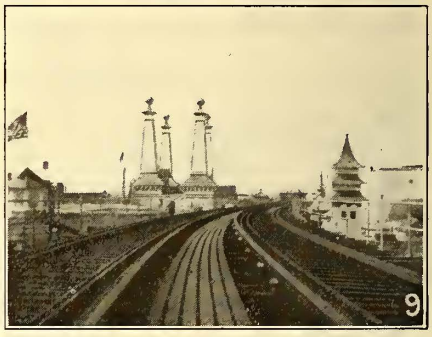
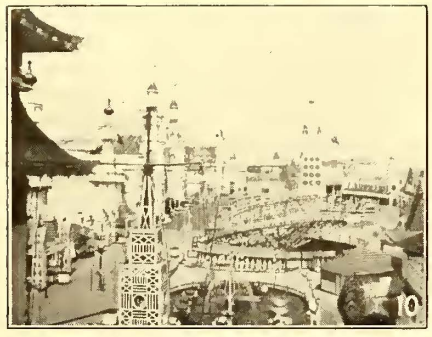
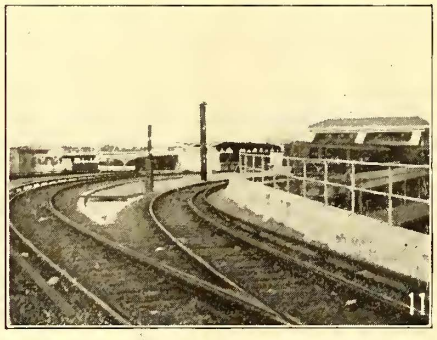
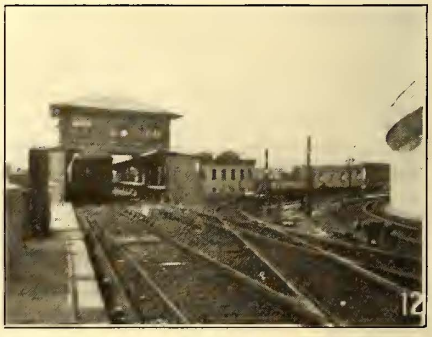
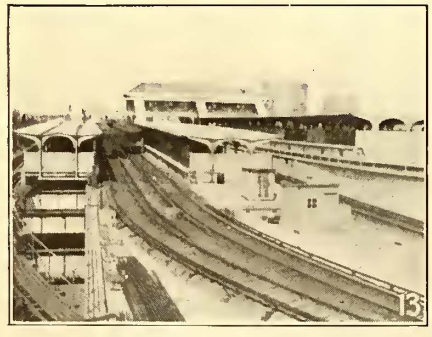
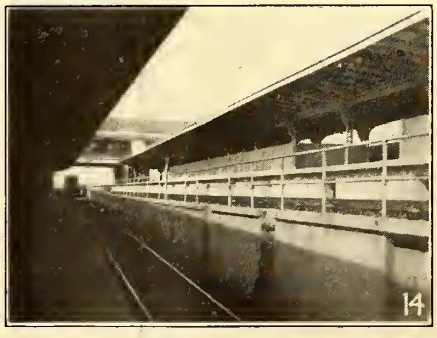
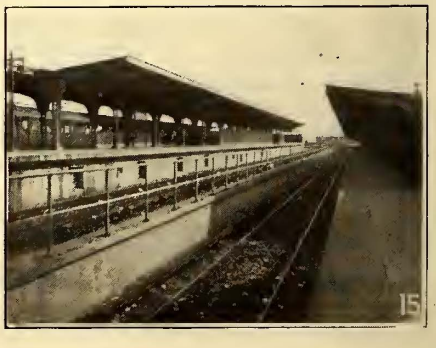
It is true that many traveling salesmen carry sample trunks, but the percentage of the total is not large, and, even so, the majority of interurban lines today are equipped to handle baggage. Those which are not so equipped must concentrate on the man who travels with a grip and portfolio.

An example of what a traveling man can accomplish by using the electric lines may be cited from the actual experience of such a traveler. This man, on a certain morning, left Chicago by the Chicago, North Shore & Milwaukee R.R. at 7 a.m. Arriving at Milwaukee, Wis., 80 miles distant, he made three successful calls, and boarded a Milwaukee Northern car for Sheboygan, 57 miles away. Here he made three calls, and found each party out. He ate dinner and repeated each call with success. At 3 p.m. he boarded an Eastern Wisconsin Electric Co. car for Plymouth 16 miles away, and made two successful calls. Leaving Plymouth at 5:58, he returned to Sheboygan, made one call, and had supper. From Sheboygan he returned to Milwaukee, spent forty-five minutes visiting the Arcade, and returned to Chicago, arriving in the loop at 12:45 a.m. This man in the round trip covered 318 miles, visited three cities, and made nine successful business calls. The same thing could be accomplished on many interurban lines, but the traveling man as a rule does not know it.

The most important place to advertise the service to the traveling man is in the hotel, not only in the leading hotels of terminal cities, but also in the hotels all along the line. The hotel cigar counter is a most excellent place to carry on the propaganda, either in the form of a framed notice, or by the distribution of pamphlets and time-tables. In the smaller towns, restaurants and, if possible, railroad stations, are good places to advertise the service. The hotel porter is, of course, a most important medium. His acquaintance should be cultivated, and he should be supplied with complete information concerning the service, and with time-tables and descriptive pamphlets. Teach him to think and talk the "electric way" first. The results may be surprising.



THE NEW TERMINAL AT CONEY ISLAND

No. 1—Junction of Sea Beach and West End lines at Coney Island Creek bridge and entrance to Stillwell Avenue terminal; Interlock tower controlling train movements at the north end of the terminal. No. 2—Two tracks across bridge branching into four just beyond interlock tower. No. 3—Four tracks branching into the eight terminal tracks on the structure. No. 4—Looking back on the same eight tracks converging into four; concrete platforms at north end of station. Nos. 5 and 6—Opposite views of Brighton Beach four-track line where the structure becomes double-decked. No. 7—Graceful structure and station over Ocean Parkway, the principal automobile route to Coney. No. 8—Double-deck structure looking toward Gravesend station from the east. No. 9—Right-of-way only 40-ft. wide through amusement park, necessitating double-deck structure. No. 10—Luna Park in the heart of Coney's amusements, from the double-deck structure. No. 11—Brighton Beach line upper deck express tracks curving into Stillwell Avenue station. No. 12—Brighton Beach lower deck local tracks curving into Stillwell Avenue station; Norton's Point shuttle line station at left with interlock tower above it, controlling movements at the south end of Stillwell Avenue station. No. 13—Stillwell Avenue station and trainmen's building from interlock tower at south end of terminal. Nos. 14 and 15—A "close-up" in the terminal, showing the construction and the two track levels to connect with the upper and lower decks.

Handling Coney Island's Crowds

Extensive New Terminal Facilities for All Elevated and Subway Lines Involve Many Engineering Difficulties and Provide Efficient Means of Handling the Enormous Throngs of Pleasure Seekers

CONEY ISLAND, famous the world over as an amusement park and bathing beach, has two appeals to the transportation department of the Brooklyn Rapid Transit Company, which operates the important railway lines serving this popular resort. It is a delight from the point of view of the immense source of business it creates, but a bane to the operating personnel on those occasions when a sudden thunderstorm transforms the light-hearted pleasure seekers into a rushing, crowding mob bent on getting home immediately, and impatient and angry at the inability of the company to receive it *en masse*.

In this respect the Coney Island crowds are perhaps not different from other crowds, except that they number such multitudes. It is not uncommon for the Brooklyn Rapid Transit Company to handle a half million people on a hot Sunday, of which about 300,000 passengers (in and out) will be handled by the three elevated and subway or rapid transit lines. Nor is it uncommon for the rapid transit terminal facilities to be pressed into the necessity of receiving 25,000 outbound and 5,000 inbound passengers in an hour. Then there is a normal week-day traffic in the summer of about 90,000 passengers, in and out, handled by the rapid transit lines, and even a winter traffic of 18,000 passengers a day which must be served.

Such crowds and their habit of travel gave rise to the necessity for spending $1,500,000 in an immense new terminal project for all lines entering the island, exclusive of surface lines. This was begun in 1916 and prolonged through the delays consequent generally to the war conditions, so that it is just now reaching completion. The problem of providing the terminal facilities for the rapid transit lines to handle the large volume of traffic was complicated both by the engineering difficulties of providing for a complex train movement on a limited private right-of-way, and by the necessity of collecting fares of passengers leaving as well as entering the terminal. The surface lines, while somewhat restricted in their terminal facilities, were not included in the terminal project covered by this article.

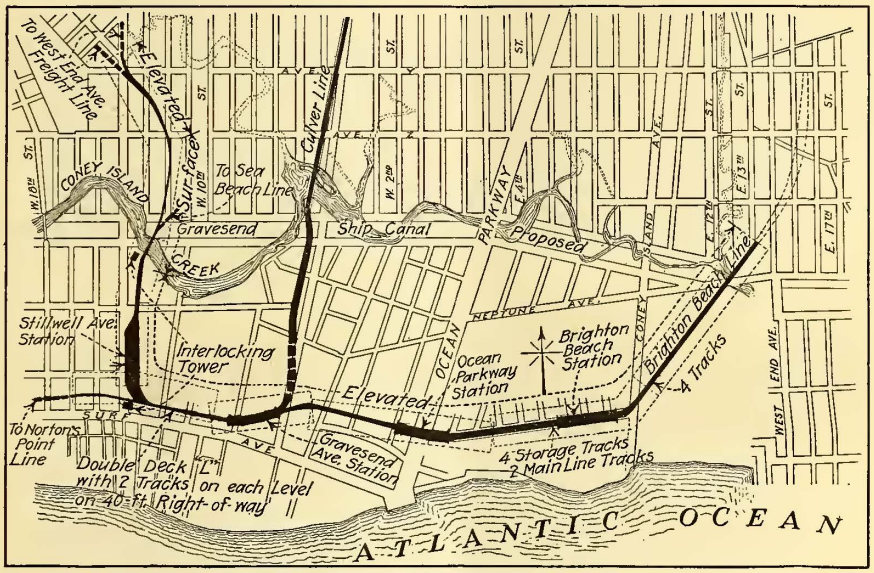


FIG. 1—MAP SHOWING THE COMPLETE LAYOUT AND TRACK CONSTRUCTION INVOLVED IN THE TERMINAL PROJECT

Formerly, all of the rapid transit lines serving the island were laid on the surface. Two of the lines fanned out into a common small stub-end surface terminal and the third line entered the island at the east end and ran up a 40-ft. right-of-way parallel to Surf Avenue, terminating simply in a two-track stub end at about the center of the island. Evidently, these limited facilities were quite outgrown, and when it came to working out new terminal facilities, the limited right-of-way property available made it desirable to combine all of the rapid transit lines into a single terminal plan whereby the principal terminal station could be placed at a point at which the necessary amount of property was available, and which could be made to serve all lines. The plan also looks toward an ultimate through routing scheme of operation between the various lines, although the trains are now stub-ended in the terminal.

In general the island is served at present by three rapid transit lines—the Brighton Beach elevated line, the Sea Beach subway line, and the West End subway-elevated line. The manner in which these three lines enter the island and terminate in the Stillwell Avenue station is readily seen from the map of Fig. 1. A fourth rapid transit line reaching from the city to Coney Island is called the Culver line. This is an elevated railway which is being built by the city and is completed at the present time as far as Avenue X, Coney Island, leaving a link about 600 ft. long to be built to connect it up with the terminal facilities. As soon as this connection is built and operation begun over this line, it will be obligatory for the operating company to charge but a single 5-cent fare for the ride to Coney Island, the present fare being 10 cents. Of this 10-cent fare, the first nickel is paid upon entering the subway or elevated station, as usual, when going to Coney Island, and the second fare is collected when the passenger leaves the terminal at the island. On leaving the island, passengers pay the 10 cents upon passing through the station turnstiles and receive a ticket which is collected at a certain point en route to the city.

The complete terminal project involved the construc-

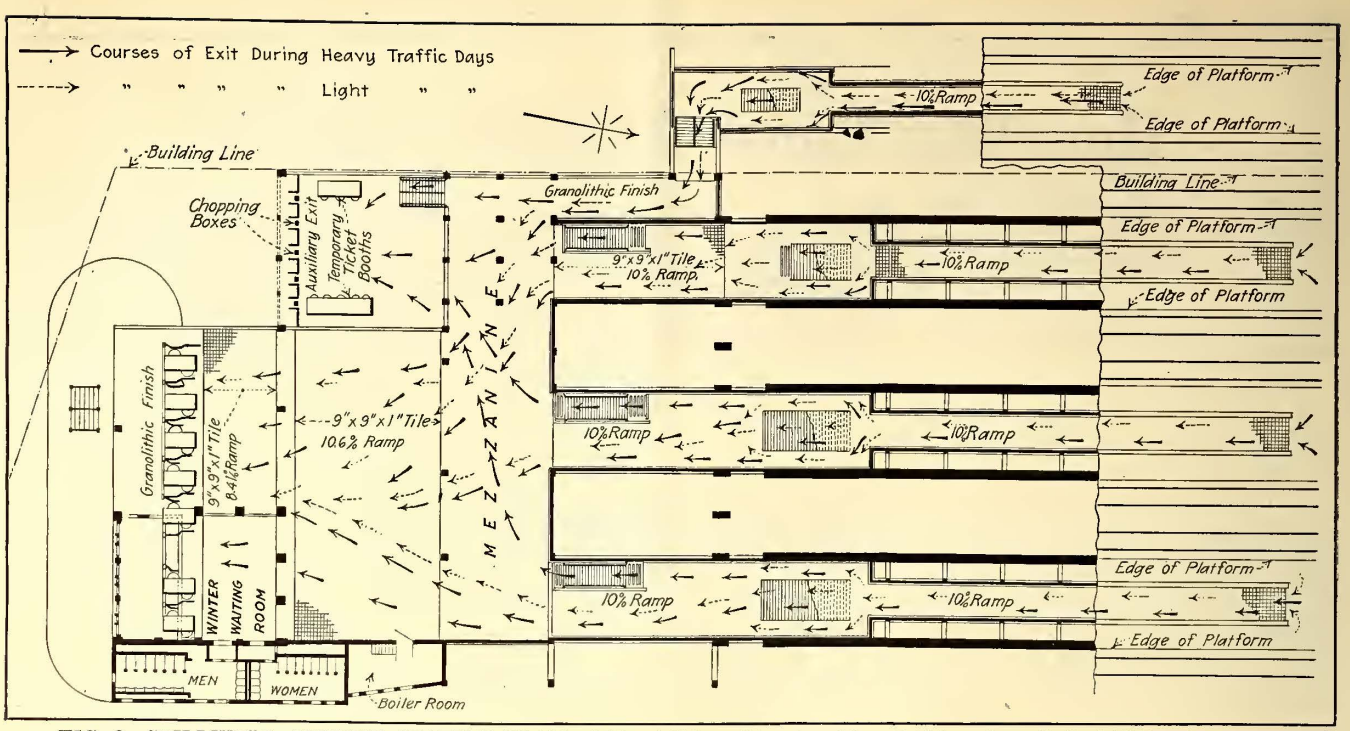


FIG. 2—STILLWELL AVENUE STATION PLAN AND FACILITIES FOR CONTROLLING THE CROWDS—ARROWS INDICATE LIGHT AND HEAVY TRAFFIC EXIT PATHS

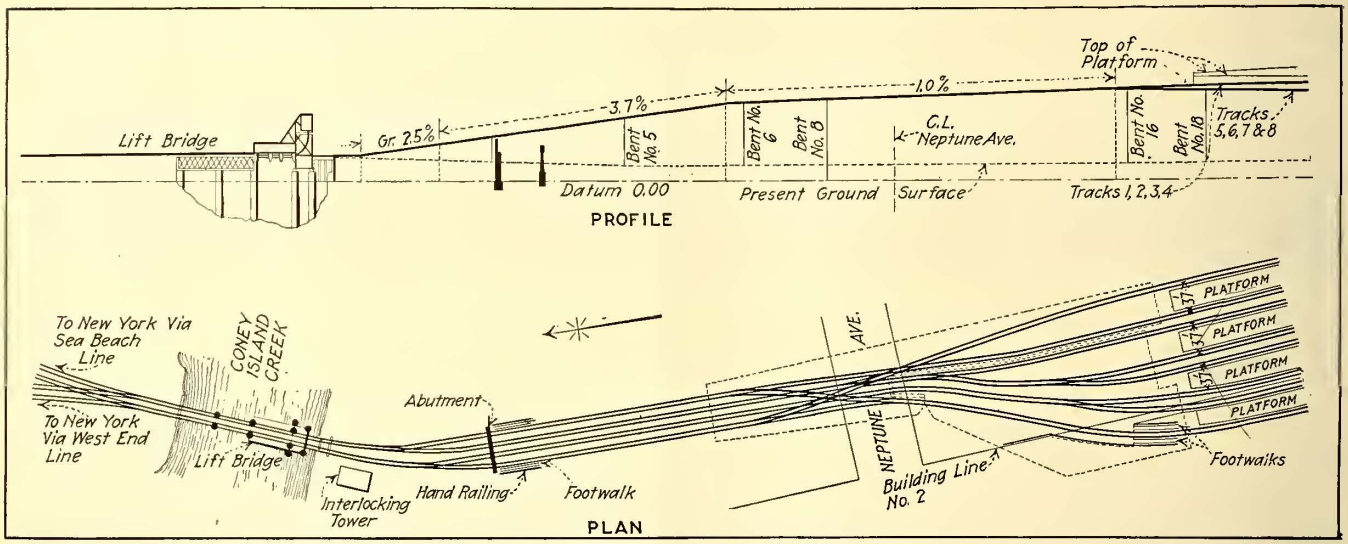


FIG. 3—TRACK PLAN SHOWING COMPLICATED SPECIAL WORK AT THE NORTH OF STILLWELL AVENUE TERMINAL

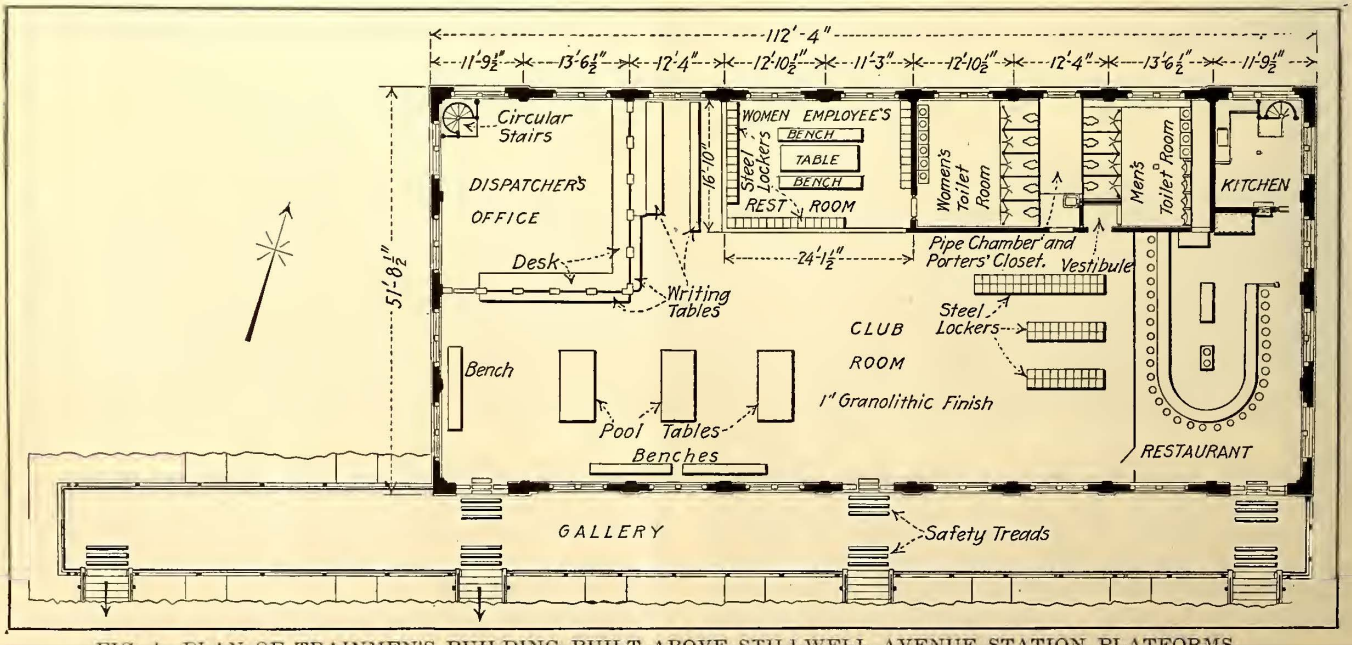


FIG. 4—PLAN OF TRAINMEN'S BUILDING BUILT ABOVE STILLWELL AVENUE STATION PLATFORMS

tion of new elevated line for all of the rapid transit railways on the island. The Brighton Beach line, which enters the island from the east end, was elevated from the point indicated on Fig. 1, and extended in a four-track structure to the Brighton Beach station. From here the track broadens into six tracks to provide a small storage trackage. Beyond the Ocean Parkway station the track again narrows into the four-track line, and between this station and the Gravesend Avenue station, the structure narrows into one of two-track width, with the two outside tracks of the four-track line and the two center tracks, respectively, extending onto the lower and upper levels of a two-deck structure. This character of construction was made necessary by the fact that the company had only a 40-ft. right-of-way up through the heart of the amusement park, and parallel to Surf Avenue. From this double-deck construction, these four tracks of the Brighton Beach line curve around into the Stillwell Avenue station, taking four of the eight tracks with which this principal terminal is equipped. For the Brighton Beach service, the express trains are operated over the upper deck of the structure, while the local trains are routed over the outside tracks on the four-track right-of-way and over the lower deck on the double-deck structure. Both the local and express Brighton Beach trains are at present stub-ended on the four center tracks of the Stillwell Avenue station. As they approach Coney Island, they discharge a good share of their load at the Brighton Beach, Ocean Parkway, and Gravesend stations before entering the Stillwell Avenue terminal. But their principal loading point on the return trip to the city is undoubtedly at the Stillwell Avenue station.

TEMPORARY CONSTRUCTION AT THE TERMINAL

Top view (No. 16), temporary five-platform wooden terminal installed on the surface beside the site of the new terminal during the construction period. Bottom view (No. 17), temporary tracks laid beside the terminal approach structure and leading to the temporary terminal.

The West End and Sea Beach lines enter Coney Island from the opposite end of the semicircular island trackage. These two lines converge into a single two-track line to cross a lift bridge over Coney Island Creek, and then spread out into four tracks, and from these tracks into the eight tracks of the Stillwell Avenue station. From the elevated structure of the West End line and from the open cut right-of-way of the Sea Beach line, the two lines join on the surface into the two-track line crossing Coney Island Creek. From here the tracks rise gradually until they reach the level of the Stillwell Avenue station, which is of concrete-slab construction, placed on steel pillars strengthened with $\frac{3}{4}$-in. and $1\frac{1}{4}$-in. bars and incased in concrete. This leaves the space underneath the station available for the storage of surface cars.

In the Stillwell Avenue terminal, under present operation, the West End trains are stub-ended on the two westerly tracks while the Sea Beach trains are stub-ended on the two easterly tracks. It will be seen, however, that practically all of these tracks extend through the terminal at either end, so that it will probably ultimately be operated as a double-end station with trains through routed from one line to another.

When completed the new Culver line will presumably share terminal trackage with the Brighton Beach line. The Gravesend Avenue station will also serve this line as a loading and unloading point in the amusement park. The shuttle line which is operated from Stillwell Avenue down to Norton's Point at the west end of the island, has also been brought up onto an elevated structure and the track arranged to connect through with the main terminal facilities in order to interchange cars.

The extensive switching necessary in handling the train movements into and out of both ends of the Stillwell Avenue terminal are controlled from two interlocking towers located as shown in Fig. 3. These tower equipments as well as all of the track signalling equipment was supplied and installed by the General Railway Signal Company. There is also a small interlocking equipment installed at one end of the Ocean Parkway station which controls the movement of Brighton Beach local and express trains on heavy traffic days. On light days this interlock is not used, as all trains are operated over the "local" tracks only. The tower at the Coney Island Creek is a large one, requiring two men to handle it. This controls the movements of both Sea Beach and West End trains through the junction of the two lines, in and out, and through the complex two-track-four-track-eight-track special work with various cross-overs at the north end of the terminal. This track plan is shown in Fig. 3.

The problem of handling passengers in and out of the station is complicated by the necessity to collect a fare in both directions. Thus, passengers leaving the station must pay a second nickel, while those entering the station and moving in the opposite direction must also pass through turnstile ticket booths. For this reason, it was necessary to arrange these turnstiles mechanically, so that they would turn in either direction and register a passenger either leaving or entering the station. The regular ticket booths across the front end of the station entrance are supplemented by auxiliary ticket-selling booths and ticket-chopper boxes installed at the west side of the ground floor area. Two sets of arrows have been inserted in the plan (Fig. 2) of the terminal to indicate the streams of passengers during, respectively,

heavy and light traffic days. On light traffic days the ticket booths at the very front of the station are used for the movement of passengers in both directions, and the other exits are closed. But on heavy traffic days, the supplementary exit mentioned before is opened and passengers leaving by this route purchase tickets at the temporary ticket booths, which are dropped in the chopper boxes as they pass through and out.

The great expanse of the area devoted to the entrance and exit of passengers to and from this Stillwell Avenue station, which is the principal terminal at the island, indicates without elaboration the extent of the facilities which are provided for handling large crowds. One of the features of the station is that while stairways have been provided, these have been shunted by large inclined walkways or ramps. These not only make it possible for the crowds to move more rapidly, but permit them to do so with greater safety and ease.

The terminating of the various rapid transit lines at the Stillwell Avenue station made this a desirable point for the location of a trainmen's building. This was provided without purchasing additional property by placing it up on the Stillwell Avenue station structure, above the platforms, and spanning five of the eight tracks. The floor plan of this building and the manner in which it is occupied and used is clearly shown in Fig. 4. A long gallery along the front of the building communicates by means of stairways with each of the four platforms, and makes it very convenient for the trainmen to go back and forth between the dispatcher's office and trainmen's room, and the platform and their trains.

Random Notes About the South

Impressions of Various Cities, Their Railway Systems and Their Business Conditions Gained During a Recent Trip Through the Coast and Gulf States

BY "SPECTATOR"

IN Atlanta, Ga., one has an excellent opportunity to observe how insufferable traffic conditions may become when permitted to follow a natural course unregulated. Any reactionary city father from another city who obstructs the passage of sound traffic restrictions has only to spend a day in Atlanta to appreciate what will sooner or later be the condition in his own town. The condition has ripened to this ultimate of chaos, confusion and delay earlier in the Southern metropolis than in almost any other city, partly on account of the complete limitation of all cross-city movements to three streets, only 200 ft. apart, which pass through the downtown section and are the principal business streets.

In addition to this cause of the congestion, three other evident reasons contribute to the general scramble. First, the streets are narrow and intersect at various angles. Second, both sides of the streets from morning until night are lined almost solidly with automobiles parked without time limitation and standing as nearly at right angles to the curb as the space between that and the car tracks will permit, thus leaving only the trackway for the movement of all vehicles. Third, the traffic policemen have a most peculiar system, or rather lack of system, of signaling and getting the traffic by.

This last is, of course, an easily remedied cause and hence not of great importance. But the writer marveled at the confusion attributable to the traffic officer himself and to his petite signal—cute, but almost invisible from 100 ft. away, because of its size and its aged painting and dilapidated condition. After watching these things at various corners, particularly at that known as "Five Points," the writer could not restrain the thought—"Wouldn't a Chicago or New York traffic cop delight the motorists and motormen here."

Is there any wonderment then at the statement of the railway men that "the congestion on our streets is worse than it is in New York." In point of confusion, if not in volume of traffic, they are right. There is no wonderment, either, at the fact that it takes the street cars thirty minutes to traverse the downtown section during the evening rush. Despite this almost incredible condition—incredible as existing in the city that desires to be the "greatest city of the new South"—Atlanta has no anti-parking regulations. It continues to make a garage of its Peachtree Street and other fine business streets. Certainly the injustice which this inflicts upon the vast majority of the people of the city who must depend on the street cars for transportation to and from their homes is so flagrant as seemingly to cry out for immediate adjustment, not to mention the serious costliness of this condition to the railway company. It puts an absolute barrier between the company and its aim to provide efficient service for its patrons.

How absurd, then, that the Mayor should veto the tardy ordinance recently passed by the City Council providing for some helpful though not adequate limitations upon parking, on some insignificant grounds, presumably that the railway would benefit too greatly thereby. The company would benefit some; enough, perhaps, to cope with the increasing operating expenses for another few months. But how much greater would be the benefit to the riding public and how much more efficiently could the business of the city be transacted.

Much is it to be hoped that this beautiful and progressive city of the South will not permit itself to be longer throttled by failure to remedy conditions so readily remedied. To this end, the speedy completion of the study now being started by a committee composed of representatives of the merchants, manufacturers, railway company and other interests, must certainly be the wish of every enlightened resident of the Gate City.

ATLANTA COMPANY PROSPERING NOW

With cotton selling at from 40 to 60 cents a pound and tobacco at $1.25, not to mention the immense sums of money left by the hosts of soldiers at the numerous camps placed in the warmer climate, there is money a-plenty in the South, and this has stimulated

a business activity which is probably without precedent. The city of Atlanta is enjoying a generous share of this activity and prosperity, and the town is crowded. This condition is of course reflected in the number of passengers hauled by the local street railway. And having the good fortune to combine heavy haulage with a 6-cent fare the company is in the coveted position of showing good earnings and an operating ratio during the last two or three months which is getting down toward that of the old days when a nickel would buy 5 cents worth of material or labor. If the prevailing business conditions continue and some unwarranted and extravagant increase in wages does not have to be conceded, then Atlanta will be one more city added to the list of companies that are able to pay their obligations to owners and investors and have a small margin of safety left with which to insure the necessary flow of new capital into the property.

Should a Man Act as Judge in His Own Case?

Time was when those railway managements which did not have state public service commissions to deal with were considered fortunate by a majority of the men of the industry. That was in the days when all rate revisions were revisions downward. But times have changed in this respect as in most others. The situation at Jacksonville, Fla., brings this to mind. Florida has a State railroad commission, but it is without jurisdiction in the case of the Jacksonville Traction Company which holds a franchise granted by the people of the city. This franchise specifies a 5-cent fare, and the only way that this can be increased is by grant from the same power that authorized the franchise.

The Jacksonville property, unlike some of the railway companies of the South and other parts of the country which have had prosperous electric lighting departments to hold them up, was recently placed in the hands of a receiver as the inevitable outcome of operation at a loss—a loss continuing in this case since 1914. The company had sought relief through a petition for a 7-cent fare and had made effort to show the people why this was the only way it could solve its difficulties. It succeeded in convincing the City Council that its case was well founded, and this body voted twelve to six for the increase. But the necessary referendum followed about forty-five days later with the usual result. A total of only about 2600 votes were polled, two-thirds of which opposed the increase. The company's enemies were of course all out to vote, while its friends were not, and the result which is usual the country over was recorded here. But friendly or unfriendly, it is human nature to oppose any increase in personal expenditures, if the right to oppose is afforded. So the receivership followed.

The outlook, to say the least, is not bright. There is no direct appeal from the decision of the voters—nothing much that can be done except to come back again to the people in a discouraging second effort to educate them to the injustice of exacting their pound of flesh.

How much better, then, in general, is the outlook for those companies which are privileged to rest their case with a state commission. Here there is a small body of men having expert knowledge of and the intelligence to appreciate the problems and obligations of the street railways and their tremendous value to a community. Such a body can be given the facts, can satisfy itself of their accuracy and then grant the necessary fare increase. Or, in the exceptional case where a commission cannot be induced to act, or when it acts unwisely, the company still has the recourse of direct appeal to higher authority. But the submission of such questions to the local electorate means a violation of a fundamental legal principle that no man will be asked to act as judge in a case in which he has a financial interest.

Oil for Fuel Has Big Impetus in the South

Particularly along the southeast and south coasts, there is a great movement on foot to change over from coal to oil for fuel in the railway generating stations. In some cases the change has been made under great pressure to avert a possible shutdown from any possible shortages of coal due to strikes of the miners. In more cases, however, the change has been made, or is about to be made, purely on the basis of economy. The constantly increasing coal costs and the prospects for further increases have everywhere given rise to a new consideration for oil, for the differential in favor of coal in the final cost of energy at the switchboard has everywhere been decreasing. Through the South, this differential has completely turned for the seaboard cities and for many inland cities, because of several contributing conditions.

Oil has been burned for years in a few southern plants on account of their nearness to the source of oil and remoteness from the source of coal. And recently, a great expansion of the oil industry on the one hand, and the skyrocketing of coal prices and the uncertain labor conditions in the coal and railroad industries which have created periodical serious shortages, on the other hand, are practically forcing most other southern plants to change over. In addition to the cost of fuel alone, there is also a saving of labor decidedly in favor of oil burning. Then the oil companies are installing enormous new storage plants at Charleston, Savannah, New Orleans, Galveston and a number of other points, so that while the coal supply is becoming more uncertain, the oil supply is becoming more dependable. This factor of dependability has been one of the greatest obstacles in the way of more extensive use of oil. But with a great increase in the number of companies producing oil and with the extensive building of storage plants of enormous capacities, it would seem that all considerations point toward a very material increase in the number of oil-burning generating stations. Under the present trend of labor conditions, it may reasonably be expected that in time oil will largely displace coal in large generating plants, except those situated very close to good mines.

Tampa a Bright Spot in the Industry

The perversity of fate is exemplified, though cheeringly, in the happy condition which prevails at Tampa, Fla. With a franchise which carries no restriction or specification as to the rate of fare, and with no public service commission whose approval must be secured—in fact, with nothing standing in the way of the company's increasing the rate of fare, no increase is needed. Thanks to 53 per cent safety car operation and the use of oil for fuel, and to the conservative and efficient management, the 5-cent fare has continued to date to provide an adequate revenue.

To go to Tampa now, one cannot help but be im-

pressed with the spirit of "busy-ness" which the "hustlin' little cars," as a Florida cracker described the Birneys, give to the city. They are always in sight, they come up so quickly and stop so sharply though gently, the doors open and close so snappily and then they are on their way again so smartly—they lend a spirit of animation to the whole city, and the people like them, the trainmen like them and they are building up more riding steadily and saving money too. Tampa has enjoyed a substantial growth due largely to continuing war activities, and this has of course contributed toward the present prosperity of the street railway. But it may fairly be said that the extensive and intensive use of the safety cars represents the difference between the company's present satisfactory condition and a condition requiring higher than 5-cent fares. Tampa is to be congratulated upon having a street car system that is right up to the minute in modernity and that is supplying the type of service which aids materially in attracting business to the city.

TEXAS INTERURBANS IN GOOD CONDITION—CITY ROADS IMPROVING

Texas is enjoying unprecedented prosperity. This is due largely to a fuller appreciation and greater realization of the natural resources of this section of the country. Nearly all the cities are crowded and are growing by leaps and bounds—from small towns to cities, almost overnight. But it is a natural, substantial boom which may be expected to continue. The intense activity in the oil fields is contributing immensely to the general good business conditions prevailing. The very high market price for cotton is bringing huge sums of money into the State, and a wage of $2.75 a hundred pounds and higher to pickers, and correspondingly high wages in other lines, is causing a very high circulation of money.

These conditions are naturally creating a great deal of business for the utilities, and both urban and interurban railway companies are carrying more passengers and earning higher gross revenues than ever before, with percentage increases in traffic over last year's figures which seem incredible. Companies are being taxed to the very limit to carry the people and are rapidly being forced to the position that additional equipment will have to be secured. The interurban railways, in the absence of a State commission, have been able to carry this abundance of traffic at a profit by increasing fares to cover the increased costs of operation, the rates ranging from 2.75 to 2.9 cents per mile. As a result, the Texas interurbans are today among the most if not the most profitable lines in the country, per mile of track, per car-mile, or any way it is figured. Dividends on common stock, really earned with full allowance for maintenance and depreciation reserve, are beginning to make their appearance for securities heretofore nonproductive. The movements of prosperous cotton growers, the movements of men engaged in oil pursuits, and even the weather which has supplied heavy rainfall and kept the roads in such condition as to minimize automobile competition, have contributed heavily to this gratifying traffic condition.

The city railway properties of Texas have not fared so well in their net earnings as have the interurbans, though nearly all of them are doing a large business, for most of them are still operating on a 5-cent fare. However, these companies have benefited greatly from the marked increase in the number of riders, and they are getting along excellently though not earning a proper return on the investment involved. This condition seems in a fair way to be remedied, for those who are intimately in contact with the public of Texas believe that there is distinct improvement in the attitude toward the railways and a rapidly growing disposition to permit them to earn a fair return on a fair value. In Texas, this is a matter entirely under local control, and while most of the capital invested in the railways came from without the State, there is a feeling more strongly prevalent now than heretofore that this capital must be protected in order to attract more capital into the State to develop its resources. Judged as a whole, the electric railway situation in Texas is very hopeful.

THINGS ARE MOVING AT BIRMINGHAM

The railway property at Birmingham, Ala., is both depressing and inspiring at its present stage. Things have been bad with the company for some time back and have gone from bad to worse until the regrettable receivership was reached. There has been an undercurrent of conversation among railway men likening Birmingham to a graveyard, and the appearance and sound of what rolling stock was capable of negotiating the streets justified the reference, for the condition was indeed distressing to the mechanical sense of any good operator. And, needless to say, the public has manifested its disapproval of the service and condition of the equipment by violent criticism of the company, though the responsibility for the situation rested largely with this same condemning public.

But things are on the mend. With the granting of a 6-cent fare, the earnings have shown a gratifying improvement; and with this to build upon, the management has set about the considerable task of completely rehabilitating the property. All hands have jumped into the task with an enthusiasm which comes of the joy of relief from the painful necessity to stand by with hands tied and watch one's own property go to pieces. A real rivalry has sprung up, for example, between the different departments of the shop to keep ahead of the others in putting the cars through complete rehabilitation from ground up. For what could be more inspiring than to take active part in restoring the equipment from a condition begetting shame to one in which there is basis for pride.

Likewise, the track and overhead departments are coming in for liberal allowances quickly to take care of the long deferred maintenance work. In other words, things are moving at Birmingham and the process of rehabilitation is rapidly changing the aspect of the situation. With the continuation of the present policy, it will not be many months until this property will be in a fair way to show some low maintenance costs, to earn a little money if business continues as good as it is now, and to be lifted from the receivership which hangs over it.

The Commission of French Engineers who visited this country early last summer for the purpose of studying the systems of heavy electric traction in use here have presented their report to the French Ministry of Public Works. This report accords with the preliminary report made by Prof. A. Mauduit, a member of the commission, which was abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 1, 1919, page 834. The full report goes into great detail of the study of the principal electrifications in this country.

What Is to Be Done With Our Electric Railways?

How One Company Is Making Effective Use of the Testimony Presented Before the Federal Electric Railways Commission

THE Interborough Rapid Transit Company, New York City, has distributed a sixteen-page booklet, 6 in. x 9 in. in size, giving excerpts from the testimony presented by about twenty-five of the witnesses who appeared before the federal commission. The typographical arrangement is "catchy," and the material speaksfor itself. After a brief "foreword" in explanation of the text, as given below, are the abstracts from the testimony. In conclusion some striking statements from other sources are appended. Following are some excerpts from the booklet:

From statements made before the Commission

FACTS

1. Rise in Prices. Materials for service have risen between 1916 and 1918 an average of more than 100 per cent.

2. Wages. Have risen since 1916 about 120 per cent and are still going up.

3. Size of Industry. Capital about $6,000,000,000. Employs about 300,000 men. 44,000 miles of track.

4. New Capital Needed. For extensions and improvements about $700,000,000 a year.

5. Service Rendered. The electric railways of the United States carry ten times as many passengers as the steam railroads.

6. Losses to Investors. Shrinkage of security values has already cost investors hundreds of millions of dollars. They will invest no more under present conditions.

7. In New York State. More than a billion and a quarter dollars of electric railway investment is in peril in New York State alone.

CONCLUSION

The Actual Situation. The industry cannot survive without increased income. A very important part of it must have relief at **once.**

Facts

First, what is the situation? The following bits of testimony before the Federal Electric Railways Commission touch upon the outstanding facts:

In Danger of Collapse

BY JOHN H. PARDEE
President of the American Electric Railway Association

An industry in which some $6,000,000,000 are invested and which, with more than 300,000 employees, operates more than 44,000 miles of electric railway track, is in danger of complete collapse.

Receiverships

BY J. W. WELSH
Statistician of the American Electric Railway Association

On May 31, 1919, a total of 62 companies, with a mileage of 5912 miles of single track were in the hands of receivers.

Sixty companies with a mileage of 763 had been dismantled and junked and 38 companies having 257 miles of single track had been abandoned.

The total for the three classes, nearly 7000 miles, represents almost 16 per cent of the total track mileage of all the electric railways in the country.

Increase of Prices

BY WILLIAM H. HEULINGS, JR.
Vice-President of the J. G. Brill Company, one of the foremost manufacturers of electric railway cars in the world.

RISE OF MATERIALS

	Per Cent
January, 1915 to January, 1916	36
January, 1915 to January, 1917	119
January, 1915 to January, 1918	128
January, 1918 to January, 1919	*18

*Decrease.

RISE OF WAGES

	Per Cent
January, 1915 to January, 1916	12
January, 1915 to January, 1917	40
January, 1915 to January, 1918	117
January, 1915 to January, 1919	119

(and it is still rising)

New Capital Needed

BY H. G. BRADLEE
President of the Stone & Webster Management Association

Street railways of the United States need between $600,000,000 and $700,000,000 new capital each year for necessary extensions and improvements if they are to keep up their service and meet the public demands.

Losses to Investors

BY FRANCIS H. SISSON
Vice-President of Guaranty Trust Company of New York

Electric railway security owners have seen their holdings precipitately and alarmingly depreciate in value.

The situation involves the validity of a huge structure of investment and credit the undermining of which to have far reaching effects upon general credit and business prosperity.

Public authorities should not forget that they are holding in their hands the credit of other cities, savings banks, life insurance companies and other institutions.

SHOWING HOW CREDIT OF STREET RAILWAYS HAS FALLEN

	Date of Maturity	Price July, 1909 to Yield	Price July, 1919 to Yield
Detroit United 1st Con. 4½s	1932	$5.90	$7.55
New Orleans Railway & Lt. Con. 4½s	1935	5.48	9.64
United Railways of St. Louis, 1st 4s	1934	5.01	9.98
Chicago City Railways 5s	1927	4.68	9.75
Metrop. West Side El. 1st 4s	1938	4.68	9.40
South Side El. 4½s	1924	4.95	9.71
West End Railway Co. Deb. 4s	1932	3.84	6.00
Philadelphia R. T. Co. Tr. 5s	1957	4.85	5.85
Aurora, Elgin & Chicago 1st 5s	1941	4.94	9.30
Chicago Railway 1st 5s	1927	4.90	9.80
Duluth Street Railway 1st 5s	1930	5.00	7.82
Los Angeles 1st 5s	1838	4.68	6.42
Louisville Ry. Con. Mort. 5s	1930	4.45	5.74
Denver C. Tram 1st & Ref. 5s	1933	5.22	13.25
B. R. T. Con. 5s	1945	4.60	8.30
1st Ref. Conv. 4s	2002	4.63	*8.70
Conn. Ry. & Lt. 1st & Ref. 4½s	1951	4.40	5.95
Int. R. T. 1st & Ref. 5s	1966	5.05	6.95

* Stock yield.

High Prices Here to Stay

BY THOMAS CONWAY, JR.
Professor of Finance, University of Pennsylvania

The "emergency" has not passed and will probably never pass in the sense in which the term is used by the average man.

The cost of operation of the electric railway has been permanently placed upon a higher level.

Opinions

By Public Service Commissioners

Numerous members of Public Service Commissions gave testimony. They all agreed that service cannot be continued below cost, and that a fair return to capital invested is part of the cost.

Dead Broke

BY CARL H. MOTE
Secretary of the Indiana Public Service Commission

Generally speaking the electric railways of the country are "dead broke." I do not think we have reached the peak of the effect of competition [by automobile] on traffic, either passenger or freight.

Immediate Relief

BY RICHARD T. HIGGINS
Chairman of the Public Utilities Commission of Connecticut

The condition in which the American street railways find themselves is exceedingly serious.

Immediate and substantial relief must come primarily from the states or municipalities and should involve a material increase of rates and a reduction or suspension of taxes and other municipal obligations.

New York's Service Best

By Lewis Nixon
Public Service Commissioner, First District of New York

New York City has the best service in the world. In New York we now carry passengers 20 miles or more for 5 cents against a much higher charge by the steam railways.

The prime reason for all the difficulties in New York is the increased cost of labor and materials.

Or Service Will Suffer

By Wm. B. D. Ainey
Chairman Public Service Commission of Pennsylvania

If the public is to be adequately served, railways must be permitted to earn revenues large enough to pay operating costs, to maintain the property and to provide a fair return.

Without adequate service the economic, social and industrial life is seriously affected if not paralyzed.

The Facts Needed

By W. G. Bliss
Chairman of the Rhode Island Public Utilities Commission

I believe the public is reasonable if it can get the facts fairly presented.

I think the public are not permitted to get the simple facts and until people in public position and the press are willing to state the facts, the solution will be delayed.

Capital Must Have a Return

By Frederick J. McLeod
Chairman of Massachusetts Public Service Commission

It is useless to expect capital to invest in street railways without promise of a reasonable return.

As between the car rider and the investor, the car rider, so far, has had much the best of the bargain.

The Remedy

As Seen By Well Known Men of Widely Varying Interests

"What are you going to do about it?" No other question is so important. The following are the opinions of some of the best qualified men in America:

Street Cars Cannot Live

By Brig. Gen. Guy E. Tripp
Former head of the Production Bureau of the Ordnance Department

Street car companies cannot live under present conditions.

The individual investor generally takes the advice of his banker and the bankers are thoroughly informed as to the situation and are alarmed over it. The value of securities has been melting away like snow under a summer sun.

Fares Must Follow Costs

By Frank J. Sprague
Famous electrical engineer. Builder of the first electric railway in America

The people want efficient operation and a very high character of service from them all.

They cannot get it if capital will not invest the money. There must be a fair return. If costs go up, the price must go up.

Got To Do It Now

By Mortimer E. Cooley
Noted Engineer, Dean of the University of Michigan

I recommend that the street railways be given the right to charge fares that would permit them to meet their operating expenses, keep up their service and maintain their properties intact.

You've got to do it now.

In the Public Interest

By Edward N. Hurley
Former Chairman of the U. S. Shipping Board

Adequate and efficient electric railway facilities are just as essential to the development and prosperity of our communities as the transcontinental lines.

The public interest requires first class service and is willing to pay in additional fare—the public interest is best served when a fair return is paid on capital invested.

Reduce Taxes, Too

By Prof. Charles J. Bullock
of Harvard. Former President of the National Tax Association

The crisis that faces the electric railways is urgent.

Along with other measures of relief, a substantial reduction should be made in the taxes they are required to pay.

Immediate Relief Needed

By Samuel Insull
Chairman Executive Committee Chicago Elevated Railways

Your Commission can perform a signal service to the nation by bringing to the attention of the public the present deplorable conditions and recommending immediate relief—such increase of fares as will prevent the ruin of this necessary public utility.

The "Pound of Flesh"

By Thomas A. Edison

The electric railway industry has reached a serious stage. No more capital can be obtained except in special cases.

The municipalities can exact their pound of flesh if they so desire, with the ultimate bankruptcy of their organizations, but the spirit now abroad in the world is against this.

The Shrunken Nickel

By Prof. Irving Fisher
of Yale University

The purchasing power of the dollar is about one-half what it was before the war.

The failure of trolley fares to correspond with other prices is one of the most conspicuous examples of the havoc played by the depreciation of the dollar.

Recommendations

By United States Officials

Officers of the United States Government, from the President down, have realized the real peril of the electric railways. Holding that it is a local problem, they have appealed to local authorities to give the electric railways the needed relief.

From a Letter to President Wilson

By William G. McAdoo
When Secretary of the Treasury

I earnestly hope that you may feel justified in expressing the conviction that the vital part which the public utilities companies represent in the life . . . of the nation ought to receive fair and just recognition by State and local authorities.

In Reply to Secretary McAdoo

By President Wilson

I fully share the views you express regarding the importance of the public service utilities as a part of our national equipment.

I hope that State and local authorities will . . . respond promptly to the necessities of the situation.

From Annual Report, Jan. 31, 1918

By John Skelton Williams
United States Comptroller of the Currency

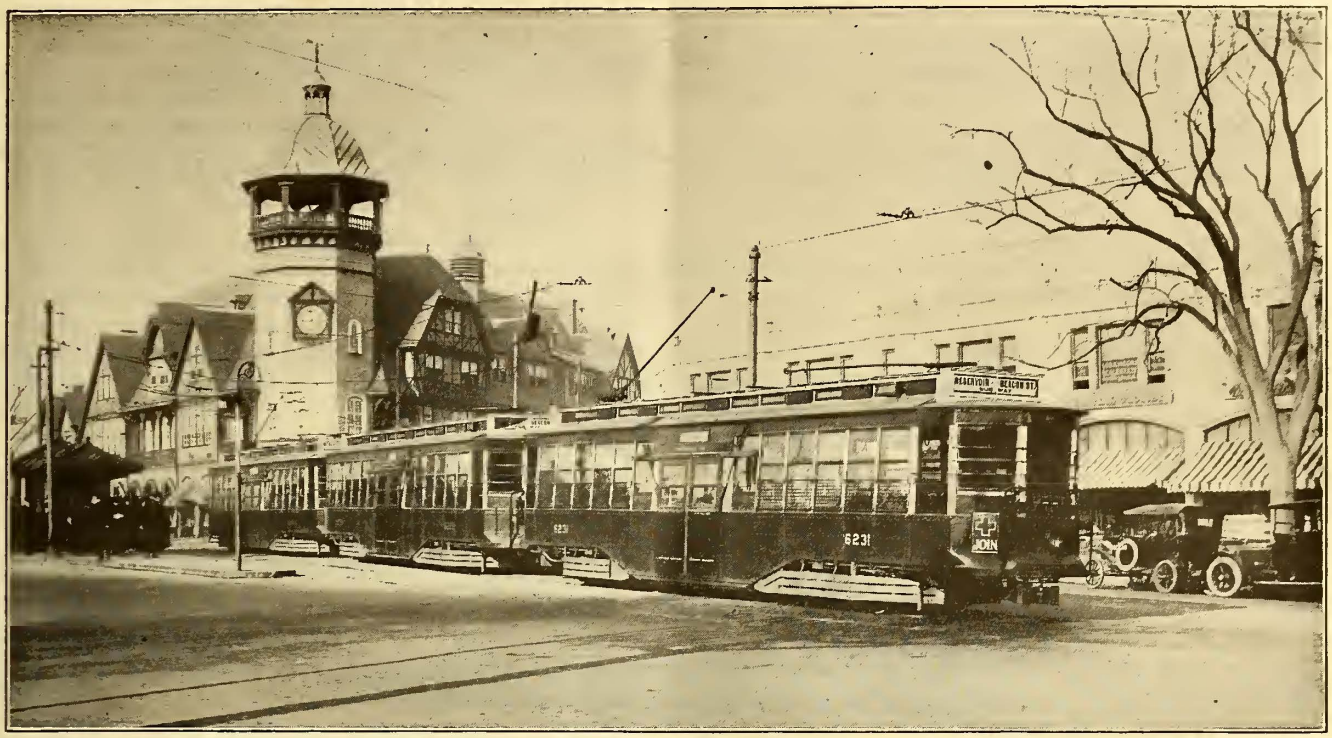
Many thousands of large and small investors have suffered seriously from the decline of the earning capacity of public utility corporations and the consequent shrinkage in the value of the securities representing investments of many hundreds of million dollars.

The breaking down of those corporations would be a national calamity.

From a Communication to the Federal Administration

By William H. Taft
Ex-President of the United States

This is not a question of turning on the history of the relations of local street railways and the municipalities in which they operate. The increase in fare must be given because of the imminent pressure for more money receipts now to keep the street railroads running.



THREE-CAR TRAIN AT COOLIDGE CORNER, BEACON STREET LINE IN BOSTON

Three-Car Trains Satisfactory in Boston

Traffic Condition on One Surface Route of Boston Elevated Ry. Made the Use of Three-Car Trains Economical and Desirable from the Operating Standpoint

BY EDWARD DANA
General Manager Boston Elevated Railway

FOR some time three-car train service has been given over the route, in Boston, from Reservoir carhouse to Park St. subway and it has worked out in a very satisfactory manner. The center-entrance cars which were added to the equipment some time ago were designed with train operation in view, and were provided with multiple-unit control. The three-car train route is shown in the diagram on the next page, the distance between the two points mentioned being 10.051 miles. The time allowance for the section is sixty minutes. Kenmore Station at the entrance to the Boylston street subway is the point of maximum loading. At this point 15,000 passengers were previously handled in each direction during the day, and 3,000 passengers were handled in the maximum hour in the direction of maximum traffic flow.

The Reservoir line was operated on five-minute headway with a motor car hauling a trailer, and the Coolidge Corner route, a short-line service 6.704 miles in length, was operated on a five-minute headway with single cars. The method of operation provided that the Reservoir line should run limited stops between Coolidge Corner and the subway, and the Coolidge Corner line should care for local traffic. It was so arranged that the Coolidge Corner service immediately followed the express service, and consequently the local line on the five-minute headway did not interfere with the making of reasonably high speed on the through line. Provision was made for the operation of twenty-four cars per hour in the outer section, and thirty-six cars per hour over the joint operating section.

Some time ago the traffic increased to such an extent that the local service was inadequate; additional service was also required between Coolidge Corner and Reservoir. The service as operated required thirty-three cars and fifty-four men. If both of these lines had been operated on an increased frequency to provide forty-five cars per hour, it would have required forty-one cars and sixty-seven men. It was then decided that the density of traffic had reached such a point that, whereas the long and the short line arrangement had worked out efficiently, a three-car train service over the long line on a four-minute frequency providing forty-five cars per hour, would meet the increased traffic demand. In order to obviate the necessity of delaying cars, the allowed time was increased from sixty to sixty-four minutes. Except in certain instances, the sixty-minute time was sufficient, but it was not thought wise to begin operation of three-car units on too close an allowance.

The operation of three-car train units over the long route without any additional service from Coolidge Corner requires, therefore, forty cars and sixty-four men, or one car and thirteen men fewer than would have been required if the former service had been operated to care for the traffic by the provision of forty-five cars per hour.

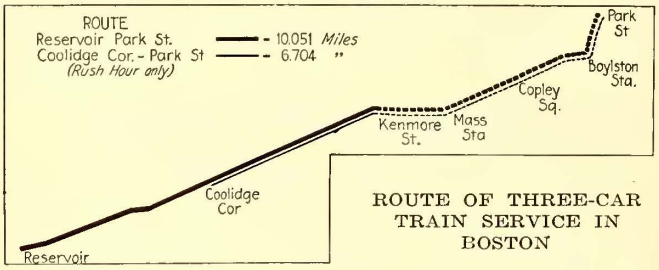
The actual mileage operated was only slightly in-

creased, for the reason that as the former Coolidge Corner line became more frequent in headway, it required the pulling out and putting up of more cars, whose mileage under the three-car train operation was consolidated into revenue service.

It will be noted that the allowed speed was reduced from 10.051 m.p.h. to 9.920 m.p.h. in order to insure continuity of service. In reality, as good speed was maintained as previously, for the total number of units operated was decreased from thirty to fifteen per hour, thus relieving congestion at the main terminal at Park St. quite materially.

The cars which are used in the train service were described in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 29, 1917, page 1167, but a few notes regarding them may be of interest in connection with the discussion of three-car train service. The salient data regarding these cars are repeated for convenience in the accompanying table.

The control apparatus is located beneath the car and operated from a master controller located in the motorman's cab. The control circuit is so connected through a cable and connections on the drawbars that train units of two, three or four cars can be operated as readily as a single car. The use of a storage battery



Heavy line represents reservoir—Park St. route, 10.051 miles long. Light line represents Coolidge Corner—Park St. route, 6.704 miles long (rush-hour service only). Parts of route represented by dotted line are in Boylston St. Subway.

and the automatic couplers insures continuity of control current independent of the power supply, thereby providing means of reversing the motors in case of emergency. The master controller is, of course, provided with the "dead-man's" handle.

The brake equipment comprises electro-pneumatic air brakes and electric application and release features which insure simultaneous braking on all cars of the train, and also the application of the brakes instantly in the event of the drawbars pulling apart. Any conductor on the train has it within his power to stop it by operating an emergency valve located under his stand. As a further safety precaution, hand brake staffs are provided in each cab, as well as in the center of the car near the conductor's stand.

In addition to the normal lighting system each car is equipped with lamps operated from a storage battery, these lamps being automatically brought into circuit whenever the normal power supply is interrupted. This applies also to the red tail-lights on both ends of the car or train. As a further precaution against accident to persons boarding or alighting, the motorman receives his signal to start by the lighting of a small lamp so interlocked through contacts located at each door as to be lighted only when all doors of the train are closed.

The motorman operating either a single car or train may stop it either by the use of air brakes operated electrically or air brakes operated pneumatically, by reversing the motors and applying power, by simply reversing and allowing the car or train to be stopped by regenerative braking, or finally by the use of the hand brake.

SALIENT DATA OF BOSTON ELEVATED CENTER-ENTRANCE CARS

Trucks	Brill 77-E-1
Motors and control	Part GE-247 motors, PC-5 control; part Westinghouse-514R motors, AB-PC control
Air	GE EP with CP-27 compressor
Length over all	48 ft. 9½ in.
Truck centers	24 ft.
Width over all	8 ft. 8¾ in.
Height, rail to top of running board	11 ft. 7¼ in.
Truck wheelbase	5 ft. 6 in.
Wheels	24 in. diam.
Seating capacity	56
Weight, light	45,000 lb.
Weight, loaded	66,800 lb.

Freight Business Still Increasing on the Sacramento Northern

THE steady development of agricultural areas along the lines of the Sacramento Northern Railway in the last two or three years is still continuing and the policy on that road has been to make adequate provision for freight traffic in the way of warehouses, industrial spurs and rolling stock. There has been still further extension of the facilities since a description appeared in the ELECTRIC RAILWAY JOURNAL of May 31, 1919, and present indications are for a continuous growth for some time to come.

During 1919 the company made no endeavor to increase the main line mileage, but the territory covered was developed by numerous short extensions that would more properly be classed as industrial spurs. Typical of the more important of these was a 2-mile branch to a 15,000-acre irrigated tract from which a considerable tonnage of produce is regularly handled.

To handle the freight business increase in 1920 over 1919 there are now on order for delivery in March, two 60-ton Westinghouse freight locomotives and a total of fifty-five box cars. Twenty-five of the cars, which are of the 40-ft., 80,000-lb. steel underframe type, are being built by the Mount Vernon Car & Manufacturing Co. and are to be shipped on June 20. Six are being built up on old trucks in the company's shops at Chico and the remainder, also built upon old trucks, are being made by the Pacific Car & Equipment Co. of San Francisco.

Clinkers on Boiler Tubes

IN THE question box of the October issue of *Combustion*, an engineer asked why there was a heavy deposit of what seemed to be clinkers in the lower three rows of tubes in the first pass of his steam boiler. The answer given was that steam soot blowers, if not properly drained before using, will, when the valve is first opened, discharge considerable water as well as wet steam. The moisture causes an accumulation of soot between the tubes, particularly if there is a deposit on the bottom row. For this reason only dry or superheated steam should be used with steam soot blowers. The deposit of a clinker or scale at the bottom of a lower row of tubes is usually found with stokers using forced draft, and this cinder or clinker accumulation cannot be removed with the usual soot blower. It must be scraped off with hook or scraper. This is readily done since the deposit does not as a rule adhere strongly to the tubes.

Trolley Freight in New England*

The Business Is Constantly Growing in Spite of Motor Truck Competition and Amounts Now to More Than $2,000,000 a Year—The Author Gives Helpful Suggestions Regarding Equipment, Schedules and Other Details

By R. E. COSGROVE
Freight and Passenger Agent Springfield Street Railway and Worcester Consolidated Street Railway

FROM an insignificant beginning in New England the transportation of freight by electric railways has grown to such an extent that trolley freight is an established fact in most cities and towns. Once the back door of the street railway, it has now become the side door, and if the hopes of its friends are realized it will some day be the *front door*.

In the early days of trolley freight many street railway officials questioned the advisability of entering the business. In New York State, several companies had embarked in the enterprise by 1900, there being an established freight service from Albany to Schenectady and surrounding towns. The Metropolitan Express Company, by traffic arrangements with the Third Avenue line and the Union Railway Company was well established. Out of Bridgeport, Conn., Cole's Express had built up a business over the lines of the Bridgeport Traction Company. The Rhode Island Company began freight service in May, 1901, and their Mr. Goodrich, now of the Colonial Line Navigation Company, fathered the enterprise to success. The movement spread from one company to another until by 1912 most of the present territory was opened and business placed on a firm foundation.

The story of trolley freight is much the same with all companies. In spite of makeshift freight stations, inadequate reconstructed equipment, and an almost hopeless beginning amidst the skepticism of a great many railway officials, the trolley freight has grown to command new terminals, specially constructed equipment and other improvements to the extent that the general street railway situation of today will permit.

To impress upon your minds the present scope of trolley freight, let me quote a few facts: There are 175 scheduled daily freight cars operating in New England, over 1750 miles of track, giving employment to 850 people. The annual gross revenue of these lines is in the neighborhood of $2,185,000, and it is increasing every year.

What the Business Consists of

One of the most remunerative operations is the switching and transfer of steam railroad cars to or from sidings on electric railways. This phase of the business has almost unlimited possibilities. Carloads of produce, lumber, coal, etc., are switched to and from communities that would be placed at a disadvantage without the electric railway. It brings the steam railroad right to their doors. The switching of steam railroad cars over city streets requiring special switches and curves is not an unsurmountable difficulty. In the larger cities where frontage along the steam railroads is at a premium, the installation of electric railway sidings gives the desired result at a small advance over the regular steam railroad freight charges.

The delivery of trap rock, sand and gravel by automatic dump cars is one of the best movements, and this service is being extended. By special arrangement with cities and towns, private contractors and State road commissioners, loads of material are dumped right on the job. The Connecticut Company has developed this type of business to the greatest extent, it being fortunate in the location of a very large trap rock quarry on its lines.

Of course the bulk of the business is less carload. Daily scheduled freight cars leaving large terminals keep the smaller cities and towns supplied. Before the war, food products formed the major portion of the tonnage, but the steam railroad congestion during the war period threw over to the trolley freight lines the raw materials and finished products of manufacturing concerns, and this class of freight is increasing in volume. Street railways are of necessity in closer touch with the public than steam railroads. The benefits of the trolley freight to the farmer for instance is immeasurable. It takes his milk and produce to market and brings back his supplies and farm machinery.

How It Is Conducted

The actual operation of freight cars calls for the co-operation of all street railway operating departments. The shop departments must co-operate in keeping freight cars fit for service. Most companies have just enough freight equipment for their immediate needs. The necessity therefore arises for frequent inspection and repairs. The passenger division must thoroughly second the efforts of the freight department. While freight service should be subordinate to passenger service, yet the two services can be handled without any serious interference. Dispatchers and inspectors should not unnecessarily delay freight cars. In the early days freight cars were sidetracked without regard to time or schedule, but conditions have changed. Freight operation calls for set schedules.

The operation of night service is increasing. Night schedule offers the best service to patrons and incidentally interferes less with passenger schedules. This does not necessarily mean the employment of a large number of men for night operation of terminals, but as the night business increases it will be found advisable to provide a force sufficient to unload and sort the freight for early morning delivery. This arrangement is now in effect in most of the larger terminals in New England, and any contemplated increase in schedule is usually provided for at night. This promises that the bulk of future freight business will be handled during the night. A shipment leaving Providence at night arrives in Worcester or Boston for

*Abstract of paper presented at meeting of New England Street Railway Club, Boston, Nov. 6, 1919.

delivery the next morning and in Springfield the next afternoon. Hundreds of tons are being transported nightly by trailer service out of Boston.

MOTOR TRUCK COMPETITION—TWO-CAR TRAINS

One of the features of the business is the staunch support given the trolley freight by the wholesalers in the larger cities. In some instances the growth of their business has been dependent to a certain extent on the trolley service. In these days of "ship by truck" movement it is a good transportation service that can hold the shorter haul business, and although many wholesalers have resorted to the use of trucks, the trolley freights handle a substantial tonnage. It is true that we have felt the effects of truck competition, yet there has been no cause for alarm because the trolley business has grown in spite of the keenest competition. Truck competition in most instances lasts only as long as it takes to find out it is unprofitable. The trouble is that some one is constantly trying it out, due to the able advertising and sales forces of the truck manufacturers. But they nearly always return sorry to the trolley freight.

The traffic manager of one of the largest concerns in Central Massachusetts, operating a fleet of about twenty trucks, is firm in his belief that the cost of transportation by truck is very much underestimated. His table of costs, taking everything into consideration, shows that truck delivery is unprofitable except for city delivery or for longer distances only in case of emergency. But when John Doe starts a one-truck express business, in most cases he does not base his rates on proper costs, with the result that disaster overtakes him.

One of the principal features in reducing the costs of trolley freight operation is the use of the trailer car. By the use of two-car trains, one of the Eastern Massachusetts street railways has reduced the number of uniformed men on its freight cars by 50 per cent yet is giving more service. Permission is now being sought to operate four-car trains. This particular company is fortunate in having a regular double-track steam railroad roadbed. Many companies, however, suffer limitations on the growth of their trailer business from poor track and weak bridges.

In this respect, the trolley freight is like a baby. Unless properly nourished with necessary equipment and good facilities, its growth is likely to be stunted. But with proper terminals, sufficient rolling stock, good trackage and strong bridges. there is bound to be a remunerative business, almost without solicitation.

HOW BUSINESS IS OBTAINED

Solicitation of new business is advisable, however. Our special inducement is service. Ordinarily, a trial shipment means a steady customer. As in other businesses you must keep the good-will of your patrons. Special accommodations and courtesy have their own reward.

The development of business to connecting trolley lines, steam railroads, boat lines, etc., offers another field. Out of Portland, Boston, Fall River, Providence, Norwich, New London, New Haven, Bridgeport and other ports, boat lines are in daily operation. In some instances through tariffs principally to New York or Boston are already filed, in concurrence with the trolley companies. Proportional rate tariffs are a second best inducement to through business. There are instances where trolley lines have published rates in connection with motor truck lines, principally on New York service. These rates, of course, are competitive with the American Railway Express rates. Such a connection, however, is not advisable unless the motor-truck line is financially well established, for auto-truck lines do not have nine lives, like cats and street railways.

The necessity of modern terminals for the principal cities becomes more apparent each year. One of the biggest mistakes in this respect is to underestimate the possible growth of the business by not providing space for enlargement of the terminal. In dozens of New England cities terminals were provided that were thought ample for years to come, but which actually have proved inadequate within a short time. The terminal should be planned with some idea of the future. In the smaller cities freight stations with side tracks are advisable to obviate the necessity of street delivery. Street delivery is expensive and should be necessary only in the smallest towns. Small agencies at general stores serve the purpose of delivery of freight in rural communities.

THROUGH ROUTES AND TARIFFS

There is a movement to tie up all connecting lines into one freight system, with through tariffs to all points. That would be the millenium of trolley freight. Many reasons, however, make this union difficult. In the first place some companies come under the Interstate Commerce Commission's jurisdiction, while others avoid it. The restrictions and regulations of the commission seem to strike terror into their hearts. Next to the Commission bugaboo, the most important obstacle is accounting. Accounting is like religion. Every road has a different system, and each thinks its own is the best. There are blanket waybills, individual waybills and old-line express waybills, as well as variations on all of them. The problem of interchange of equipment has not been so serious, due to the fact that freight rolling stock is of much the same type on most of the lines. But all objections to concerted action are being aired by a comparatively new association of New England trolley freight men. This association holding monthly meetings has done much to let everybody see what the other fellow is doing.

Every year adds new towns to the list enjoying freight service. But it is not always without a struggle that franchise rights are obtained. Local politicians demand all sorts of concessions for the franchise privileges. It gives them campaign material, and there are instances where street railways have been consistently denied the privileges and have had to resort to the state commission. Many restrictions are placed upon trolley freight by local governing bodies. Some limit the length of cars to be used, others provide certain hours for the passage of freight cars, while in some cities freight car operation is forbidden on certain streets, necessitating long detours. This condition of affairs should be remedied by new legislation.

The recent announcement that the Eastern Massachusetts Street Railway will develop the freight business in cities and towns north of Boston has been awaited by connecting lines for several years. This great industrial section honeycombed with trolley lines offers great opportunity for the freight business. Patrons of connecting lines have constantly requested information as to when this territory would be opened.

This interest on their part shows that the average shipper is interested in general trolley freight service to all possible points, regardless of limitations, lack of franchises or through billing arrangements.

In most instances street railway freight tariffs were based on steam railroad rates. However, present conditions warrant closer study before the issuance of new tariffs. It will be found on long distance hauls that the electric railway may command higher rates than the steam railroad, but on shorter hauls, truck competition, etc., in some instances make rates lower than the railroads. The reference to class rates calls attention to the experiment of the Connecticut Company in adopting only one class rate. This obviously simplifies billing and the checking of waybills and quotation of rates. V. S. Curtis, the company's general traffic agent, who is responsible for this classification, believes that trolley lines cannot accept the rules and regulations which are imposed upon steam railroads by the Interstate Commerce Commission through its official classification. His idea merits careful consideration, and it is believed by many that some day the commission will issue a special classification intended for the use of trolley freight lines.

Relations With Public Cordial.

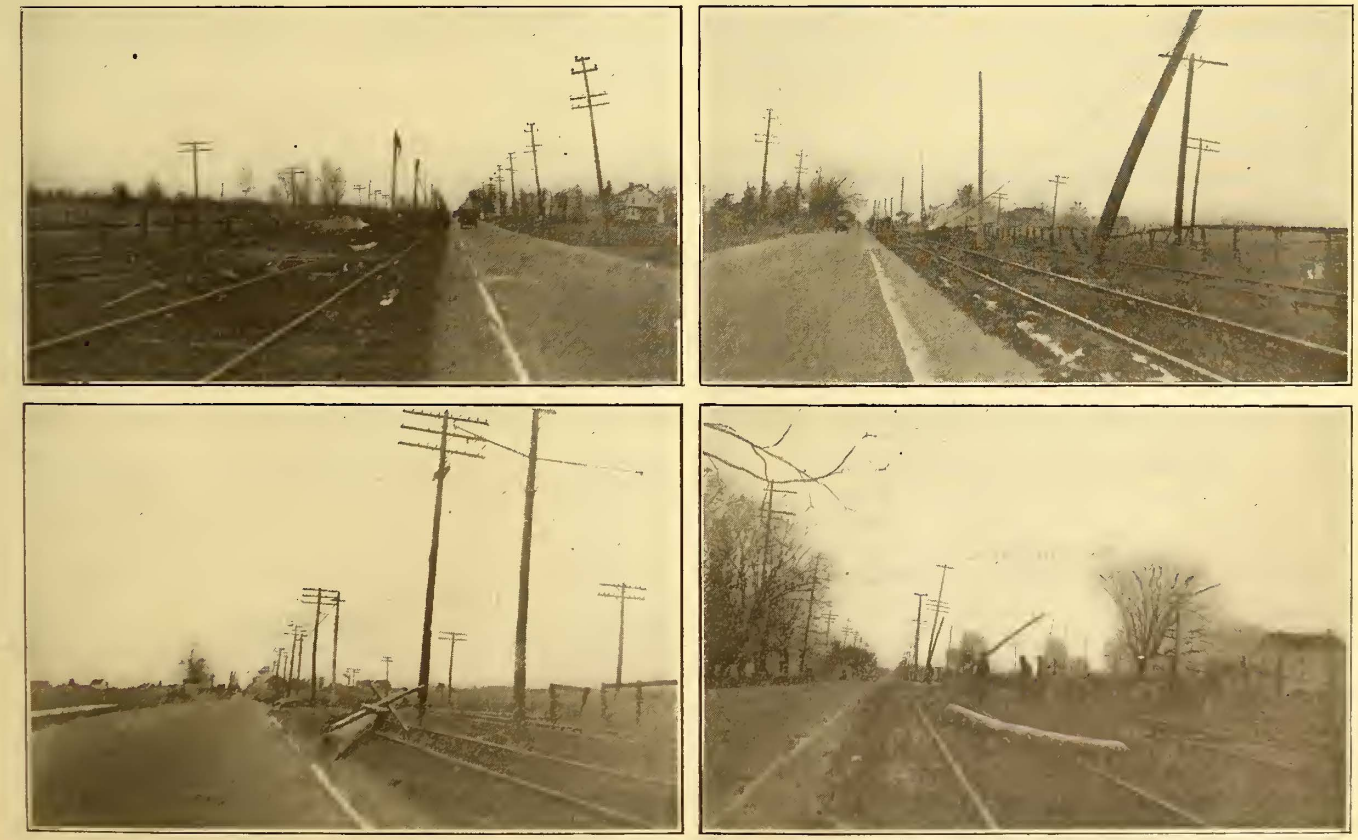
Relations with the general public have been cordial, and perhaps no other method of transportation so enjoys the confidence of the shippers. This is due in part to the fact that the trolley freight service is in a position to grant many conveniences to its patrons. Special loading and unloading privileges, extra cars apart from scheduled service, etc., make many friends. There is a minimum damage to freight enroute, and prompt attention to whatever claims may arise. But the main reason for the success of the trolley freight lines is service. In this one word lies the basis of everything. Quick service at reasonable rates will always bring patronage. In service also lies the future. May it bring its measure of success to the electric freight and its well wishers.

Quick Rehabilitation After a Hurricane

Detroit Lines Suffered $250,000 Loss But Service Was Quickly Resumed—Large Quantities of New Materials Required

THE terrific windstorm which caused an estimated loss of $250,000 to the Detroit United Ry. on Nov. 29 was the most severe outburst of natural forces ever encountered by that system. Within the City of Detroit there was little serious damage, and the service suspensions, although numerous, were not of long duration and were largely due to falling trees and limbs. On the interurban lines, however, the wind had full sweep and in addition to the damage and delays through the collapse of parts of the overhead system, the condition was made much worse by the pole lines of other utilities falling across the tracks and breaking through the trolley overhead system.

All interurban lines were compelled to suspend operation about 6 p.m. on Saturday, Nov. 29. Scores of poles on the Pontiac division were blown over or knocked down by falling trees. These included trolley poles and poles bearing wires of the lighting and telephone companies. For a stretch of 6 miles the roadway was strewn with wreckage. On the Flint division a large number of poles were down and at various points broken poles, tangled wires, trees and other wreckage covered the tracks.



THESE PICTURES ILLUSTRATE A SURPRISINGLY CLEAN SWEEP OF TROLLEY POLES, WRECKAGE BEING CLEANED FROM RIGHT-OF-WAY AND NEW POLES ERECTED. POLES BELONGING TO OTHER UTILITIES CAUSED MUCH OF THE DAMAGE

The Rapid Ry. was hardest hit. On this division more than 200 poles were wrecked. In one long cut the tracks were literally buried under wreckage of poles, wires and trees. In addition to this several bridges were weakened by washouts.

Many cars on all of the lines were in service at the time the poles fell and these were caught in the wreckage. Fortunately no one was injured. The stranded passengers proceeded on foot, by the aid of passing motor vehicles and where possible by vehicles furnished by the railway, to their destinations or the nearest hotel.

At the railway offices it was early realized from the reports coming in from all sources that it was a case of urgent need of men and materials. Extra gangs of track men and linemen were, therefore, dispatched at once to the suburban lines by automobile trucks. Trucks and wagons were pressed into service and loaded with poles, crossarms, insulators, drums of wire and all other material necessary for replacement. Tower wagons in some instances were sent out on the suburban lines. Digging tools, axes and saws were sent with the men. Immediately upon arrival of the men at the places of trouble, trees or poles were sawn up to clear the track and salvage the wires. These wires were carefully laid beside the right-of-way and kept in an untangled condition as far as possible, so as to facilitate their prompt re-election.

From the Detroit stores and the store yards on the several divisions, poles were loaded on flat cars for shipment to the wrecked areas. In many instances it was found that poles were cracked at the ground line but still stood. In some instances, if these poles would temporarily stand to hold wires up they were permitted to remain so, and in many cases poles were erected at every second span. Track men dug the holes for poles which were erected by the linemen. Crossarms and brackets, delivered from stores, were immediately installed. No time was available in which to salvage any crossarms or brackets in the field.

The extent of the damage done by the storm is indicated by a report showing the quantities of materials which had to be used in the repair work. To replace the trolley poles destroyed by the storm, 596 new poles were erected and it was also necessary to realign 1,000 poles. Other materials used on the interurban lines included 20,000 ft. of trolley wire, 35,000 ft. of span wire, 75,000 ft. of telephone wire, 5,000 ft. of high-tension wire, 672 high-tension insulators, 224 feeder insulators, 896 pony glass insulators, twenty-three lightning arresters, 500 porcelain insulators, 224 pole brackets. On the city lines new materials used included 1,500 ft. of span wire, forty porcelain insulators, 7,200 ft. of trolley wire. The amount of trolley wire that was salvaged may be computed by assuming the new poles as spaced 100 ft. apart. An idea of the disastrous effect of the storm may be realized from the accompanying illustrations.

In many instances every second pole was erected and the trolley attached to the bracket by means of tie wires in order to give the cars something to travel on. On one division a patron reported that he had traveled from Flint on a new form of railway, namely, the "wireless railway." He referred to three gaps of a mile each where the right-of-way was cleared but over which there was no wire. These happened to be located where the grade was level and there were no curves. A run was taken before the gap was reached and the conductor would pull down the trolley and the car would drift through. This was done for about two or three days in both directions in order that the men could have time to erect poles in a district which had suffered greater damage.

Interurban cars caught in the collapse of poles and wires served a most useful purpose. Fires were kept burning in them and meals were served as regularly as possible under the circumstances. Many of the line and track department men although excused on Sunday night continued at work and remained steadily on the job night and day from Saturday until Tuesday night.

In referring to the catastrophe, M. F. M. Werth, superintendent of power, gives the men themselves great credit for the spirit exhibited. He says: "There was no lagging, holding back or quibbling. It was a case of 'dig,' and the spirit of the men at all times was all that could be desired. If the men have confidence in the management, the management confidence in the men and each do the right thing, results can be produced."

Statistics on Montreal Traffic

Testimony Presented by J. R. Bibbins at the Public Utilities Commission Hearing Contains Interesting Statistics and Comparisons

SOME interesting particulars of the traffic in Montreal as well as comparisons of cost of operation in that city and other cities were given during the hearings in October before the Quebec Public Utilities Commission by J. R. Bibbins, special representative of Bion J. Arnold and the Arnold Company, consulting engineers, of Chicago. The hearing was called by the commission to consider the budget of the Montreal Tramways Commission, the City of Montreal and the neighboring villages contending that the items in it were too high.

Earnings Per Mile High in Montreal

In his testimony Mr. Bibbins brought out the fact that the settled portions in Montreal have an unusually high density of population for a city of its size, with the result that the local track mileage per thousand of inhabitants is considerably lower than usual, and the average density of service, as well as the earnings per mile of track, is unusually high. There are operated approximately 100,000 car-miles per year per mile of track, and the earnings per mile of track are approximately $33,000, this being equal to the service density and the earnings of the Chicago Surface Lines, which operate in a city of 2,500,000 inhabitants. On the other hand the riding habit is not well developed, as compared with various cities in the United States, as may be seen from the following table:

RIDES PER CAPITA PER YEAR

Manhattan	388	Cleveland	325
Detroit	360	Brooklyn	265
Chicago	334	Pittsburgh	230
Montreal	225		

This comparatively low riding habit in Montreal is probably due in some measure to the dense settlement referred to and the fact that a considerable percentage of the population lives within walking distance of the business section. While this has resulted in comparatively small earnings for the population served, it has likewise had the effect of requiring a very much smaller system

than would ordinarily be expected, with a corresponding high density of service. To this latter is due in large part the successful operation of the Montreal system.

Economies Possible to Be Effected

The rush-hour service in Montreal is more than double (215 per cent to 230 per cent) the base day service. While this is not in excess of the rush-hour ratio in distinctly industrial cities, it is above the average. One reason for this is that during rush hours there is a concession in fares. Such a practice increases the operating expenses of the company and decreases its revenue.

Since 1913, the average speed has been increased from 7.52 to 8.32 m.p.h. While this is an improvement, it is believed that still further improvement is possible, and thus a considerable saving in car service expense may be secured. To do this, however, will require the cooperation of a number of interests, including the passengers, the city and police departments, the business interests and the press.

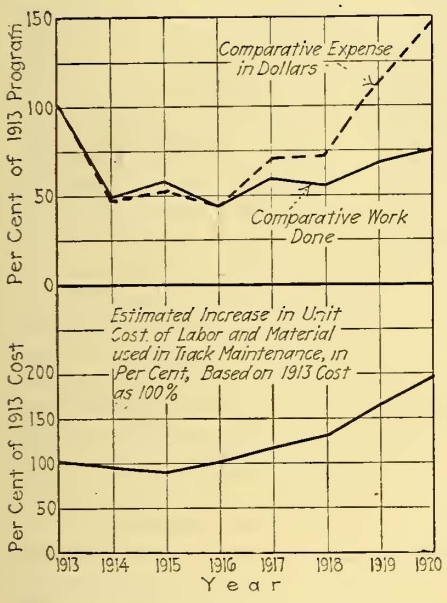


CHART SHOWING COST OF TRACK MAINTENANCE AND ACTUAL WORK DONE

Attention is also called to the short distance between stops. Many of the blocks are only 250 ft. long and the present practice requires cars to stop on demand at every intersection, where passengers may desire to board or alight. A spacing of 500 ft. is preferred. Reduction of automobile parking and the introduction of safety cars are also recommended.

One objection raised to the use of one-man cars in Montreal has been the heavy snows, and it was stated by the company's officials that no car was considered practicable which had a weight of less than 10,000 lb. per axle, and that single-truck cars with even this weight could not be successfully operated, because of the uneven distribution of the weight per axle on grades where it is most needed. Mr. Bibbins thinks, however, that a one-man car should be given a fair trial, particularly on some of the lines on which light cars are now operated. If light cars are not found practicable, some of the present heavy double-truck cars might be converted for one-man operation on lines of light traffic. It is even possible that the situation would justify the purchase of a number of one-man cars to be operated during nine months of the year, when the street conditions are favorable.

Mr. Bibbins makes the point that if the cost of a given piece of track maintenance work in 1913 is taken as 100 per cent, the cost for the same piece of work in 1919, based upon records of labor and material prices, provided by the company, is found to be 165 per cent, and is estimated for 1920 as 195 per cent. In consequence, although the 1920 budget in dollars amounts to 146 per cent of the 1913 expenditure, the actual work contemplated is 25 per cent below that done in 1913. This relation is shown in one of the accompanying charts. Estimates of car maintenance are shown in the second chart. The current appropriation for "renewals" is not subject to these price fluctuations because in Montreal the item of "renewals" covers only the original cost of appraised value of such items of property as have to be renewed during the current year, any increase in cost due to present high prices being considered a capital charge.

The conclusion reached by Mr. Bibbins was that the 1920 budget seemed conservative and should not be reduced. It is interesting to record that after this evidence was presented the city attorney asked that the decision of the Tramways Commission should be upheld, thus disposing automatically of the appeal filed by the city so far as its demand for an order lowering the charge fixed by the Tramways Commission was concerned. The commission also upheld the justice of Mr. Bibbins' estimate on the charge for maintenance of equipment and in general his recommendations that deferred maintenance accrued during the war period must be made good promptly to save the property from further deterioration which would surely set in from continual neglect. The commission also indorsed Mr. Bibbins' recommendation of the skip-stop system and it eliminated the reduced fares formerly charged during rush hours.

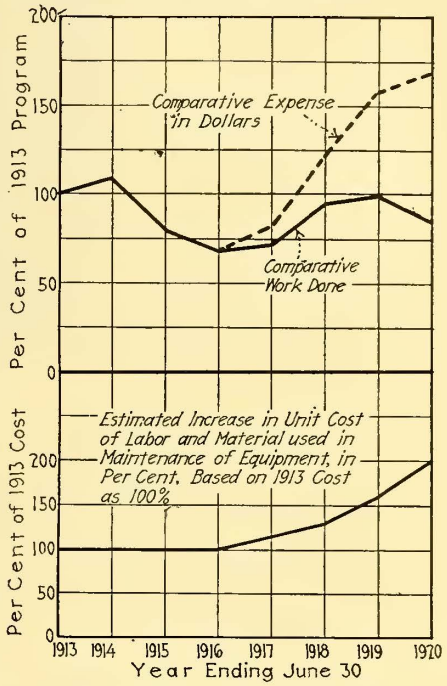


CHART SHOWING COST OF CAR MAINTENANCE AND ACTUAL WORK DONE

New Engineers' Club Formed

ON JAN. 7, 125 engineers, architects and chemists formed the "Mohawk Valley Engineers' Club" at Utica, N. Y. The club will have regular monthly meetings on the first Tuesday of each month, and special meetings as required. The territory embraced by its activities includes that covered by a radius of approximately 40 miles from Utica. The officers for the current year are: Byron E. White, engineer, Utica Gas & Electric Co., president; Hubert E. Collins, consulting engineer, first vice-president; Roy F. Hall, division engineer State Highway Department, second vice-president; Horace B. Sweet, consulting engineer, third vice-president; Frederick E. Beck, engineer Consolidated Water Co., secretary, and Clifford Lewis, Jr., civil engineer, treasurer.

Second Year of Automatic Substation Operation at Butte

The Maintenance Cost for the Second Year's Operation of the Butte (Mont.) Electric Railway's Automatic Substation Was But $249

By E. J. Nash
Electrical Engineer Butte (Mont.) Electric Ry.

IN THE article by the writer, published in the issue of the ELECTRIC RAILWAY JOURNAL for March 22, 1919, and entitled "A Year of the Automatic Substation at Butte," it was stated that the railway company planned to install another automatic substation and to automatize the central substation. Unfortunately the company has experienced the same financial difficulties as other roads have suffered, and these plans have not yet been realized. The one automatic equipment which we have, however, has given excellent service, as will be seen from the following recital of another year's experience with it.

Operating Record Almost Perfect

As reliability of service is one of the prime requisites in the transportation business, one of the first questions to be asked in regard to the automatic substation is as to its proved trustworthiness as compared with the manually-operated station. On our property, as explained in the previous article, the manually-operated stations contained rotary converters of the same type, style and capacity as does the automatic substation. These machines are 500-kw., 60-cycle, six-phase, General Electric machines, diametrically connected. The full-load rating is 834 amp., and they are designed to carry 50 per cent overload for two hours, and 100 per cent overload momentarily. They have flash suppressors, or arc coolers.

While the rotaries in the manually-operated station have flashed over, and have flashed to the pedestal six times within the last year, the automatically-operated station has never flashed over. Four of the flashovers in the manually-operated station occurred when only the "owl" cars were running, or when the station load was light. However, the same condition was duplicated in the automatically-operated substation, for on three occasions the line broke within 3,000 ft. of the automatic substation, when the "owl" car was running. The station started on the no-load condition, for the breaker at the manually-operated station opened and fed into the "short" until the trolley wire was removed from the rail.

The automatically-operated station failed but four times the first year; during the last year it failed but three times. The causes of the failures were as follows: On one occasion the circuit breaker between the rotary and the bus, which is located on the switchboard where there is considerable vibration, opened either because it was not closed properly, or because paint lodged between the bearing surfaces of the catch and the holder. The station was off until an electrician arrived to close the breaker. The next time the failure was caused by the opening of the circuit through the bearing resistance, which caused the temperature relay to cut the machine off the line until the inspector arrived.

On the third occasion the finger of the brush-raising and lowering device had been jammed and given too much pressure against the movable contact, so that it did not drop at the proper time and thus did not raise the brushes when the machine was cut off the line by the underload relay. These three causes of failure kept the rotary off the line for but three hours, and at no time did the failure cause any delay in the car schedules.

In December, 1919, Butte experienced the coldest weather ever recorded. Thermometers near the station showed 50 deg. below zero on one day and 56 deg. below zero on the next. Cars had to stop running the first day, on account of the snow, but were operating the next day, that is, the day of the coldest weather. The station operated under these conditions without a hitch and without heat.

Current Limiting Feature Advantageous

The current-limiting control feature of the automatic substation has proved itself to be a great advantage. The control is accomplished by means of resistors, contactors and relays. Under normal conditions the two resistors between the machine and the bus are shunted by contactors, and a resistor in each feeder circuit is shunted by a contactor. These contactors are held closed by means of current through the contacts of instantaneous-opening, time-limit-closing overload relays. Under overload conditions, the feeder relay opens at a predetermined value, thus opening a contactor and inserting resistance between the bus and the trolley. On a continuance of the overload the relay set to operate at one and one-third overload opens, inserting more resistance. If the overload still continues, the third relay opens at one and two-thirds overload, or at whatever other overload is desired, inserting all of the resistance between the machine and the trolley.

The above explanation is necessary to show how the "automatic" on many occasions has contributed to the reliability of the power supply. The automatic substation is located about half-way between the center of the city and the end of the Englewood line, which includes about 7,000 ft. of 7 per cent grade. Last summer, in addition to the regular attractions at the park resort, there was an aviation circus staged by the United States government, which drew a large crowd. The cars carried 12,000 people to the field in one and three-quarter hours. Time after time, when the cars were badly handled in starting, or from overload, resistance was inserted in the circuit by the above-mentioned relays, and in consequence the trolley voltage was lowered a little, allowing the car to get under headway. Although the voltage was below normal, the power was available for the cars at all times without the usual opening and closing of circuit breakers.

Maintenance Cost $106 Lower Than in 1918

The maintenance cost for the first year's operation was $355.80, while that for last year was $249.17. Of this amount $18.17 was for material, and the balance of $231 was for labor. The latter amount represents 264 hours of work, of inspection and cleaning, which is slightly more than five hours per week. The rotary converter and the auxiliaries are blown out once a week. The only other outlay chargeable to the station was for $113.56, the cost of installing resistance bearings, together with their relays and a circuit breaker between the machine and the bus. These pieces of apparatus were sent by the General Electric Co. free of charge as improvements over the existing equipment.

The Safety Car a Successful Merchandiser

The Experience of a Number of Cities Is Cited to Show that the Light, One-Man Car Is an Effective Business Getter

BY N. H. CALLARD, JR.
Railway Department Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

THE chief function of a railway company is to *sell* rides at a profit. Whatever else it may do is but preliminary to selling. Its end is accomplished only by rendering complete satisfaction to the public and building up a popular confidence in the railway. The ideal has only been reached when the entire community believes that the railway furnishes a service that is superior to any other form of transportation of equal cost.

THE SAFETY CAR IS AN INCREASINGLY FAMILIAR SIGHT

There has been no single development in years that seems so adequately to fill the wants of the public and so economically to permit the railway to approach this ideal as the safety car. Originally this car was designed and operated to duplicate as nearly as possible the service given by automobiles and to reduce the cost of operation from both the labor and the power standpoints. To the surprise of many operators of cars of this type, it was discovered that more passengers returned to their lines than were taken away by the automobile and thus the fundamental theory of transportation was again established that people will patronize any system of transportation that provides a conveyance when it is desired to be taken, and moves them rapidly and safely to their destination.

Operators of street railways have always realized that with quicker service more passengers will ride, but the cost of giving improved service with heavy equipments operated by two men was prohibitive. The one-man safety car makes this improved service possible. The companies that have adopted the safety car have invariably found that where increased service is given the percentage increase in revenue is one-half or more of the percentage increase in service. The only salesmen a railway property has are its cars; and the more of them that are present the more rides will be sold.

The methods by which the safety car can be utilized to sell more rides are innumerable. Examples of some will be given.

In Seattle, Wash., the Capitol Hill line operates from the Union Depot loop, up Third Avenue (which is a very busy street with a large number of transfer points from other parts of the city) to Pine Street; thence out Pine Street to Fifteenth Avenue and on to Galer Street. The principal shopping district of Seattle, including the Public Market, is in the vicinity of Third Avenue and Pine Street and the all-day shopping load from this district is very large. The regular cars pick up a large load from the Depot up Third Avenue so that when the cars arrive at this shopping district, there are seldom any seats left for the parcel-laden shoppers. This caused considerable criticism of the service and created a condition where husbands would leave their automobiles at home so that their wives could go shopping with a maximum of ease.

The railway could not economically operate more cars over the entire line, because the load that was picked up on Third Ave. would usually drop off at different transfer points less than a mile from Third Ave. and Pine Street. To relieve this condition, five safety cars were sandwiched in between regular cars to give additional service between this shopping district and Capitol Hill. The cars alternate with the larger two-men cars, of which six are in service all day, and eleven more go on as trippers during the rush hours. This change of schedule was made with the sole idea of building up traffic and fostering goodwill; reduction in operating expenses was a secondary consideration. Tables I and II show the difference between the old service and the new. An 89 per cent increase in cars per hour over this section of the line is obtained with only four men additional.

TABLE I—RESULTS OF SAFETY CAR OPERATION IN SEATTLE

	Old Schedule	New Schedule
Car-miles per day	1106	1535
Cars per hour	7.26	13.72
Longest headway (minutes)	12	4.5
Shortest headway (minutes)	5.5	3
Per cent increase in cars per hour	....	89
Per cent increase in seats per hour	....	54
Men required	28	32

TABLE II—TWO OVERLAPPING ROUTES IN SEATTLE

	Through Cars	Safety Cars
Length of line (miles)	7.0	4.5
Running time (minutes)	54 to 60	36
Shedule speed (miles per hour)	7.8 to 7	7.5

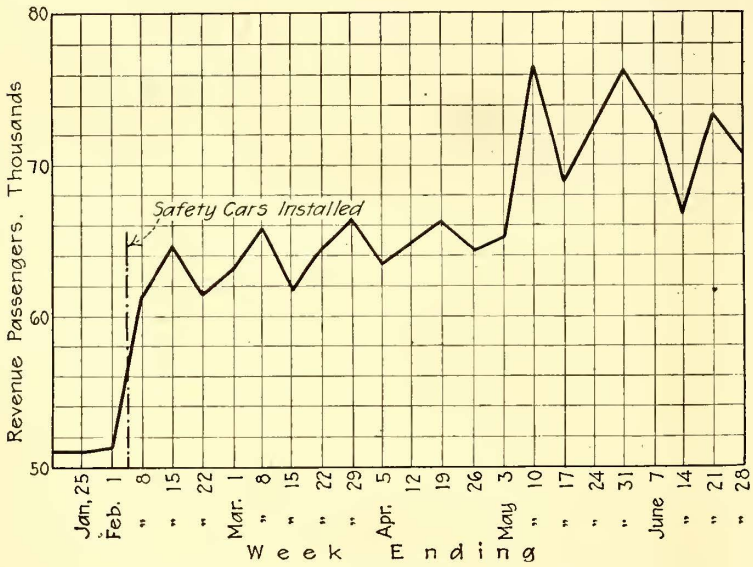
The new service is so convenient that an average increase of 34 per cent in revenue passengers has resulted. Many women who formerly drove their cars down town to shop now find it more convenient to use the street cars, for they can more easily go from one store to another and do not have to waste time and effort in finding places to park their cars.

The Kansas City Railways started safety car service on April 27, 1919, operating the new cars on the Sunset Hill line, which is seven miles in length and passes through Grand Avenue in the downtown district. This

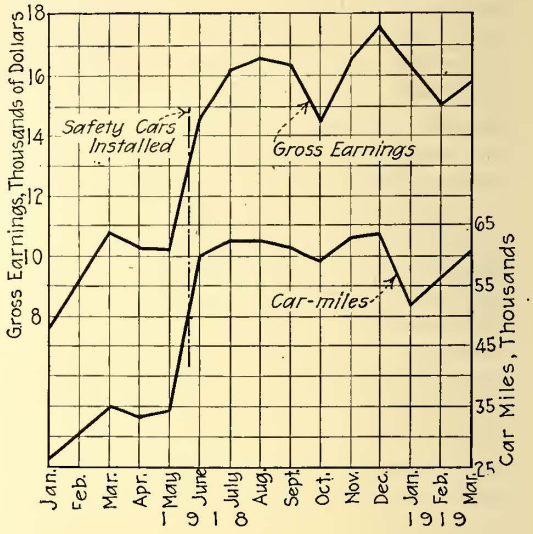
street carries extremely heavy traffic with a headway during the rush-hour portions of the day of from thirty to forty seconds. The Sunset Hill line has the usual heavy grades to be found throughout Kansas City and the safety cars encounter every type of severe conditions that are to be met any where.

Formerly on this line, during the rush-hour period, twenty large cars were operated, giving approximately a four and one half-minute headway. During the non-rush hours, an eight-minute headway was given with fifteen cars. With the inauguration of the safety car, a two and one half to three-minute headway was given during the rush-hour periods and a four and one half to five-minute headway during the non-rush hours.

Apparently riding did not fall off on adjoining lines and the results of operation after a considerable length of time showed the following increases over the average conditions prior to the inauguration of the safety cars: car-miles, 47 per cent; car-hours, 54 per cent; gross receipts, 19 per cent.



EFFECT OF SAFETY CAR OPERATION ON REVENUE IN BRIDGEPORT



INCREASES IN CAR-MILEAGE AND REVENUE IN HOUSTON (WOODLAND-LABRANCH LINE)

One of the newest installations of safety cars is on the properties of the Virginia Railway & Power Company, operating in Richmond, Petersburg and Norfolk. The Belmont Avenue and the Laurel Street lines in Richmond are both operated with the new cars, service having been increased on the Belmont Avenue line approximately 55 per cent and on the Laurel Street line approximately 40 per cent. After a month of operation the revenue passengers on the Belmont line had increased 23 per cent over the previous average number of passengers. The Laurel Street line has not been operated by safety cars long enough to determine the increase in revenue passengers.

A most remarkable increase in revenue passengers resulted from the installation of safety cars on the lines of The Connecticut Company in Bridgeport, Conn. There were formerly two lines with rather infrequent service; the Oak Street line with 15-minute service and the South Park line with a 10-minute service. Parts of these lines were combined and safety cars were operated on a five-minute headway. No increase in service was given on the parts of these lines not operated with the safety cars. The accompanying diagram shows the increase in revenue passengers on both lines. It was found impracticable to segregate the data for the two. However, all of the increase can be properly attributed to better service.

Here is a case where more than 11,000 passengers per week are carried, who formerly either walked or used other conveyances. The traffic on adjoining lines does not show a decrease. The cost of giving the increased service is no greater than that with the older plan of operation.

In the spring of 1918 the Houston (Tex.) Electric Company found it necessary to purchase additional equipment. Safety cars were ordered and a crosstown line, known as the Woodland-LaBranch line, was selected to try them out. This line is 4¾ miles long, one way, including 3½ miles of double track. The single track has five turnouts with a wye at one end of the line and a loop at the other. The traffic on this line is comparatively heavy, as it passes through the most congested points of the business district, and crossing three steam railroad tracks at grade. Two of these crossings are without flagmen.

In addition to the seventeen cars operated on the Woodland-LaBranch line, thirty-eight additional one-man cars are operated as regular and extra cars on other lines with excellent results. A second diagram shows the car-mileage and the revenue of this line for 1918 and the early months of 1919. Table III gives a comparison of two-man operation and one-man operation on the Woodland-LaBranch line:

TABLE III—COMPARISON OF TWO-MAN AND ONE-MAN OPERATION ON WOODLAND-LABRANCH LINE, HOUSTON, TEX.

	Old Schedule Two-Man Cars	New Schedule One-Man Cars
Headway, rush hours	6 minutes	4 minutes
Headway, normal hours	12 minutes	6 to 8 minutes
Running time, rush hours	72 minutes	68 minutes
Running time, normal hours	72 minutes	64 minutes
Number trips per day	136	200
Car-miles per day	1290	1897
Seats per rush hour	400	725
Seats per normal hour	200	262 to 350
Schedule speed, miles per hour	7.91	8.90

Houston is only one of the many cities where the Stone & Webster Management Corporation has used safety cars with very great success. In Tampa, Fla., the safety car is used on two lines. On one of these car-mileage has been increased 29 per cent with an increase in receipts of 13 per cent; on the other the car-mileage

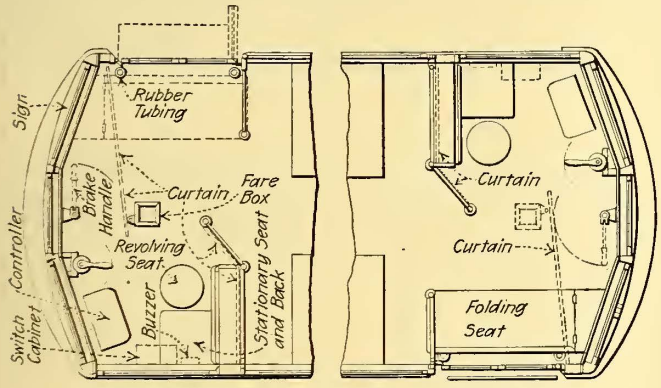
has been increased 51 per cent and the receipts 51.4 per cent.

In El Paso, Tex., two lines are operated with safety cars. One line shows an increase in receipts of 50 per cent with an increase of only 47.5 per cent in car-mileage and on the other line the increase in receipts has been 36.7 per cent, with an increase of 50 per cent in car-mileage.

Three lines in Tacoma, Wash., are operated with safety cars. The increase in car-mileage on one has been 75 per cent and in receipts 42 per cent; the increase in car-mileage on the second line has been 20.9 per cent and in receipts 25.8 per cent; on the third line, the increase in car-mileage has been 3.4 per cent and in receipts 17.31 per cent.

From the experiences of the Stone & Webster Management Corporation, H. G. Bradlee, its president, has assumed "that with a 50 per cent increase in mileage, you will be able to get a 25 per cent increase in car receipts, which is a small proportion for our figures show that for many of our properties the increase in receipts, in percentage, is fully equal to the mileage." All of these figures show the indubitable fact that receipts are dependent upon service, up to the point of traffic saturation.

Occasionally there will be cases where the safety car will give good service and increase receipts, even though a car-for-car replacement is made. Such a case is that of the Hartford property of the Connecticut Company. On its Asylum Street-Post Office Loop line single-track, side-seated cars holding twenty-six people were formerly used. A ten-minute headway was given until 7 p.m. and a fifteen-minute during the balance of the night. The company now operates three safety cars, giving a ten-minute service continuously, which, coupled



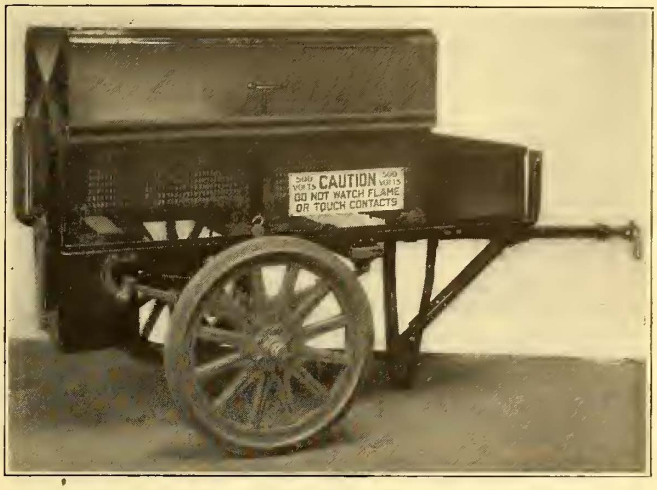
LAYOUT OF STANDARD SAFETY CAR

with the easy-riding qualities of the cars and their attractive appearance, has actually increased the travel on this line. Cases like this, however, are very exceptional and it is usually found that where one-man cars are merely substitutes for two-men cars, the revenues actually decreas, for the public feels that their service has been cheapened.

In conclusion a most extraordinary condition must be mentioned. When the safety car is installed as a merchandising means of selling more rides by giving better service to the railway's patrons all real objections to the car disappear. When thus applied, the use of the new type of car does not involve fewer men but in many cases actually more are required. Furthermore the automatic, laborless devices, with which the car is equipped, make it easier to operate and no justifiable complaint can be made by the operator. The shorter headways and the better time made due to the less frequent and shorter stops insure the instant approval of the public.

New Mounting for Welder

IN ORDER to meet the requirements of electric railways which are now handling their track maintenance equipment by automobile or motor instead of by team as formerly, the Indianapolis Switch & Frog Company has developed a high-speed mounting for its electric



NEW HEAVY DUTY HIGH SPEED WELDING OUTFIT

welders. This new mounting is equipped with heat treated Timkin axles, Timkin double-thrust roller bearings, super-strength artillery wheels with solid rubber tires, heavy oil-tempered semi-elliptic springs and a double-acting spring drawbar with attachment for connecting to a work car or a motor truck. This type of two-wheel mounting permits the welder to be handled in wheel mounting permits the welder to be handled in close quarters, as it can be turned in its length.

In the design of this new mounting provision has been made so that it can be interchanged with the former four-wheeled steel tired mounting provided by this company. The change in mounting can be carried out in half an hour by removing six bolts and drilling four holes in the old frame.

Creosote Treatment Increases Life of Poles

Data compiled by E. I. du Pont de Nemours & Co., Inc., show that the effect of applying creosote treatment to the ends of poles and posts which are to be embedded in the ground will lengthen their life somewhat as follows: White cedar, from sixteen to thirty years; cypress from six to fifteen years; chestnut from twelve to sixteen years; pine from six and a half to twenty years and juniper from eight to eighteen years. At present 4,000,000 poles are being erected annually, and records compiled by the United States Forest Service show that 95 per cent of all poles are destroyed by decay, 4 per cent by insects, and the remaining 1 per cent by mechanical abrasion.

That the electric railway is not the only utility which is suffering from high prices is indicated by the annual report of the Bureau of Railway News and Statistics which showed that during 1918, out of one dollar, 2.65 cents were available for dividends, reserves and surplus, as compared with 11.78 cents in 1916.

Bulletins Tell the Story

New York Posters Explain Need for Higher Fares

THE Interborough Rapid Transit Company of New York is making a strong effort to develop a popular conception of the need for higher fares on the subway and elevated lines by a series of car bulletins. These bulletins are pasted on the windows of the subway and elevated cars under the names "Subway Sun" and "Elevated Express." Typical posters of this kind are reproduced herewith. They are changed at intervals and may supply some ideas for posters or advertisements for the same purpose for other companies.

The Subway Sun — World's Safest Railroad

Published now and then by the Interborough Rapid Transit Company

VOLUME II — AUGUST 4, 1919 — NUMBER 14

The Shrunken Nickel

"shrinking"

The value of the nickel has been shrunk one-half by the War. This amounts to cutting the car fare in two.

Why? * * *

Before the War 64 nickels would buy a ton of coal for your Subway service. Now they will buy only half a ton.

INTERBOROUGH RAPID TRANSIT COMPANY

Theodor P. Shonts
President

The Interborough Operates More Than 10,000 Trains a Day

Subway Sun

Published now and then by the Interborough Rapid Transit Company

VOLUME II — SEPTEMBER, 1919 — NUMBER 22

Frank J. Sprague
Famous Engineer
Builder of the First Electric Railway in America

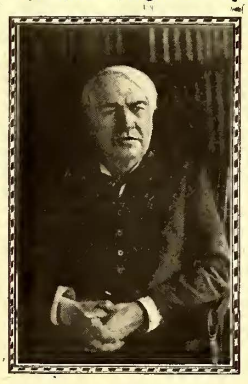
To Insure Good Service

Testimony Before the Federal Electric Railways Commission:

"The people want efficient operation and very high character service.

"They cannot get it if capital will not invest. There must be a fair return. If costs go up, prices must go up."

The Interborough Has Spent About $20,000,000 for Safety Devices



Thomas A. Edison

Subway Sun

Published now and then by the Interborough Rapid Transit Company

VOLUME 9 — OCTOBER, 1919 — NUMBER 34

"The Pound of Flesh"

Mr. Edison, in a letter to the Federal Electric Railways Commission:

"The Electric Railway industry has reached a serious stage. No more capital can be obtained except in special cases.

"The municipalities can exact their pound of flesh if they so desire, but the spirit now abroad in the world is against this."

The Subway Sun — World's Safest Railroad

Published now and then by the Interborough Rapid Transit Company

VOLUME II — OCTOBER, 1919 — NUMBER 26

Fire Prevention Week

(OCTOBER 6—OCTOBER 11)

Preserving Property

CLEAN UP RUBBISH—That's where most of the fires start. Last year's fire record shows:

Rubbish fires cost	$9,538,725
Carelessness fires: (cigarettes, matches, etc.) cost	1,012,380
Lives Lost	125
Permanently injured	206

Have you been guilty?

THOMAS J. DRENNAN, Fire Commissioner

Preserving Service

Destruction or deterioration of New York's Rapid Transit Service—the best in the world—would cause losses far greater than the losses by fire.. Prevent that.

* * *

Transportation cannot be provided indefinitely at less than it costs.

INTERBOROUGH RAPID TRANSIT COMPANY

Interborough — The Elevated Express — Always Dependable

Published now and then by the Interborough Rapid Transit Company

VOLUME II — NOVEMBER, 1919 — NUMBER 27

United Hospital Fund Week

NOVEMBER 17-24

Preserving Life

The "United Hospital Fund" is collected to pay part of the cost of FREE SERVICE given in 46 non-municipal hospitals. This work is vital to the City's health. Every dollar given is used for life-saving, and every citizen should give it support.

ROYAL S. COPELAND, M. D.,
Commissioner of Health

Preserving Service

New York's Rapid Transit Service is the best in the World. This was made possible by private and City capital joining together. If this capital is to remain good, the fare must be sufficient to support it.

INTERBOROUGH RAPID TRANSIT COMPANY.

About $20,000,000 has been spent for Interboro Safety devices

Subway Sun

Published now and then by the Interborough Rapid Transit Company

VOLUME II — NOVEMBER, 1919 — NUMBER 28

No Mystery

The traction situation is a simple civic business problem. Owing to the war:

1. Materials cost over 100% more than they used to.
2. Our men are being paid at a rate 103 per cent higher than in 1916.
3. Service has been greatly increased by opening new lines.

Through no other plan than an increased fare can the present standard of service be maintained.

INTERBOROUGH RAPID TRANSIT COMPANY

Association News

Information and Service Bureau Active

SINCE the statement issued, the following additional statistics have been prepared by the bureau of information and service: (1) A list of cities having increased rates of fare brought up to Jan. 10, 1920. This compilation shows a classified list of cities on the basis of the rate of fare, the population of the city served, the name of the company, the ticket rates in effect and the date the fare increase became effective. A summary of all cities showing the number in each group and total and average population served is also included. (2) A report on valuations. This contains a detailed statement of reports of the commissions and other public authorities, summarizing the valuation obtained for electric railway properties and abstracting the elements included therein. (3) A compilation of methods of interurban companies in increasing rates of fare dated Jan. 1, 1920. The compilation included the latest rates of fare on interurban companies classified as to the basis of the fare increase, whether on a mileage basis, a flat fare increase, change in zones, or by other means. This shows the existing rates of fare, the former rates of fare and the date of increase. (4) A report on the effects of increased rates on operating revenues in cities of over 100,000 population. This is based on a questionnaire recently sent out by the association. It shows present and former rates of fare, authority granting same, and gives a comparison by month, both for the increase in passenger revenue and in revenue passengers before and after the fare increase became effective.

Committee on Standards to Meet

CHAIRMAN H. H. ADAMS has called a meeting of the committee on standards to be held at association headquarters on Feb. 9. The purpose of this meeting is to review and pass upon the recommendations of the standing committees which were passed at the October, 1919, convention, and which require final action by the committee on standards before they can be incorporated in the approved standards, recommendations and miscellaneous practices of the association.

Reports and discussions which are to be considered at the meeting on Feb. 9 are as follows: (1) Corrected copy of report of committee on equipment. (2) Corrected copy of report of committee on power distribution entitled "Joint Specifications for Electric Light, Power Supply and Trolley Lines Crossing Steam and Electric Railroads." (3) Copy of discussion at Atlantic City convention on recommendations of equipment committee and power distribution committee to be acted upon by committee on standards.

The specifications and recommendations approved by the convention and requiring final action by the standards committee are the following: (1) Dimensions for A. E. R. A. steel wheel design; (2) design for tread and flange contours for steel wheels; (3) journal bearing and wedge gages; (4) gaging points and terms for wheels and rails, and (5) specifications as in (2) in paragraph above.

The standards committee as now constituted comprises H. H. Adams, Chicago Surface Lines, chairman; H. L. Andrews, E. J. Blair, C. H. Clark, L. P. Crecelius, C. G. Keen, John Leisenring, John Lindall, H. H. Norris, F. R. Phillips, Martin Schreiber, W. C. Starkey, N. W. Storer and N. B. Trist.

Equipment Committee Starts Active Work

THE equipment committee of the Engineering Association held its first meeting of the year at association headquarters in New York City on Jan. 16. Those present were Messrs. Durie, Adams, Benedict, Dalgleish, Holding, Johnson, Priest, Sargent, Simmon and Squier.

The personnel of the committee has been increased over the list in the Jan. 3 issue, page 61, by the appointment of Keith MacLeod, Montreal Tramways; Sylvester Potter, Detroit United Ry.; Terance Scullin, Cleveland Ry., and C. W. Squier, ELECTRIC RAILWAY JOURNAL.

Two additional assignments have been made, namely, a study of life of wearing parts, and revision of standards, making a total of seven. These have been subdivided among the committee as follows, the name given first in each instance being that of the chairman of the sub-committee:

(1) Revisions of standards for brakeshoes and brakeshoe heads—Messrs. Benedict, Sargent, Johnson, Adams and MacLeod. (2) Continuation of study of standardization of motor parts—Messrs. Dalgleish, McWhirter, Scullin, Simmon, Priest and Potter. (3) Report on helical gears—Messrs. Durie, Johnson, Dalgleish, Simmon and Priest. (4) Investigation of feasibility of adopting standard cars—Messrs. Scullin, Squier, Holding, Yount, Adams and MacLeod. (5) Co-operation with committee on way matters on rail heads—Messrs. Sargent, Benedict, McWhirter, Holding and Dalgleish. (6) Study of life of wearing parts—Messrs. Squier, Potter, Yount, Simmon and Priest. (7) Revision of standards—Messrs. Johnson, Dalgleish, Holding, Sargent and Adams.

At the meeting the seven subjects assigned for study and report were discussed in considerable detail and plans were outlined for carrying on the work. The chairman of the various sub-committees will obtain ideas and opinions of members not present at the meeting as soon as possible with a view to beginning activities at once.

Connecticut Section Considers Aviation

AT ITS dinner meeting held on Jan. 8 in New Haven, the Connecticut Company Section cast a glance ahead as it listened to a lecture by Prof. Hiram Bingham of Yale, on "Future Aviation." Professor Bingham had served during the war in charge of aviation work and gave the section a lecture full of information and inspiration. W. R. Dunham, Jr., the newly-elected president, presided at the meeting, and in taking the chair delivered a brief address on the work of the section. D. A. Kennedy, Boston, told a number of stories, and there were solos by guests and songs by a quartet from the Yale Glee Club.

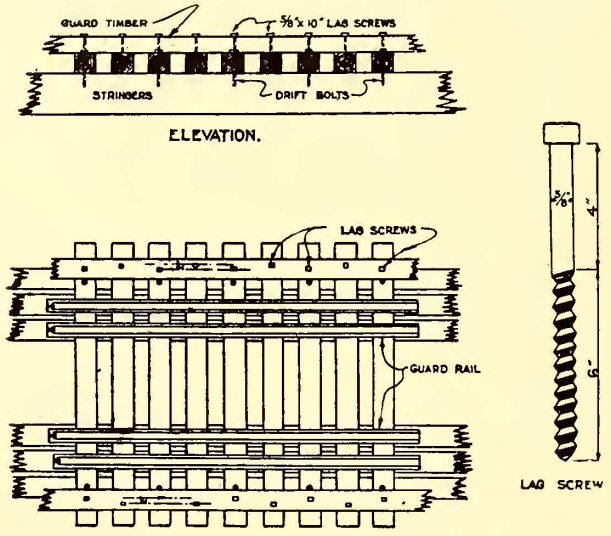
The resignation of J. W. Colton from the vice-presidency of the section was received, Mr. Colton having left the employ of the Connecticut Co. to become editor of the *Hartford Times*. In accepting the resignation the

section made Mr. Colton an honorary life member. Announcement was also made that at a meeting of the executive council held previous to the section, V. S. Curtis, secretary of the Connecticut Co., was elected vice-president in Mr. Colton's place, and E. T. Chapman, treasurer of the company, was appointed to fill his place on the program committee.

Lag Screws vs. Bolts in Trestle Construction

THE timber trestle builder has always been accustomed to the use of bolts, particularly in the decks of railway trestles. The general practice at present calls for the bolting of wooden guards to the ties. The guards are also dapped to fit over every tie, and the ties are dapped to fit the stringers. The purpose of all this has been to prevent shifting of the timbers, either laterally or longitudinally. The bolting and dapping call for a large amount of labor and material, and timbers have to be larger in size than is really necessary to provide for the dapping.

The committee on wooden bridges and trestles of the American Railway Engineering Association has been investigating this feature of trestle construction with



PROPOSED METHOD OF FASTENING GUARD TIMBERS TO TIES ON DECK OF WOODEN TRESTLES

the view primarily of eliminating the bolts and substituting lag screws. In its report for 1918 the committee made recommendations which indicate that lag screws may be safely and economically substituted for bolts in trestle decks, and stated that a test installation, with new materials both with bolts and lag screws in the same trestle, indicated that the lag screw method without dapping cost but 40 per cent of the bolt-and-dap method.

Meanwhile a maintenance period of two years developed a reduction in cost of 94 per cent in favor of the lag screws, the maintenance consisting of tightening lag screws or tightening bolts and replacing missing nuts and washers.

The lag-screw type of deck construction as developed by the committee is shown in the accompanying figure, and the committee states that lining the track is greatly simplified with this construction. Some seventeen steam railroads have tried and are using this method.

The committee presented these conclusions: (a) Lag screws require greater care than ordinary bolts to install, but are cheaper on account of ease of application. (b) When properly applied, they hold ties from bunching equally as well as bolts and nuts, and better than daps, in timber guards. (c) If the lag screws are tightened after the timber has shrunk, there is less cost of maintenance than with bolts and nuts. (d) Use of lag screws renders dapping of guard timbers unnecessary and, therefore, decreases cost of trestles without impairing quality. (e) Surfacing (sizing) ties and guard timbers is better construction than dapping; makes a better riding track, thus decreasing impact stresses, and is, therefore, good practice. (f) For proper application of lag screws, holes in guard timbers should be bored with augers $\frac{1}{16}$ in. less in diameter, and holes in ties $\frac{1}{4}$ in. less in diameter, than the nominal size of the lag screws used.

Letters to the Editors

Publicity Direct and Indirect

NEW YORK, Jan. 21, 1920.

To the Editors:

Those who are familiar with some of the arts of publicity will recall Sheridan's witty catalog in "The Critic" of "the puff direct, the puff preliminary, the puff collateral, the puff collusive and the puff oblique, or puff by implication." It is a fact that where direct publicity proves incomplete it may be assisted by indirect publicity.

As an example, let us assume that an electric railway is desirous of making clear that it needs more revenue to improve its service. Perhaps it has been arguing itself black in the face from the angle of direct publicity. A certain number of people are convinced, but not enough to carry the point. The others sagely assert that it's all camouflage, bluff, etc.

Suppose now that the railway abandons this line of argument and goes to the public with some fare proposition which would result in carrying regular off-peak riders for less money. In trying to sell this proposition, the railway will have just the right opportunity to explain that a poor load factor is one of the reasons that lead to a higher fare; that if it could fill the seats of its cars eighteen hours a day instead of two, an increase in fare could be postponed indefinitely. This line of argument puts it up to the public to furnish the required extra patronage or else admit that the railway's point is well taken. The fact that the public is offered the off-peak riding at a rate decreasing inversely as its riding increases eliminates any objection that the company is asking something unreasonable.

Whether the railway succeeds in getting the needed additional revenue through such special rate propositions or not is entirely aside from the fact that it has been enabled to get its difficulties before the public from a novel and effective angle. What it fails to get in direct increase of revenue may come indirectly through a reduction of burdens permitted by an enlightened public opinion. Therefore, I might paraphrase Sheridan by saying that there is "advertising direct, advertising preliminary, advertising collateral, advertising collusive and advertising oblique, or by implication." It's what every publicity man knows!

ADVERTISING AGENT.

Bulletin News Page

Summary of the Principal Happenings of the Industry of Current Interest Since the Last Issue of This Paper Was Published

PRINTED JANUARY 23, 1920

The technical papers prepared by B. G. Lamme, chief engineer of the Westinghouse Electric & Manufacturing Co., have been reprinted in book form.

W. A. Smith, with the Omaha & Council Bluffs Street Ry., Omaha, Neb., since 1872, has been elected president of the company.

The buses in Brooklyn, N. Y., are carrying 45,000 passengers daily.

The city of Trenton, N. J., will have no part of the bus. It has turned down flat a proposal to establish such service there.

Manufacturers in College Point, Long Island, fearing for the future of the railway there, have come out for a 10-cent fare. The employers say they will buy tickets at 10 cents each and resell them to their employees for 5 cents each.

The Staten Island Midland R.R. has suspended service despite a restraining court order. A fleet of buses is making a bold effort to handle the business.

The 187 per cent paid out in dividends by the Interborough Rapid Transit Co., New York, N. Y., furnished a rare opportunity for the headline writers of New York's dailies to play with words. This amount was paid out since the organization of the company in 1904, or in sixteen years.

The receivers of the Pittsburgh (Pa.) Rys. feel that the recent increases in fares have removed the danger of the disintegration of that property. A statement covering figures for nine months is presented in detail.

Evidence seems to be accumulating of the failure of the different security holders of the Rhode Island Co., Providence, R. I., to come together on terms that will insure a peaceful reorganization.

The deficit of the Washington Railway & Electric Co., Washington, D. C., for the year just ended was $170,894.

In the seventeen months ended November, 1919, the Boston (Mass.) Elevated Ry. lost $5,934,255. The first annual report of the public trustees is reviewed.

The annual meeting of the Central Electric Railway Association will be held at Louisville, Ky., on March 10 and 11.

The Northern Ohio Electric Co., Akron, Ohio, has turned toward preferred stock as the most satisfactory way, under the present abnormal condition of the money market, of meeting an expiring short-term loan of $4,000,000.

St. Louis is to have a 10-cent bus system.

The Federal Court at Toledo has announced that it will extend the time within which the two divisions of the railway commission there are to report on plans for the settlement of the franchise and future of the Toledo Railways & Light Co.

The Lake Shore improvement of the Illinois Central Railroad at Chicago, including electrification, has been approved by the War Department.

A new street railway commission has been appointed at Detroit, Mich. Mayor Couzens says a railway should be run primarily for service, not for profit.

The union of employees on the Key Route, Oakland, Cal., is roundly scored by the arbitrators for their failure to live up to their contract. The arbitrators, however, confess themselves powerless under the circumstances.

The water-power bill has passed the Senate. The measure now goes to conference.

The sales idea in transportation is stressed in a communication from President Musser of the Harrisburg (Pa.) Rys. to the employees of that company.

The outlook at Pittsburgh is better. This the receivers frankly say in a statement recently made public. It is their hope that the disintegration of the properties included in the Pittsburgh Rys. system can be avoided. The earnings statement is for the nine months ended Sept. 30. Among the outstanding features is the statement that the recent fare increase has produced a revenue fully equaling the expectations of the receivers.

The merchants of Broadway, New York, have gone on record, through the Broadway Association, of having buses replace the street cars on that historic thoroughfare.

Traffic of the Interborough Rapid Transit Co. is increasing rapidly. Figures are given this week of recent B. R. T. gains.

Plans were urged before the Public Service Commission of the First District of New York on Jan. 21 looking toward the construction of a rapid transit loop to encircle the Herald Square and Times Square districts and linking up the Pennsylvania and the New York Central terminals. Among the proposals suggested is one for the installation of a moving platform.

The Assembly of New York on Jan. 20 concurred in a resolution adopted previously by the Senate calling upon Public Service Commissioner Lewis Nixon to report to the Legislature whether the electric railways in New York City can furnish adequate service at the present rates of fare.

Judge Mayer in New York has divorced another surface railway from the system of which it was formerly a part.

The Connecticut Company's answer to opponents of the zone system was given to the Public Utilities Commission at a hearing on Jan. 22. Figures were introduced by the company calculated to show that the zone fare system was workable, that the large majority of the people served by the company's lines were satisfied with it, and that receipts continue to increase under the zone system. The earnings for December, 1919, were $165,297 greater than the same month in 1918, and the gross for the first fifteen days of this month were $53,000 more than for the same period in 1919. The day before Christmas the company's riders paid within $1,000 of what had been secured on the most prosperous day in the past several years.

Safety cars are expected to be in operation on the lines of the Los Angeles (Cal.) Ry. about April 1.

To smoke or not to smoke: that is the question up for settlement in St. Louis. The company there says it cannot keep the smokers within bounds.

Justice Cropsey of the Supreme Court in Brooklyn has reserved decision in the appeal of the Brooklyn Rapid Transit Co. against the operation of buses by the city in competition with the railway.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Finding in Key Arbitration

Wages Increased 12½ Per Cent—Eight-Hour Day Denied—Other Working Conditions Satisfactory

A 12½ per cent wage increase has been granted platform men of the San Francisco-Oakland Terminal Rys., Oakland, Cal., in an award made recently by an arbitration board appointed to settle the differences arising from the strike of last October. The eight-hour day was denied, as was also the claim of the men for the elimination of "tripper," or emergency crews, and retroactive pay.

In granting the increase in wages the arbitration board ruled that the fact that the War Labor Board had ceased to function did not destroy the right of either party to ask for a readjustment of the award made by the War Labor Board in October, 1919. It found further that the old rates of 43 to 48 cents on the city lines and 45 to 50 cents within the Key route were not sufficient to provide a proper living but that an increase to a scale of 48 to 54 cents on the city lines and 50 to 56 cents on the Key route would be sufficient. This amounts to a 12½ per cent increase and will give the men an average income of $1,600 a year on the basis of a ten-hour day.

Old Rates Inadequate

In denying the plea of the employees for an eight-hour day the arbitration board said that the eight-hour day would increase the cost to the company for wages at least 45 per cent and at the same time would not increase the earnings of the men above the amount granted in the present award. The board found the company positively unable to pay any such increase in the wages.

Union Scored

The employees had asked that any wage increase granted become retroactive to October, 1919. The board ruled that by their action in declaring a strike on Oct. 1 the men had forfeited their right to expect such retroactive pay. The strike caused the company a loss of $350,000. With one minor exception the remaining demands of the men were denied. This exception is the abolition of the system of hiring emergency or tripper men not on the regular list except between the hours of 7 and 9 in the morning and 4 and 6 in the evening.

The arbitration board was appointed after a strike beginning Oct. 1, 1919, and lasting eleven days. About Sept. 1 the men served notice on the company of a demand for certain changes in their contract, the most important of which were increased wages and the establishment of an eight-hour day. The company refused to grant the demand but offered to arbitrate the matter. Contrary to their agreement with the company and in contradiction to the constitution of the union, the men refused to arbitrate and struck. After eleven days of loss to the company, the men and the public, an agreement of arbitration was entered into and the men returned to work. Both the men and the company were pledged by the State Railroad Commission to accept the decision of the arbitration board. This decision is retroactive only to Jan. 1, 1920, and is to remain affective for a period of one year.

The board stated that under normal circumstances the award would have been made effective as of Oct. 1, 1919. It censured the men for having gone on strike, however, and as a penalty made the award effective on Jan. 1, 1920. In refusing to grant the request of the company for some assurance that the men will abide by their contract and this award the board said:

> Just what assurance be given is not suggested and we know of none. The cause of organized labor depends fundamentally upon organized labor living up to its contracts, but if the men themselves will not perceive this and voluntarily fulfill their agreements, we know of no machinery at the present time by which they can be compelled to do so. Upon this point of assurance all that we can say is that it is beyond our power.

Mr. Billings Wins Union Praise

C. P. Billings, manager of the Wheeling (W. Va.) Traction Co., has won praise from union sources in that city for his handling of a recent case in which a man was discharged. Under the title "A Hopeful Thing" the Wheeling *Majority* said:

> Last month a man was discharged by the management of the Wheeling Traction Co. Last week the case went to arbitration. The management and the union were unable to agree on the case, and the contract between the men and the company provides arbitration in all disputes. The arbitration board found the evidence sustained the manager and justified the discharge. And then the manager re-employed the man, returning him to his former position and rate of pay.
>
> It is a hopeful thing when the human relationship can thus enter the theoretically cold halls of business. The fairness of Manager C. P. Billings was vindicated by the arbitration decision; his kindness, which is more than mere justice, was shown by his subsequent action.
>
> The incident has two morals: one, that we are leaving the days of an industrialism of Simon Legrees and cringing slaves; the other, that arbitration will work. Men can be fair, and more than fair, if the atmosphere is created that develops fairness. And fairness, even to the point of charitableness, will not destroy discipline among employees. On the contrary, it develops a loyalty and co-operation which makes for efficiency in the service, through the management, to the public.

Power Bill Passes Senate

Measure Sent to Conference Between Upper and Lower Houses—Important Changes Are Forecast

By a vote of fifty-two to eighteen the Senate on Jan. 15 passed the water-power bill. The measure now goes to conference. It is a foregone conclusion that important changes will be made in the bill by the conferees. The conferees on the part of the Senate are Senators Jones of Washington, Nelson of Minnesota, Bankhead of Alabama, Smoot of Utah, Fall of New Mexico and Myers of Montana, and those who will represent the House are Representatives Esch of Wisconsin, Sinnott of Oregon, Haugen of Iowa, Sims of Tennessee, Taylor of Colorado and Lee of Georgia.

The amendment relating to compensation for the use of water powers utilized by private capital and not by the government, which had been lost by one vote in committee of the whole, was voted upon again in the Senate proper and was passed by a vote of forty-four to twenty.

The five provisions of the measure which were characterized by Gifford Pinchot as being anti-public and indefensible were not adopted except the one striking out the Senate committee amendment relating to joint approval of contracts and the one limiting to some degree the amount of severance damages. The Pinchot objections were pressed very strenuously by Senator Lenroot and others. It is expected they will receive consideration in the conference.

$25,000,000 Development Authorized

As finally passed by the Senate, the bill contains the authorization for a $25,000,000 power development on the Potomac River at Great Falls and gives to the Federal Power Commission all the authority vested in the Newlands commission. It is regarded as not improbable, however, that both of these provisions of the bill will be stricken out in conference. The Newlands commission was empowered to study development and control of waterways and water resources and subjects relating thereto and to study the matter of bringing into co-ordination and co-operation the engineering, scientific and constructive agencies of the governmental departments so as to make recommendations as to irrigation, drainage, forestry, reclamation, clarification of streams, regulations of flow, control of floods, utilization of water power, prevention of soil erosion and waste, storage and conservation of water.

The matter of development of water

power on Indian reservations called forth considerable debate, but an amendment by Senator Nugent prevailed after determined opposition on the part of Senator Walsh of Montana. Among other things the amendment provides that "in the case of tribal lands embraced within an Indian reservation which said lands were ceded by the Indians to the United States by treaty, no license shall be authorized except by and with the consent of the council of the tribe."

An effort was made by Senator Nugent to amend the bill so that it would not take effect until the expiration of three years after its approval by the President. This amendment had the support of only a few votes.

Chicago Electrification

War Department O. K.'s South Shore Improvement and Illinois Central Electrification with Reservations

A new chapter in the history of Chicago railroad electrification has been opened with the receipt of word from Newton D. Baker, Secretary of War, that the government has approved the Lake Shore improvement and Illinois Central electrification, and that a permit for the improvement will be issued if a few slight changes are made in the plan. Thus after ten years delay it seems assured that the work will actually commence in the near future.

Ordinance Reviewed a Year Ago

The new ordinance was reviewed in the ELECTRIC RAILWAY JOURNAL of Jan. 11, 1919, page 108. Since that time the ordinance has been submitted to the government for approval, and it seems that this has now been granted. The reservations that Secretary Baker requests have already been practically agreed upon by the Illinois Central R.R., and the South Park Board.

The railroad company has also requested a change in the wording of the amendment to the ordinance as a safeguard against delays resulting from federal railroad legislation. While an agreement as to this wording is being reached, it is expected that the City Council will grant the railroad's request for an extension of the acceptance date to Feb. 21.

The changes which Secretary Baker has requested apply entirely to the Lake Shore improvement work, and therefore have no particular bearing upon the plans for the electrification of the Illinois Central R.R.

The ordinance covers, in addition to the electrification of the Illinois Central, the erection by that road of a new passenger terminal at East Twelfth Street. With this completed the downtown terminals centering in Polk Street, Harrison Street, and Van Buren Street, will be transferred to the new lake front terminal.

Confidence is expressed that work will begin on the carrying out of the project by July, 1920.

$2,600,000 Improvements Suggested

Plans for the extension of the Lee, Taylor, Tower Grove, Natural Bridge and City Limits car lines of the United Rys., St. Louis, Mo., are being prepared by Charles S. Butts, superintendent of the department of public utilities of St. Louis, and will be submitted to a special committee of the Board of Aldermen within a few days. The improvements are designed to meet growth of the Union Avenue industrial district and other sections of the city.

Mr. Butts' plan provides for the extension of the Tower Grove, the Taylor Avenue line and the Natural Bridge line. The railway recently obtained funds to erect a station at Pine Lawn and announced a plan to divide the present Kirkwood-Ferguson line at that point. Engineers of the company have been working on the Natural Bridge extension to serve the General Motors and other new industries. The City Limits line is to be taken off Hodiamont Avenue, between Plymouth to the Hodiamont and Kirkwood-Ferguson tracks to Pine Lawn to connect with the Natural Bridge line. A bill granting a franchise for the use of Plymouth Avenue west of Hodiamont to carry out this plan is pending before the Board of Aldermen. The company recently announced a plan to extend the Olive-Maryland division north on Kings Highway to Waterman Avenue to connect with the University line and thence over that line to Pennsylvania Avenue.

The proposals required 64.45 miles of track, costing $2,600,000.

Banker Wants Lines Kept Intact

A. C. Robinson, president of the Peoples Savings & Trust Co., Pittsburgh, Pa., in an address before the Pittsburgh Association of Credit Men on Jan. 15, insisted that the Pittsburgh Rys. system must be treated as a whole if the interests of the public, the holders of securities and the railway itself are to be served. He deprecated the efforts of certain of the underlying companies to detach themselves from the system, and argued that a greater degree of co-operation among them must be had if a satisfactory solution of the transportation difficulties of Pittsburgh is to be arrived at.

Mr. Robinson took a determined stand against municipal ownership, but he did contend that, if the city must levy taxation to make up a deficit in the railways company's operation, there would be no injustice worked, since the railways company more than repays any expenditure of this kind by the city by the growth it encourages in the municipality.

He bespoke the whole-hearted support of the public for A. W. Thompson, recently-elected president of the Philadelphia Company, which is the holding company for the railways system.

New Board at Detroit

Mayor Couzens Announces His Railway Commissioners—Formal Approval of Railway Postponed

At the close of his annual message to the City Council of Detroit, Mich., Mayor James Couzens announced the appointment of a new Board of Street Railway Commissioners. At the request of the Mayor, formal approval of the $15,000,000 street railway addition, as provided for by the Castator street railway ordinance, has been postponed in order to refer the ordinance to the new Street Railway Commission for consideration. The new commission is composed of Attorney Ralph Wilkinson, W. G. Mayo, chief engineer of the Ford Motor Co., and G. O. Ellis, publisher of the *American Boy Magazine.*

Representative Commission

In commenting upon the personnel of the board, the Mayor stated that he had appointed a lawyer, an engineer and a business man, thus combining the three elements which he needs for the proper development of his plan. As the building of the railway system will naturally fall under these classifications, a man was chosen who is an expert in each.

It is believed that Mr. Wilkinson, who has been chosen president of the board, will be an able assistant to the Corporation Counsel in settling the numerous questions that will arise in connection with the consummation of the proposed railway plan.

Mr. Mayo's selection by the Mayor was prompted by his desire to obtain the services of a member of the Ford organization, familiar with the development of the new Ford gas traction car which is being considered in the matter of equipment of the tracks which the Mayor proposes to build. Mr. Mayo will also be competent to take an active part in the supervision of construction of the new lines.

The need of a practical business man on the commission was filled by the appointment of Mr. Ellis, a man possessing the proper qualifications and a member who, it is believed, will work in harmony with the Mayor in carrying out his plans.

Mayor Favors Municipal Ownership

In discussing his plans, the Mayor outlined his reasons for favoring municipal ownership for Detroit. He believes such ownership of a transportation system superior to private ownership because, while municipal corporations stand primarily for service, the real reason for the existence of a private company is for profit.

Although the new lines are being planned with a view to using the Ford gas cars, complete electrification of the system has been provided for if needed. Great caution has been exercised in estimating costs of the proposed system, the Mayor stated, to insure that the money asked for would

cover all requirements. Taxes, paving, sinking fund and interest charges similar to those figured by the Detroit United Ry., have been included in his estimates.

At its first meeting, on Jan. 16, the new Street Railway Commission analyzed the probable cost of construction and discussed the best way of placing the plan before the voters at the April election. The plan will go to the Council in the near future, in the form of the Castator ordinance, with a communication from the commission recommending its passage.

A publicity campaign will be organized with the view to furthering the Couzens plan by a schedule of meetings to be addressed by speakers who will be prepared to discuss details of the plan.

Protests Coal Price Increase

At a meeting of representatives of electric railway, light and power, gas, water and telephone companies of Indiana, on Jan. 3, letters signed by representatives of the five utility groups were sent to President Wilson by Arthur W. Brady, president of the Union Traction Company of Indiana, protesting against any further increase in the price of coal and recommending a larger representation for the public on the coal commission.

Representatives of the various utilities stated at the meeting that increased coal prices would mean either higher rates or impairment of the present service rendered to the public.

The letter to the President reminds him that the petitioners are the authorized representatives of the gas, electric light and power, traction, water and telephone services serving more than 3,000,000 people in the State of Indiana, and that these companies are apprehensive, because some of them have already been advised by the coal operators that it will be necessary to increase coal prices 25 cents a ton as a minimum, because of the 14 per cent increase already granted the miners.

As the Indiana companies consume approximately 7,000,000 tons of coal annually, the 25 cent initial increase will mean an addition of about $1,750,000 to the collective coal bill of these utilities. This presents a very serious problem.

Copies of the letter were sent to Senator Frelinghuysen, of New Jersey; Senators New and Watson, of Indiana; the members of the Senate committee investigating the coal situation; the members of the Indiana Public Service Commission, and to Governor Goodrich.

Mid-Crosstown Loop Urged

Advocates of the various projects for a solution of crosstown traffic of the uptown business center of Manhattan were heard on Jan. 20 by the Transit Construction Commission through Daniel L. Ryan, Deputy Commissioner. Of the thirty or forty who attended a majority represented the Thirty-fourth Street Board of Trade in its advocacy of a subway loop covering an area bounded by Seventh Avenue, Fourth Avenue, Forty-second Street and Thirtieth or Thirty-first Street.

In speaking for the Thirty-fourth Street organization, Milo R. Maltbie, former Public Service Commissioner, attacked the report of the chief engineer of the Rapid Transit Commission, Daniel L. Turner, both for his broad recommendation of the proposed moving sidewalk under Forty-second Street and his insinuation that the loop scheme was advocated by those that had a selfish interest. The advocates of the moving sidewalk scheme were not silent.

There were two advocates of the immediate extension of the Queensborough subway from Grand Central Terminal to Seventh Avenue. These were Maurice E. Connolly, president of the Borough of Queens, and Arthur G. Peacock, of the Interborough Rapid Transit Company counsel. The extension of the Queensborough subway crosstown long has been delayed, although it has been contracted, and Mr. Peacock said the Interborough demanded immediate fulfillment of the contract, at least before any other plans for crosstown traffic were considered or made.

Bills Introduced in New York

Senate Intro No. 21, Print No. 21, introduced Jan. 6 by Mr. Lockwood. Amending subdivision 2, 3, 6 section 161-d labor law, by striking out the provisions that no female over twenty-one years of age shall be permitted to accept fares in any railroad station, car or train of any street, surface, electric, subway or elevated railroad more than six days or fifty-four hours a week nor more than nine hours in any one day nor before 6 a.m. or after 10 p.m. of any day. This repeal is to permit the employment of conductorettes in Greater New York under the same conditions as prevailed before the law was amended last year as it now reads.

Ten-Cent Buses in St. Louis

The Board of Public Service of St. Louis, Mo., has agreed on the terms of an ordinance regulating the operation of motor buses in St. Louis. J. Lucas Turner, superintendent of the Missouri Motor Bus Co., has announced that his company will begin the operation about Feb. 1 of fourteen double-deck buses, seating sixty-one persons each. Routes have not been selected. A license of $25 a year for each bus operated and 5 per cent of the gross receipts of the buses are to be paid to the city.

The Missouri Motor Bus Co. has agreed, in order to avoid conflict with the cars of the United Rys. operating in the downtown district, that all lines established east of Twelfth Street shall run east on Chestnut Street, probably to Seventh Street, then north to Washington and back to Chestnut either on Sixth or Eighth Streets. The fare will be 10 cents.

Extension at Toledo

Court Indicates It Will Grant Additional Time for Conduct of Franchise Settlement Negotiations

On Jan. 16 it was announced that Federal Judge Killits would issue an order within a few days extending beyond Jan. 15, the time in which the city and the Toledo Railways & Light Co., Toledo, Ohio, must agree upon the terms of an ordinance, or alternative service-at-cost and municipal ownership proposals, to be submitted to vote at a special election.

It is expected the service-at-cost and municipal ownership divisions of the street railway commission will be required to submit reports of their proposals to the court on a definite date, reasonably soon, and that Council may be permitted to fix the date of the special election.

As a result of a conference between Law Director Martin and W. L. Milner, chairman of the service-at-cost commission, it was decided to hold no further meetings of this board until Jan. 19. It was expected that by that date the law director will have completed drafts of the service-at-cost ordinance, leaving only a few blanks for insertion of figures and phrases by which the big issues in dispute, such as valuation, rate of return to the company on its investment, and maximum fare will be settled.

COURT OVER-SANGUINE

Judge Killits made the statement on Jan. 15 that there were eighteen points in dispute between Mr. Doherty, operating head of the property, and the city, upon no one of which agreement had been reached. Law Director Martin said subsequently that since the meeting to which Judge Killits referred tentative agreements had been reached on many of these points between representatives of the city and Dewey C. Bailey, Mr. Doherty's personal counsel. Those who have followed the situation closely say it ought to be known very soon whether there will be an agreement or a definite break in the negotiations.

At the hearing in the Federal Court counsel for the company opposed any extension of time.

Judge Killits said:

> It is very obvious that the former order of the court must be modified or the right to discontinue car service after Jan. 25 will be a weapon in the hands of the company. As Mayor Schreiber says, the original order simply cannot be complied with. Under it, the city would be helpless and the company would have the unrestrained choice of doing as it pleased about continuing service.
>
> We all made a mistake by fixing the time so short. The city, by the ouster ordinance, had outlawed the company. Then the city found that was a very improvident act and asked the company to come back. It was entirely with the court's concurrence that the time limitations were placed in this order.
>
> I confess I had the over-sanguine notion that settlement could be reached in five weeks on the service-at-cost plan, with a municipal ownership ordinance as an alternative. But when it developed that the municipal ownership commission required new State legislation, I realized the awkward situation we were in.

Texas Interurban to Spend $160,000

Approximately $262,500 was expended last year by the Texas Electric Ry., Dallas, for new equipment, station improvements, ballasting and paving and track renewals in cities where city lines were operated. Of this amount approximately $87,500 was expended on the properties of the interurban system in the State. Two baggage trail cars were constructed in the company's shops during 1919 at a cost of $7,500, approximately $50,000 was expended for new station properties in various cities served by the lines as well as making improvements on stations owned.

Track ballasting entailed an expenditure during 1919 of $30,000 and some 60,000 new ties were put in place throughout the system. Expenditures on city lines during 1919 included the purchase of ten new one-man safety street cars for operation in Waco at an approximate cost of $80,000, the placing of air-brake equipment on cars in Waco, which cost $5,000, and the expending of about $90,000 for paving and track renewals in the various cities served by the company.

The outlook for 1920 for the Texas Electric Railway is encouraging, according to its officials. Expenditures contemplated for the new year will be slightly in excess of $160,000, depending on weather and crop conditions and other general conditions with which industries have to deal. In line with contemplated improvements in the system is also expected to come a substantial increase in the company's business.

Of the total amount to be expended during 1920 $50,000 will go for ballasting track, $40,000 will be used in the replacing of wooden and pile bridges with concrete and steel bridges, and between $15,000 and $20,000 will be set aside with which to purchase new shop equipment and tools. It is possible that new equipment will be needed for the system and the company has tentatively in contemplation the purchase of two new interurban passenger motor cars costing approximately $40,000. With this new equipment and increased transportation facilities the Texas Electric Railway and subsidiary lines will be in a position to handle a larger volume of traffic during 1920 than they have ever handled during any previous year.

Merchants Approve Car-less Broadway

Members of the Broadway Association of New York City, by a vote of nearly four to one, have approved a proposal calling for the removal of the present Broadway surface car lines and the substitution of a motor bus system instead. A one-fare motor bus service from Bowling Green to Kingsbridge is the association's preference.

The matter was put up to the 1,200 members by the association's transportation committee, consisting of John David, chairman; Frank G. Carrie, Thomas D. Green, Glenn A. Tisdale and J. E. Harrington. These were the three questions voted upon:

1. Are you in favor of a through line operated from Bowling Green to Kingsbridge for a single fare without transfer?
2. Are you in favor of the continued use of the present type of green car used on Broadway south of Forty-fourth street?
3. Are you in favor of the removal of the street car tracks and the substitution of a modern bus system operating on Broadway?

The returns showed that 77 per cent of the members favored abolition of the present surface car lines while only 15 per cent wanted the street cars retained. Eight per cent did not vote.

Bill to Amend Rhode Island Utilities Act

A bill amending the public utilities act of Rhode Island, to give the Public Utilities Commission control over all issues of stocks, bonds, notes and any other evidence of indebtedness of public utility corporations has been introduced in the House and sent to the judiciary committee.

The measure was prepared by City Solicitor Elmer S. Chace of Providence and is accompanied by a joint resolution of the Providence City Council, requesting the Legislature to pass the measure substantially as presented.

The act provides that before issuing any evidence of indebtedness extending beyond a period of one year, the public utility shall file a petition with the Public Utilities Commission for authority to do so, and that the Utilities Commission shall give a public hearing before granting such authority.

The change in the present law is made by adding three sections. The more significant provisions of these sections follow:

Sec. 61. A public utility may, with the approval of the Public Utilities Commission, but not otherwise, issue its stock, bonds, notes and other evidences of indebtedness payable more than twelve months after the date thereof for the purpose of defraying the cost of acquiring property of any kind which is reasonably requisite for present or future use

Sec. 62. No public utility shall issue any stock, bonds, notes or other evidence of indebtedness payable more than twelve months after the date thereof without first procuring an order of the Public Utilities Commission authorizing the same. No public utility shall apply the proceeds from stock, bonds or notes to any other purpose than those specified in the order of the commission authorizing the issue of the same.

Every public utility issuing stock, bonds or other evidence of indebtedness shall file with the commission an account showing the disposition of the proceeds of such issue. The decision of the commission as to the amount of stock reasonably necessary shall be based upon the price at which such stock is to be issued, and the commission shall refuse to approve any particular issue of stock, if, in its opinion, the price at which it is proposed to be issued is so low as to be inconsistent with the public interest.

Sec. 63. Any public utility which may apply to the Public Utilities Commission for authority to issue such securities shall file with its application a statement in reasonable detail showing the actual amount of items of expense already incurred and the estimated amounts of items of expense to be incurred for any of the purposes defined in section 61 hereof which it may desire to capitalize. The commission shall determine the actual or proper cost of such items, and if in its judgment the issue of such securities upon the terms proposed is consistent with the public good, it shall authorize the same to an amount sufficient at the price fixed in accordance herewith to provide funds for defraying the cost as so determined. Upon any application for authority to issue securities for the purpose of providing funds for discharging any indebtedness incurred by a public utility in good faith prior to Jan. 1, 1920, in acquiring property, or accomplishing any of the other purposes specified in the preceding section, no deduction shall be made from the cost thereof as determined by the commission on account of any estimated depreciation of plant and properties beyond the portion if any of such costs which it may appear has been paid out of the depreciation reserves of said public utility if any, or out of earnings, to make good depreciation.

Fundamental Treatment Necessary in New York

Dr. Charles A. Beard, director of the New York Bureau of Municipal Research, has recently published an interesting thirty-page study of the above title, issued as publication No. 94 of his institution. Dr. Beard points out that the New York situation calls for fundamental treatment. Much information concerning the organization and financing of the New York system is included and the pamphlet concludes with the enumeration of seven propositions "as a starting point for an agreement on a certain irreducible minimum":

1. It must be conceded that the principles evolved by the American people in fifty years' experience in traction matters afford the basis for negotiation.
2. No increase of fare ought to be granted in New York City without a modification of the franchises and contracts of the existing companies in the public interest.
3. The traction problem of Greater New York must be treated as one problem involving the entire system. The convenience of the travelling public and the cost of the general service, not the operating costs of single short lines, should be the determining factors in fixing rates.
4. Provision must be made for unified operation with a view to effecting the economies which such operation promises, even though two or more companies might be embraced in the final settlement.
5. The total capital upon which a return may be earned should be determined once for all and the slate wiped clean for future extensions, betterments and additions on a basis of bona fide capitalization.
6. Definite provision must be made for assuring to the companies consolidated a fair return upon their adjusted capitalization and upon additional capital hereafter raised for extensions and betterments—such a guarantee being accompanied by a division of surplus, if any, between the city and company or companies owning the properties.
7. The way must be cleared for applying municipal ownership to the surface and elevated lines on definite terms and conditions as to acquisition and financing when and if such a step is desired by the people of the city.

The principles mentioned under heading one are: (1) that perpetual franchises are intolerable, (2) that the capital in traction lines already established must not be inflated by manipulation, and that new capitalization must represent bona fide expenditures for services, materials and labor, (3) that a public utility company must be allowed to earn a reasonable return on the capital invested, (4) that all profits above this reasonable return should be divided between the company and the local government in such a way as to furnish incentive for efficient and economical operation, and (5) that the terms and conditions of municipal ownership should be explicitly set forth in agreements embodying principles 1—4.

News Notes

Back to Low Tension D.C.—The Indianapolis, Columbus & Southern Tracton Co., Columbus, Ind., will reduce the voltage between Sellersburg and Seymour from 1200 to 600. When this is done the voltage will be uniform along the entire line from Indianapolis, Ind., to Louisville, Ky.

Bonus in Liberty Bonds.—The Phoenix (Ariz.) Ry., distributed between $2,800 and $3,000 at Christmas among its trainmen in recognition of faithful work. S. H. Mitchell, manager, was responsible for the awards. He said that the company is still operating under a 5-cent fare, and that he went the very limit to show the men that the company appreciated their loyalty and co-operation.

Railway Activity in Great Britain.—From the list of proposals for tramway extensions and other improvements which the British Parliament is considering on petition of municipalities and private companies, great activity in the line of urban and interurban transportation is expected in the immediate future in Great Britain. Particularly noticeable is the number of applications for permission to operate motor buses as auxiliary to the tramway service.

Arbitration Board Complete.—W. G. Evans and William C. Thornton, arbitrators representing the Denver (Col.) Tramway and the union respectively in the wage dispute, have notified the State Industrial Commission they have agreed upon a man for third arbitrator. Under the terms of a recent agreement, the appointment of the nominee agreed upon is left to the commission, leaving the prospective appointee free from any one-sided interpretation. The name of the third man was not made public.

Addresses at Glasgow Semi-Jubilee.—A brief account of the celebration on July 1, 1919, of the semi-jubilee of the tramways department of the Glasgow Tramways is given in a thirty-six page pamphlet. There was a picturesque pageant through the streets, in which one of the original horse-drawn cars participated, and this was followed by an inspection of the shops and other property of the department. The addresses and portraits of the speakers appear in the pamphlet.

Vocational Classes for Trainmen.—The Birmingham Railway, Light & Power Co., Birmingham, Ala., has drawn up comprehensive plans for vocational training classes for its trainmen. A course of thirty-six lessons, with two-hour sessions twice a week, will be given under the supervision of F. H. Jarvis, vocational training representative of the Department of Labor. The trainmen will be given theoretical and practical instruction that will make them more efficient in their work.

Wage Question Still Unsettled.—Officials of the Georgia Railway & Power Co. and the committee from the Amalgamated Association had not reached a wage agreement up to Jan. 16. The conductors and motormen are demanding a 50 per cent increase with time and a half for Sundays, holidays and overtime. The old contract with the men expired on Dec. 31, 1919. This contract called for 40 cents an hour, while the new contract calls for 60 cents and hour, time a half clauses and a demand for a closed shop.

I. R. T. Charges Dismissed.—The extraordinary Grand Jury which has been investigating charges of conspiracy made against officials of the Interborough Rapid Transit Co., New York, N. Y., and officers of the Brotherhood of Interborough Employees, on Jan. 17 handed to Supreme Court Justice Bartow S. Weeks a presentment dismissing all the charges on the ground of insufficient evidence. The Grand Jury investigation grew out of the strike of the Interborough trainmen several months ago.

M. O. Suggested for St. Louis.—Declaring that the receivership of the United Rys., St. Louis, Mo., has proved a failure, the executive board and United Rys. committee of the Civil League of St. Louis has addressed a letter to Mayor Kiel and President Aloe of the Board of Aldermen offering "our co-operation to the city for a real move toward relieving the people of St. Louis by taking over the street railway system at a proper valuation." To this end a study of the feasibility of municipal ownership is urged and it is suggested that Delos F. Wilcox, New York, be employed in such a survey. No reply has been made to the letter by either the Mayor or by the Board of Aldermen.

Underground Motor Roads.—Lord Ashfield of Southwell, the former Sir Albert Stanley, foreshadowed a vast system of underground roads for London devoted exclusively to motor traffic, in a speech at the American Luncheon Club on Jan. 16. These roads, he suggested, would be connected with the outer districts of the metropolis by what might be described as boulevards, the latter being used exclusively for motor traffic. Lord Ashfield said that London is the greatest riding city in the world. Some one has got to provide roads capable of dealing with 375,000 motor cars, and he predicted that a rapidly increasing number of underground railways would have to be built, as well as underground motor roads.

Interborough Men Not to Strike.—Employees of the Interborough Rapid Transit Co., New York, N. Y., will not strike because their company has failed to grant them the second 25 per cent raise, which would have met in full their demand made at the time of the one-day strike last August. They are not going to strike because they realize the company cannot pay them an increase and remain solvent. This was the result of a conference between Frank Hedley, president of the railway, and leaders of the Interborough Brotherhood. The men have decided to await the decision of the city's inquiry into the requests of the transit companies for a higher fare before pressing their claims.

Permanent Commission for South Carolina.—The General Assembly of South Carolina, now in session, will consider plans for the reorganization of the present State Railroad Commission. Two bills have been drafted, each providing for a permanent commission. One of these bills has been prepared by public service corporations doing business within the State, the other by the present commission, the two bills being very similar in detail. They contemplate a body of three members, and carry appropriations for the commission's expenses. Both of these bills would give the commission authority over rates and also over service rendered by Utilities. They would also give authority to approve securities of such companies. The two bills have been presented to Governor Cooper.

Praise for Mr. Connette.—E. G. Connette, retiring president of the International Ry., Buffalo, N. Y., is the subject of editorial praise in the Buffalo *Courier* of Jan. 6. That paper said: "President Connette has borne himself in a way that has gained for him the respect of those who have to do, officially and otherwise, with the relations of the company to the municipality and the public. For reasons which he candidly gives in a letter to the board of directors of the company Mr. Connette has resigned, the resignation to take effect on the appointment of his successor. In the light of his striking recitation of the salient facts of his record of management, even those who have at times been severe critics will no doubt be disposed to give him credit for very effective handling of a difficult task. Mr. Connette will carry with him to other fields the well wishes of numerous Buffalo friends."

Programs of Meetings

Engineering Institute of Canada

The annual business and professional meeting of the Engineering Institute of Canada will be held at the headquarters of the Institute in Montreal on Jan. 27, 28 and 29. At the convention questions of interest to the engineering profession of Canada and topics of special interest to the people of Quebec will receive attention.

Central Electric Railway Association

The annual meeting of the Central Electric Railway Association will be held at the Hotel Seelbach, Louisville, Ky., on March 10 and 11. At this meeting the annual reports of committees and the secretary and treasurer will be presented and the annual election will be held. It is expected that the printed program will be mailed by Feb. 15.

Financial and Corporate

Northern Ohio Financing

Stockholders Will Vote on Jan. 27 to Create $4,000,000 of 8 Per Cent Stock to Retire Loan

The Northern Ohio Electric Corp., Akron, Ohio, has coming due on Feb. 1, 1920, a loan for $4,000,000. It is proposed now to liquefy this loan through the issue of $4,000,000 of Class A, 8 per cent first preferred stock. The present 6 per cent preferred stock will be exchanged for new Class B 7 per cent second preferred shares, provided the holder subscribes for 66⅔ per cent of Class A preferred at par, and also pays $10 per share held for the privilege of the exchange.

The loan now about to be taken up was made at the time of the original financing of the company in 1916. At that time the issuance of $6,000,000 of preferred stock, 75,000 shares of common stock, without par value, and a $4,000,000 one-year loan provided for the purchase of approximately, $9,000,000 of common stock of the Northern Ohio Traction & Light Co. and also furnished about $900,000 of working capital. The one-year loan was secured by pledge of the Northern Ohio Traction & Light Co. common stock purchased. It has been renewed from year to year owing to the unfavorable financing condition attributable to the war.

OPPORTUNITY FOR STOCKHOLDERS

The last renewal was secured upon assurance that some plan would be devised for the retirement of the loan at maturity. As any security issued at this time for that purpose must carry a high rate of return, the directors feel that the stockholders should not only have the opportunity to subscribe therefor, but that the advantage in so doing should be especially brought to their attention. In consequence a special meeting of the stockholders has been called for Jan. 27 to vote on the new financing. The shareholders will be asked to increase the preferred stock and to classify all of the preferred stock as follows:

Class A: $4,000,000 (40,000 shares of $100 each) 8 per cent cumulative, dividends payable quarterly (March 1) to be preferred over all other stock, both as to the payment of dividends and distribution of assets; to be callable at 115; to participate in the distribution of profits equally per share with the common stock, after the common stock shall have received $4 per share in any year. This stock is to be secured by the pledge of two shares of Northern Ohio Traction & Light Co. common stock for each and every share of Class A preferred stock outstanding.

Class B: Not exceeding $6,000,000 (60,000 shares of $100 each) 7 per cent cumulative preferred stock, dividends payable quarterly (March 1) to be preferred over all other stock except Class A stock, to which it is subject as to payment of dividends and distribution as assets; to be issued upon the payment of $10 per share, only in exchange for 6 per cent preferred stock now outstanding share for share, so that at no time will the aggregate amount of Class B and 6 per cent preferred stock exceed $6,000,000.

Upon subscription to the full amount of Class A preferred stock, and the conversion of 6 per cent preferred stock into Class B, 7 per cent preferred stock, the capitalization of the corporation will be as follows:

Class A 8 per cent preferred stock	$4,000,000
Class B 7 per cent preferred stock	6,000,000
Common stock (without par value), shares	75,000
Dividend on $4,000,000 Class A 8 per cent preferred stock	320,000
Dividend on $6,000,000 Class B 7 per cent preferred stock	420,000

A circular explaining the plan says that since August, 1916, the gross earnings have nearly doubled, while the operating expenses have greatly increased because of vastly higher cost of labor and material as have also the fixed charges occasioned by the financing of a large amount of extensions and additions to the property and the refunding of maturing obligations on a higher interest basis and largely increased taxes, the officers feel that the corporation has been exceptionally fortunate in its maintenance of net income, the decrease therein during 1917 and 1918 having been very much less than in the majority of public utility companies, while for the year 1919 there was a substantial increase, with excellent prospects for continuing improvements.

It is pointed out that the electric light and power business has increased remarkably, the total gross receipts from this source having been more than trebled during the past three years, and now being more than 35 per cent of the total gross receipts as compared with less than 22 per cent at the time the property was acquired. It is also pointed out that the interurban railway business is profitable and growing rapidly. The city electric railway business, however, is not satisfactory, no increase in fares having been secured, but continuing efforts are being made to secure such increase.

Relief Is Necessary

Washington Railway & Electric Co. Being Swamped With Rising Tide of Costs

The Washington Railway & Electric Co., Washington, D. C., and its subsidiaries, since the war, have failed to earn by approximately $1,000,000 a return of 6 per cent upon the value of the properties of the companies, according to a statement by W. F. Ham, president of the company, at the annual meeting of the stockholders on Jan. 17. Mr. Ham declared that unless further relief can be obtained with reasonable promptness, the integrity of the property of the company will be seriously threatened with deterioration of service and equipment. Mr. Ham said:

Since 1914 our gross annual business has increased from $5,048,435 to $9,003,919, or 78 per cent. In the meantime, however, operating expenses, taxes and miscellaneous charges, not including interest, have increased from $2,891,112 to $7,242,293, or 150 per cent, the result being that with a very much larger business now being done than five years ago, we are actually earning much less as a return upon our investment, which has been increased several million dollars during that period.

Two items alone will indicate the tremendous increase in operating expenses. Wages of conductors and motormen in 1914 amounted to $560,163; in 1919 to $1,409,113, an increase of $848,949, or 151 per cent.

In 1914 we burned 94,283 tons of coal at a cost of $317,496. In 1919 we burned 213,114 tons at a cost of $1,220,825, an increase of $903,328, representing an increase of 284 per cent during the five-year period.

Mr. Ham submitted the accompanying statement of earnings.

COMPARATIVE STATEMENT OF EARNINGS OF WASHINGTON RAILWAY & ELECTRIC CO.

	1919	1918
Gross earnings	$9,003,919	$7,035,499
Miscellaneous income	80,298	41,748
Gross income	9,084,218	7,077,248
Operating expenses (including taxes and miscellaneous items)	7,242,293	5,150,961
Gross income (less operating expenses, taxes and miscellaneous items)	1,841,925	1,926,286
Interest charges	1,460,309	1,252,176
Surplus income for the year	381,615	674,111

DISPOSITION OF SURPLUS—1919

Surplus income for the year		$381,615
Additional miscellaneous profit and loss adjustments		59,739
Total		$441,355
Less—		
Sinking fund requirements—P. E. P. Co	$106,000	
Payment of 5 per cent dividend on preferred stock	425,000	
Payment of 1¼ per cent dividend on common stock	81,250	
		612,250
Profit and loss deficit for the year 1919		$170,894

Council Orders Service Restored

The City Council of Wellsburg, W. Va., ordered C. P. Billings, general manager of the Wheeling Traction Co. to restore service in that city immediately. All cars were taken from Wellsburg seven weeks ago, the company taking the position that the local system was not a paying proposition. It was announced that the equipment removed would be used to perfect the service of the company between Wheeling, W. Va., and Steubenville, Ohio, Wellsburg being on the route. Mr. Billings says he will not carry out the order of the Council, but will take the matter up with the Public Service Commission.

$5,934,255 Loss in Boston

This Is Amount Boston Elevated Went Behind in Seventeen Months Ended November

The trustees' report of the Boston Elevated Ry. for a period of seventeen months ended Nov. 30, 1919, has been made public. This report comprises three statements, viz., a five-months period, ending November, 1918, a period extending from November, 1918, to November, 1919, and a period of seventeen months from the beginning of the trusteeship to November, 1919. The trustees' statement is very brief.

The public control act expressly imposed upon the trustees two distinct duties. The first was that of establishing the service upon a self-supporting basis. Under private management the 5-cent fare had failed to produce sufficient revenue to pay operating expenses and fixed charges. In consequence the railway property which came into the extraordinary conditions operating losses continued until the middle of September. Since then, however, the 10-cent fare has produced revenue in excess of expenditures. This surplus on Nov. 30, 1919, had reduced to $518,755 the deficits incurred in July, August and September aggregating $928,694.

The trustees point out that in forecasting the amount of excess in revenue over expenditures for the balance of the year allowance must be made for the favorable traffic conditions that always prevail in October, November and December. The average for the twelve months may be less than the average for these three months. However, the trustees believe that receipts will continue to exceed expenditures and that on June 30, 1920, all losses will have been absorbed and no deficit exist to be assessed upon cities and towns. This statement is subject, of course, to the happening of events not reasonably to be anticipated. As the law now stands there can be no lower fare until the cities and towns have been reimbursed for the amounts paid to meet past deficits and the reserve fund of $1,000,000 has been restored.

The second duty imposed upon the trustees was that of bringing the railway to a condition suitable for efficient operation. With insufficient receipts to meet expenses and without capital available for permanent additions and improvements, the task of bettering the service has been difficult. A beginning has been made, however, under a program of improvement which can only be completed in a series of years. The changes thus far made are featured in the purchase of modern cars, in replacement and addition to former equipment, the completion of certain through lines, the lengthening of tunnel trains with the introduction of two and three-car trains on surface lines, larger and more frequent rapid transit service. Full provision is now being made for maintenance and depreciation, so the trustees point out.

The sale of the Cambridge Subway authorized at the recent special session of the Legislature, when carried into effect, will make available for capital expenditures approximately $8,000,000. The trustees say:

> It goes without saying that a business-like administration is as essential to success in the conduct of a public service as it is in the conduct of private affairs. Therefore none but a prudent use of the proceeds of this sale, which at least for the time being afford the only source of capital, could be justified. Such use would secure important improvements with resulting economies and tend to re-establish the credit so vital to the development of railway facilities.

The trustees believe that car riders ought not to be subject to a special tax for using public highways either through payment of subway rentals or assessment for street improvements. The Street Railway Commission recommended changes in the law to relieve them from this burden. The trustees say that this question is between the car rider and taxpayer and is one for legislative decision in determining what is a proper service at cost.

RECEIPTS AND COST OF SERVICES FOR SEVENTEEN MONTHS, ENDED NOVEMBER, 1919

RECEIPTS

From fares	$36,906,919
From operation of special cars, mail pouch service, express and service cars	163,849
From advertising in cars, on transfers, privileges at stations, etc	415,703
From other railway companies for their use of tracks and facilities	68,329
From rent of buildings and other property	109,497
From sale of power and other revenue	178,087
Total receipts from direct operation of the road	$37,842,385
Interest on deposits, income from securities, etc	138,647
Total receipts	$37,981,033

COST OF SERVICE

Operating Expenses:	
Maintaining track, line equipment and buildings	$5,143,203
Maintaining cars, shop equipment, etc	3,536,508
Power (including 388,751 tons of coal at $6,412, $2,492,833)	3,856,501
Depreciation	2,839,000
Transportation expenses (including wages of car employees, carhouse expenses, etc.)	13,806,800
Salaries of administrative officers	131,305
Law expenses, injuries and damages, and insurance	1,594,273
Other general expenses	1,270,205
Undistributed back pay	3,937
Total operating expenses (of which $20,187,625 is for wages)	$32,181,735
Total increase over 1917-18, $5,746,961.	
Taxes, proportion	1,414,380
Rent for leased roads (exclusive of subways)	3,672,867
Proportion of rent of subways and tunnels, to be paid to the city of Boston, exclusive of Cambridge Subway owned by the B. E. Ry	2,125,657
Interest on Boston Elevated bonds and notes	2,052,713
Miscellaneous items	66,023
Proportion of dividends under Acts of 1918	1,945,207
Interest on unpaid taxes	30,347
Uncollectible accounts cancelled	2,079
Total "cost of service"	$43,491,012
Net loss	$5,509,978
Delayed credits in profit and loss not applying to this period	11,071
Back pay for May and June arising from the award of July 20	435,348
Total net loss seventeen months ended November, 1919	$5,934,255

A summary of the last statement appears in the accompanying table.

The total net loss of $5,934,255 was accumulated in great part during the earlier months of the trusteeship. The deficit for the last five months is $529,827. The receipts per revenue passenger were 10.057 cents and the cost of service was 10.474 cents, 5.229 cents being the labor portion. A considerable reduction in loss for the latter part of the seventeen months period is due to the 10-cent fare.

The first annual report to the Senate and the House was submitted by the trustees of the Boston Elevated Ry. in pursuance of the provisions of the special acts of 1919. While the letter of the statute requires only a statement for the year ended Nov. 30, 1919, it seemed proper to the trustees that the report should also cover the full period of public control. The appended record of operations therefore begins with July 1, 1918.

In view of recent public discussion and the comprehensive report of the Street Railway Commission with reference to the conditions and needs of this railway, the preliminary general statement is very brief.

The public control act expressly imposed upon the trustees two distinct duties. The first was that of establishing the service upon a self-supporting basis. Under private management the 5-cent fare had failed to produce sufficient revenue to pay operating expenses and fixed charges. In consequence the railway property which came into the hands of the trustees was in many departments much the worse for lack of maintenance and in a condition unfit for efficient operation.

Successive changes in fare were made to obtain receipts that would meet expenses. In August the 5-cent fare was changed to a 7-cent fare which, in December of the same year, gave way to an 8-cent fare. The receipts from the 8-cent fare after a trial of seven months also proved inadequate so that the results of operation for the year ended on June 30, 1919, showed a total deficit of $4,980,151. In accordance with the terms of the statute this amount was assessed upon the cities and towns served by the railway—the transaction in effect being a loan that must be repaid and not a permanent contribution to the cost of the service.

The deficit of that year had really exceeded the amount named and paid by $435,348, which additional loss resulted from the retroactive character of the wage award in July adding this sum to the wages which had been paid in May and June.

On July 10, 1919, the fare was made 10 cents. Owing to strikes and other

Danger of Disintegration Removed

Receivers of Pittsburgh Railways Make Statement That Promises Hopes for the Future

In a lengthy letter submitted on Dec. 1 to the City Council, the receivers of the Pittsburgh Railways notified the public that the increase of revenues through the recent fare raise has temporarily removed the danger of that disintegration of the traction system which was threatened a few months ago when two of the underlying companies took steps toward withdrawing their properties from the combination. This danger, the receivers added, cannot be permanently eliminated until the just claims of security holders have been satisfied and until the company embarks upon a policy of meeting those claims as they arise.

The receivers have been defaulting upon rentals, interest charges, municipal claims and expenses other than operating charges, in pursuance of their theory that the best interests of both the public and the security holders could be served, for the moment, by devoting all available moneys to rehabilitation of the system. The time has come, they indicate, when this policy should be changed.

The letter, as such, is a review of the operation of the railway for the nine months ended Sept. 30 last, with such comments upon that operation as the receivers felt pertinent. One suggestion they pressed home most forcefully was that the city and other municipalities served should abandon their custom of assessing the railways for large sums for such items as street cleaning, pole taxes and tolls on bridges.

To the letter is appended a schedule showing that the railways on Oct. 1, owed the city of Pittsburgh $232,843 and the county of Allegheny and other political subdivisions another $84,217.

In opening the letter, the receivers declared to the Council:

> Inasmuch as the Pittsburgh Railways is a public utility engaged in rendering transportation service to the people of this city, its receivers recognize you as a party in interest in the trust represented by them.

The communication then says in part:

> The recent fare increase has produced a revenue fully equalling our expectations. The month of September, last, being the first full calendar month since the increased fare became effective, shows an increase in revenue compared with previous years as follows: September, 1916, $1,027,317; September, 1917, $1,094,882; September, 1918, $1,221,584; September, 1919, $1,450,382.
>
> The daily average receipts for the same month of the same years were as follows: In 1916, $35,243; in 1917, $36,496; in 1918, $40,719; in 1919, $48,346.
>
> The daily average for the month of October was $51,018, and the daily average maintained for the month of November to and including Nov. 24 was $52,637.
>
> While encouraged by this increase we are greatly concerned respecting the continued increase of operating expenses by reason of which the net revenue continued incapable of meeting the legitimate fiscal requirements of the system. For the first nine months of the present calendar year, the operating expenses exceeded by $586,312 the amount estimated in the budget made by the receivers at the beginning of the year. The months of October, November and December will show increases over our estimates.

The letter thereupon launches into a contradiction of statements contained in the annual report of E. K. Morse, City Transit Commissioner of the city of Pittsburgh, issued several days ago. The commissioner, it says, would have Pittsburgh's railways operated in line with practices in other cities, although experience has shown that the conditions in Pittsburgh are so unlike any others that "rule of thumb" methods are suicidal here, and general rules do not apply. It draws attention to the competition in this city between steam railroads and electric lines, but going on from that, insists that the "riding habit" is as fully developed in Pittsburgh as in any other city in the country, the transit commissioner to the contrary notwithstanding, and that the "riding habit" has increased in Pittsburgh by a greater percentage in the past year than in any other city in the country.

> At the beginning of the present calendar year, we prepared a budget based upon the rates of fare then in force, from which it appeared to be impractical, for the time being, to pay the interest on any of the railway mortgages or rentals upon any of the operated lines. * * * * By reason of the increased rate of fare, the larger revenues resulting therefrom, we have now more funds available than was anticipated when the annual budget was submitted. We now feel that, after ample provision for maintenance and necessary charges and provision for the rendering of satisfactory service, the income accrued to the holders of the securities should, as far as practicable, be paid in so far as such securities represent the actual investments which have provided the system for the public service.

WANTS TO PREVENT DISINTEGRATION

> The extent of our ability to discharge obligations representing the cash which created the properties is largely affected by the disposition to be made of the claims arising out of municipal ordinances imposing charges upon the street railways. It would be our hope that a substantial solution of our problem might be reached, without further increase of fares, if these municipal claims could be eliminated. Of course it is clear that expenditures therefor contribute nothing to holding of the system together or to its ability to serve the public. * * * * We are confident that it is the desire of the community and of its representative that the service be well maintained and the disintegration of the system prevented. Such disintegration cannot be prevented, or much longer deferred, unless just claims of security holders be met to such extent as will afford reasonable hope of their ultimate payment.
>
> The trustees representing the bondholders of the Southern Traction Company obtained authority to foreclose upon their mortgage, and started foreclosure proceed-

COMPARISON OF ACTUAL INCOME ACCOUNT FOR NINE MONTHS ENDED SEPT. 30, 1919, WITH ESTIMATED INCOME ACCOUNT FOR THAT PERIOD ON THE BASIS OF THE BUDGET

		Actual Income	Estimated Income
Income			
Passenger revenue		$11,259,791	$11,022,637
Other transportation revenue		85,039	86,725
Other operating revenue—street railway		120,484	111,823
Auxiliary operations—inclines and bridges		125,101	121,890
Other income		102,977	93,702
Total income		$11,693,392	$11,436,777
Operating expenses			
Maintenance of way and structures	(a)	$1,937,494	$1,343,615
Maintenance of equipment		1,444,887	1,334,551
Traffic		26,885	31,851
Power		1,473,761	1,570,893
Conducting transportation		4,056,730	4,053,140
Bridges and inclines (operation only; maintenance included above)		19,665	22,785
General and miscellaneous	(b)	803,275	819,550
Total operating expenses		$9,72 ,697	$9,176,385
Net operating revenue		$1,930,695	$2,260,392
Taxes (on basis of payments due that are definite and determined):			
On real estate and buildings		$49,346	$46,500
On capital stock—to state		194,824	185,000
On gross receipts—to state		58,556	58,556
Federal income and excess profits		56,473	89,541
War		1,670	1,313
Total		$360,869	$380,910
Operating income		$1,569,826	$1,879,482
Deductions			
Interest on real estate mortgages		$12,956	$13,068
Interest on car trust agreements		81,660	81,660
Principal payments on car trust agreements		225,000	225,000
Interest on bonds		37,500	.....
Rental of leased properties		15,000	.....
Interest on overdue bond interest		563	.....
Total		$372,679	$319,728
Net income (available in cash for other purposes)		$1,197,147	$1,559,754

(a) Excludes $65,056 for street cleaning taken into account but not paid.
(b1) Includes $48,438 for receivers' fees for which there was no provision in the estimate.
(2) Includes $023,083 for injury and damages payments. Accrual for this item, $451,685.
(3) Includes $8,267 for insurance premiums. Accrual for this item $34,837.
(4) Excludes $82,192 for bridge tolls taken into account but not paid.

Memorandum

Paid on account of four months, bills for supplies, etc.		$311,549
Purchased materials and supplies for stock		37,670
Additions and improvements to property		20,654
Real estate mortgage purchased		4,500
Cash in treasury Sept. 30, 1919, in excess of unpaid payrolls and current bills for power and supplies	$1,206,154	
Cash at Dec. 31, 1918	270,273	935,881
Total		$1,310,254
Accounts receivable collected Jan. 1, 1919, to Sept. 30, 1919	$28,860	
Metal tickets sold in advance of use	65,983	
Payment on account real estate mortgage	1,167	
Advance payment on scrap sales	1,406	
Increase in miscellaneous accounts payable	9,049	106,465
Balance		$1,203,789

ings some time ago. The Consolidated Traction Company several months ago gave notice of its intended withdrawal from the system. We believe that in both these cases the improved situation resulting from increased revenue has caused further action to be suspended and possibly it may be averted. To enable us, if possible, without further increase of fares, to hold the system intact and to re-establish its credit so as to render possible the securing of the needed capital, * * * * we trust that proper adjustments may be made with the municipalities concerning the municipal burdens to which we have referred.

The letter is accompanied by photographic reproductions of the general balance sheet of the company as of Sept. 30, comparisons of the actual income account with the budget estimates, and a schedule of interest and rental items due on Oct. 1.

Reorganization Prospects Not Bright

Indications point to the failure of the general committee representing security holders of the Rhode Island Co., Providence, R. I., and the Rhode Island Suburban Ry. to agree upon a plan of reorganization for the company. The trend that affairs have taken recently with respect to the reorganization has resulted in several expressions of opinion by men prominent in public life. Among these men is William C. Bliss, chairman of the Public Utilities Commission. Mr. Bliss is quoted as saying:

> I think it is the absolute duty of the holders of the underlying securities to unite on some plan of reorganization to present to the General Assembly. Until they do so, they cannot expect any sort of relief from the Legislature, either in the abolition of practice or in any other way.
>
> I would regard it as a calamity to the State if the present Rhode Island system was disintegrated, as it must be if the receivership proceedings are carried to their furthest logical conclusion. It is at present unified operation that makes it possible to keep many of the less important lines going. Break up this unified operation, lose the economy of centralization, and these lines could not stand on their own feet.
>
> I repeat that it is clearly the duty of the security holders to get together on some plan. If they do not unite on a plan, I fear that session will expire without the needed legislation and that the existence of the system as a unit will then be gravely imperilled.

As noted recently in the ELECTRIC RAILWAY JOURNAL, Benjamin A. Jackson and Harold J. Gross have been appointed temporary receivers of the Rhode Island Suburban Ry. by Judge Turner in the Rhode Island Superior Court. A hearing for the appointment of a permanent receiver has been set for Feb. 2. The receivership was asked in a bill of complaint filed by the Union Trust Co., Providence, R. I., trustee under the first mortgage 4 per cent bonds at 1900, of which $4,751,000 are outstanding and on which the July 1, 1919, and Jan. 1, 1920, interest has been defaulted. Counsel for the complainant said they wish to emphasize that the receivership proceedings were not brought to embarrass the pending reorganization of the Rhode Island Company, but rather to assist it. The property of the Rhode Island Suburban Ry. was leased to the Rhode Island Company, but the lease was terminated by decree of the Superior Court on May 14, 1919, because the Rhode Island Company had failed to pay its rent. Since the termination of the lease the property has been used by the receivers of the Rhode Island Company under an arrangement by which these receivers are to pay the Suburban Ry. for the use of its property.

Financial News Notes

Dividend by Holyoke Company.—The Holyoke (Mass.) Street Ry. has declared its first dividend in two years. The payment is for the period of one year and amounted to 3 per cent, or $40,260.

No Dividend on Lehigh Transit.—Owing to high cost of operation it was found impossible to declare any dividends at the annual meeting of the Lehigh Valley Transit Co., Allentown, Pa., on Jan. 12.

Dividends Resumed in Montreal.—The Montreal (Que.) Tramway has declared the regular quarterly dividend of 2½ per cent payable on Feb. 2, to stock of record of Jan. 24. With this distribution the company resumes regular dividend payments which were suspended in July, 1918, at the time the question of higher fares was brought up.

Successor Company at Fort Wayne.—Indiana Public Service Corporation is the name of the new corporation organized to succeed the Fort Wayne & Northern Indiana Traction Co., Fort Wayne, Ind., the property of which was sold at receiver's sale on Dec. 29. The incorporators are Henry C. Paul, Sam W. Greenland, Harry E. Vordemark, F. H. Schmidt, F. R. Fahlsing, Harry V. Norford and James M. Barrett.

Receiver for Staten Island Line.—Federal Judge Chatfield in Brooklyn, on the application of Bertram G. Eadie, has appointed Jacob Brenner temporary receiver of the Midland Ry., Staten Island, N. Y., which has suspended service. Mr. Brenner is commissioner of jurors of Kings County. The Westinghouse Electric & Manufacturing Co., a creditor, joined in the application to the court.

To Value Connecticut Trolleys.—The Public Utilities Commission of Connecticut was directed by the last Assembly to inform the latter as to the values of the various electric railway properties in the State. This valuation will be undertaken shortly by Chief Engineer E. Irvine Rudd, Assistant Engineer Joseph P. Wadhams and Electrical Engineer Archer E. Knowlton. To facilitate the work of its engineers, the commission has established a temporary office in New Haven.

Bondholders Call for Deposits.—Charles A. Peabody, Alexander J. Hemphill and Ellis W. Gladwin have announced that at the request of the holders of a large amount of the first mortgage 5 per cent gold bonds of the Brooklyn, Queens County & Suburban R.R. (Brooklyn Rapid Transit System) they have consented to act as a committee under the terms of a deposit agreement dated Jan. 5, 1920, for the mutual protection and benefit of the bondholders, default having been made in the payment of the interest which matured on July 1, 1919, and Jan. 1, 1920, on the said bonds. Holders of these bonds are invited to deposit their bonds on or before Feb. 7, next, with the Guaranty Trust Co., New York, N. Y., the depositary.

Successor to Inland Empire Incorporates.—Reorganization of the Spokane & Inland Empire Ry. system is indicated with the recent filing of articles of incorporation for the Spokane & Eastern Railway & Power Co. and the Inland Empire R.R. The former is capitalized for $3,000,000 and the latter for $1,000,000. The Inland Empire R.R. will operate the present "inland division" of the company, comprising interurban lines to Moscow, Idaho and Colfax, Wash. The other company will operate other property of the concern, including the city railway system in Spokane, the Coeur d'Alene, Idaho, interurban line, and the power plant. The property recently was purchased by the bondholders at receiver's sale. F. E. Connors, receiver, and Waldo G. Paine, traffic manager, are named as incorporators.

Amended Reorganization Plan Approved.—The plan for the reorganization of the Oakland & Antioch Ry., Oakland, Cal., as amended, has been approved by the California Railroad Commission. In an order issued by the commission the San Francisco-Sacramento R.R., the new company to be formed to take over the Oakland-Antioch lines, is authorized to issue not exceeding $6,550,000 of common stock, not exceeding $1,330,000 of preferred stock, and not more than $900,000 of 6 per cent serial bonds. The proceeds from the bond sale are to be used to pay first lien creditors, pay non-assenting bondholders, pay part or all of the reorganization expenses, finance the construction of additions and betterments and provide working capital. The stock is to be distributed to the bondholders and creditors of the three lines which make up the Oakland-Antioch.

Court Orders Leased Roads Returned.—Federal Judge Julius M. Mayer at New York has ordered Job E. Hedges, receiver of the New York (N. Y.) Railways, to return the Fourth and Madison Avenue surface lines to their owners, the New York & Harlem Railroad. The lines have not been running on a paying basis. They are to be returned at midnight of Jan. 31. As a result of this order, the transfer privileges with the lines of the New York Railways will be discontinued. The Madison Avenue line, which runs over the Williamsburg Bridge, will also be discontinued, as the company has no franchise to run over Delancey Street.

Traffic and Transportation

Wants Segregation

Representatives of Bridgeport Opposing Connecticut Zone Plan, Want City Lines Separated from Others

Clifford B. Wilson, Mayor of Bridgeport, and Lieutenant-Governor of Connecticut, advocated segregation of all suburban electric railway lines in Connecticut from those lines now operating in the principal cities. This suggestion was made to the Public Utilities Commission at a hearing upon the petitions of various communities in the State to abolish the zone-fare system recently adopted by the Connecticut Co., the principal operating company in Connecticut. The hearing was held at Bridgeport on Jan. 15.

Mayor Wants Five-Cent Fare

In his plea to the commission Mayor Wilson declared it to be his belief that the railway lines as at present conducted are not operated upon a sound business basis—a basis that might be calculated to lessen opposition by jitneys which in Bridgeport, he said, had solved the transportation difficulties of a large percentage of the population. Mr. Wilson proposed that the lines of the Connecticut Co. in Bridgeport, which he contends are a paying proposition, be segregated from the lines in the outlying district and be operated at a 5-cent fare.

Mayor Wilson held that with one-half of the population living within the four largest cities of the State, the 5-cent fare within those city limits should be adequate to conduct the operation of the trolley lines and to pay reasonable profits upon the investment. He said:

> It is unjust to assess individuals who wish to ride upon trolleys in cities where lines are self-supporting for such losses as may be entailed in operating suburban lines for the convenience of the few.
>
> Any deficiency in operating expense of necessary suburban lines should be defrayed by the state as a whole rather than by individual car riders in self-supporting districts.

In answer to a question by the commissioners as to whether suburban lines entering cities did not contribute to the welfare of such cities, Mayor Wilson replied that he believed they did, but not so much as they contributed to the welfare of outlying sections that were not capable of supporting such lines.

Labor Favors One-Man Cars

The witness further declared that in Bridgeport, the first city in the United States to place them under full police regulations and operation, the jitney had proved very useful in that they served many industrial plants where trolley lines were impractical. He expressed the belief that in the future the electric railway and the jitney would exist side by side, and that both would earn fair financial return upon capital invested.

Many suggestions were made to the commission by witnesses from various sections of Fairfield County, ranging from State ownership to a 3-cent fare.

The Central Labor Union, representing all organized labor in Bridgeport, advocated replacing the heavier type of cars with the one-man car to be operated more frequently.

Major Charles F. Hunter, Stamford, electrical engineer at the Stamford Rolling Mills and formerly connected with the New York State Public Utilities Commission, recommended a 5-cent fare in the cities with increased suburban fares and commutation to overcome such obstacles that are certain to arise under the zoning system.

Senator John B. Dillon, Shelton, argued that it was a mistake to get away from the nickel. He said:

> It is conceded that the city lines in Connecticut—Bridgeport, Hartford, Waterbury and New Haven—pay for themselves. Under what reasoning, therefore, can the city residents be asked to pay an additional amount merely to support suburban lines for suburban people who fail to support lines operated for their particular benefit. I believe the next Legislature will remedy the existing condition, but meanwhile I do not think that we should crucify the people in cities for the salvation of people in suburban sections.

Representatives from Fairfield, Stamford, Devon, Milford, Stratford, Darien and other sections appeared in protest to the zone-fare system, which they contended was both unfair and the cause of serious traffic delays.

Announcement was made that the hearing would be continued on Jan. 22.

Tickets Popular in Kansas City

More than 90 per cent of the patrons of the Kansas City (Mo.) Rys. are riding at reduced ticket or token rates, according to a recent survey of conditions on the company's more important lines. Since the company began charging 8-cent cash fares on Dec. 14 the number of persons paying the 7-cent rate, which is available through the purchase of tickets in quantities of five or more, has steadily increased until at present it represents more than 50 per cent of the car riders. A large proportion of the remaining riders buy tokens at the rate of two for 15 cents.

The reduced rates are becoming popular in Kansas City, Kan., as well as on the lines in Missouri. The company began charging 8-cent cash fares on the Kansas side on Jan. 4 under authority of Federal Judge John C. Pollock, who authorized the increase from the former 6-cent rate when the municipal authorities refused to halt the jitneys.

First New York Session

Inquiry Under Way By City Officials Into Needs of Companies for Relief

Officials of the Interborough Rapid Transit Company, New York, N. Y., were examined at the first session, Jan. 21, of the Board of Estimate investigation into the city's traction situation. Corporation Counsel William P. Burr is conducting the inquiry. The scope of the proceeding had previously been announced by City Comptroller Charles L. Craig. The information which it was planned to seek was outlined in the ELECTRIC RAILWAY JOURNAL for Jan. 17, page 175.

James L. Quackenbush attended as counsel for the Interborough. Among the witnesses on the first day were William M. Fullen, assistant counsel to the Transit Construction Commission; Edward J. F. Gaynor, auditor of the company, and Horace M. Fisher, secretary. Mr. Fullen was asked to identify certain contracts which had to do with the construction of the original subway. He was unable to furnish the board with a schedule of the physical assets of the lines and the actual amount spent in equipping the roads prior to operation because Mr. McDonald, the contractor, had not complied with the section of the contract requiring this.

Mr. Gaynor was asked about the intercorporate relations of the company. Much was made in the daily newspapers of the testimony of Mr. Gaynor that the company had paid out 187½ per cent in dividends to its stockholders in the last sixteen years. This proved great meat for the Mayor and he promptly began to chew upon it, suggesting that the stockholders be called together and asked to help the road out from their former profits. All this was information available to anybody with a disposition for figures who has access to any one of a number of financial manuals sold to the general public. But it made great headline copy. Of course it was all true, but as Mr. Quackenbush explained the war conditions could not have been predicted in advance and even if the shareholders were inclined to help the company's finances their aid would be inadequate, simply postponing a situation which would have to be met another day.

The hearing also developed that August Belmont & Company received an honorarium of $1,500,000 in Interborough stock for services rendered during the organization and financing of the company. Mr. Gaynor said that others could best testify as to the services of Belmont & Company in connection with the financing. Later on it was established that Belmont & Company were the only financiers who could be induced to have anything to do with the carrying out of a project which at its inception was an entirely unknown quantity as to the liability which might attach to its sponsors.

Zone System a Success

Hearing in Connecticut Confirms Wisdom of Adoption of Present Fare Basis

The Connecticut Company's lines earned 21 per cent more in November and December, 1919, the first months of the new zone system, than in the corresponding months of 1918, according to figures introduced at the zone fare hearing in Hartford on Jan. 22. Of the fifty-eight cities and towns in the State which the company serves, it was shown, only sixteen have joined in protest to the public utilities commission against the zone system. The company is run by federal trustees and no dividends have been paid on the stock since 1916. The 6-cent fare regime, from October, 1917, to Nov. 2, 1919, was a failure. The zone system, on a service-at-cost basis, is on the face of things a real success.

Zone Fares Increase Revenues

The hearing on Jan. 22 gave the company the opportunity to offer rebuttal to the arguments of the several towns which have been protesting that the zone system was iniquitous. Most of those arguments had simmered down to the one basic protest against the zones as laid out by the company, and not against the zone system.

The company presented figures to show that in spite of being "boycotted" by Manchester riders it had been able to keep its revenues under the zone system higher on that line than in the corresponding months in 1918 with the 6-cent fare. Joseph F. Berry, attorney of the company, introduced a mass of figures, with several articles from the ELECTRIC RAILWAY JOURNAL, to show that various other electric railways throughout the country were in bad straits.

Members of the public utilities commission questioned the company's implied claim that the increase in revenues had been brought about almost entirely through the zone system of collecting fares, but Walter J. Flickinger, assistant to the president, maintained that probably 20 of the 21 per cent increase could be laid at the door of the new method of getting revenues.

Results at Hartford Compared

The commission's questions were based on figures the company presented showing that with the old 6-cent fare system the period Aug. 1, 1919, through Oct. 31 of that year brought 13 per cent more revenue than the corresponding period in 1918. The company claimed that the discrepancy in figures could be accounted for largely because of the influenza epidemic which raged in the last months of 1918.

The three lines near Hartford which are under attack are the Manchester, Rockville and New Britain-Berlin. The figures presented for the corresponding periods of 1918 and 1919 in each case were:

Hartford-Manchester

		November	December
1919	(zone)	$14,285	$15,960
1918		14,020	14,725

Hartford-Rockville

1919	(zone)	$9,965	$10,838
1918		7,810	8,476

New Britain-Berlin

1919	(zone)	$7,802	$8,705
1918		5,871	6,772

B. R. T. Traffic Gains

Figures submitted to the Public Service Commission for the First District of New York showing traffic on the lines of the Brooklyn Rapid Transit Co. reveal that ticket sales from May to November, 1919, inclusive, increased 25,247,952 over the same period in 1918. This is a smaller increase than reported by the Interborough Rapid Transit Co. during the past year.

The increase in gross receipts of the Brooklyn Rapid Transit Co. aggregated according to the company's figures, about $2,162,500 a year, or approximately $308,928 a month. In the following table of increase in traffic on the Brooklyn Rapid Transit System it is shown that in one month, August of last year, there was a decrease, but it was due to the strike that tied up the lines for four days:

	1918	1919
May	23,895,961	28,090,025
June	24,833,523	28,381,724
July	27,998,781	29,475,663
August	27,742,691	26,063,571
September	23,647,843	28,025,053
October	22,947,302	29,293,687
November	22,885,568	29,869,898
Total	173,951,669	199,199,621

An analysis of the figures indicates that the average increase in sales per month was 3,600,000, or 43,250,000 for twelve months.

The figures for November and December have not yet been reported.

A Plea for Co-operation

Frank B. Musser, president of the Harrisburg (Pa.) Rys., in a booklet given to all of the employees of the company on Jan. 7 pointed out that the men who work on the various lines have it in their power to make the company a success or a failure and also took occasion to thank the employees for their loyalty. The booklet was placed in the pay envelopes of the employees. It is in a measure a short talk on "Co-operation." Mr. Musser asked the men to give their best service to the community during the year and to make "co-operation" a "habit." The booklet says in part:

> We are engaged in the business of manufacturing and selling transportation to the public. This we deliver to our customers in 6-cent lots. It is, therefore, only by making the largest number of sales that we can be a success.
>
> In order to make a large number of sales we must render a satisfactory, prompt, reliable, safe and courteous service to our customers. The men operating our cars have it in their power to make this service a success or failure. They are our salesmen, and if their co-operation is whole-hearted and sincere, they will materially increase the sales of our goods, which is transportation.
>
> We aim to co-operate with each and every one of our 400 employees, and in turn we ask their full co-operation with the management to make the service we render to the public of Harrisburg and vicinity the best possible. To this end we assure you that our offices are always open to each and every one of our employees, so that constructive criticisms and suggestions may be made, and we earnestly invite our employees to come in and make such suggestions that will aid us toward rendering a more perfect and satisfactory service to our patrons.
>
> In assuring our men that our offices are always open to them, it is with the thought in mind that each man is entitled to and shall receive a square deal from the company; and, in return we ask that each man resolve and continue to give our company a square deal.

Transportation News Notes

Would Raise Interurban Rate.—The Kansas City (Mo.) Rys. has applied to the State Public Service Commission for authority to increase the rates on its line between Kansas City and Independence. The company would charge 8 cents at each of the four collection points on the round trip between the two cities.

Six Cents in Fort Smith.—The Fort Smith Light & Traction Co., Fort Smith, Ark., on Jan. 16 raised its fare from 5 cents to 6 cents under an order of the State Corporation Commission. The commission directed the company to sell nine tickets for 50 cents. The 6-cent fare will continue in effect for a period of six months.

Would Retain Five-Cent Fare.—The City Council of Seattle, Wash., at a recent meeting passed a resolution favoring the retention of the present 5-cent fare charged by the Seattle Municipal Street Ry. A ordinance was passed limiting the expense which the company should pay for paving in business and residential districts.

Mayor Approves Fare Increase.—Mayors and other city officials of Morris County, N. J., at a recent meeting in Morristown, declared themselves in favor of an increase in the fare of the Morris County Traction Co. The company has applied to the State Board of Public Utility Commissioners for authority to raise its rate from 6 cents to 7 cents.

Relief Ordinance Still Pending.—The City Council of Columbus, Ohio, is still deliberating over the proposed ordinance looking toward the extension of financial relief to the Columbus Railway, Power & Light Company. There was another meeting of the Council in the evening of Jan. 20 and the matter was again postponed.

Asks Higher Rate on Interstate Line.—The Wheeling (W. Va.) Traction Co. has applied to the Interstate Commerce Commission for an advance in rates on its Steubenville-Brilliant Line in Ohio. This action was taken after efforts to

arrange a conference with the city councils of Wheeling and Mingo Junction to consider measures of relief for the company, had failed.

Straight Five-Cent Fare in Kokomo.—The Indiana Public Service Commission has authorized the Indiana Railways & Light Co., Kokomo, to install a straight 5-cent fare on its lines and to discontinue the sale of six tickets for 25 cents. The sale of eight tickets for 25 cents to mail carriers and city park employees will also be discontinued. Free transfers are retained.

No Jitneys for Trenton.—The City Commission of Trenton, N. J., has refused the application of the Automotive Collateral Co. for authority to operate a bus line within the city limits. This action was taken to give the Trenton & Mercer County Traction Corp. an opportunity to carry out plans for improving the service in Trenton. The company recently raised its fare from 6 cents to 7 cents.

Reduced Ticket Rate on Missouri Interurban.—The Missouri Public Service Commission has ordered the Kansas City, Clay County & St. Joseph Ry., Kansas City, to install a commutation rate of 1.3 cents a mile on its lines between Kansas City and Liberty, Kansas City & Ferrel Valley, and St. Joseph and Dearborn. The present rate is 2 cents a mile. The new rate will become effective on Feb. 15.

Would Raise Long Island Rates.—The Long Island R.R., New York, N. Y., has notified the Public Service Commission for the First District of its intention to raise its rates within the city of New York. The company's lines, which are electrically operated, serve large sections of the borough of Brooklyn and Queens. The fare to any station within the old Brooklyn city limits on the Atlantic Avenue branch was reduced to 5 cents about 1913 and was subsequently raised to 6 cents.

Safety Cars in Los Angeles.—The Los Angeles (Cal.) Ry. will install one-man safety cars on several of its lines within the next few months. The company has ordered forty-five of the cars, which it hopes to put in service by April 1. Their use was recommended in the report of the chief engineer of the State Railroad Commission as a means of improving the service in Los Angeles. The City Council has rejected a proposal to require motormen to pass an examination to demonstrate their fitness and ability to operate cars.

Will Seek to Restore Five-Cent Fare.—Walter P. Armstrong, city attorney for Memphis, Tenn., under the new administration, expects to go before the Tennessee Utilities Commission and seek a restoration of the 5-cent fare on the lines of the Memphis Street Railway. The railway was permitted to increase fares from 5 cents to 6 cents last June as a temporary measure while a valuation was being made. This work has been completed and the city will contend that a 5-cent fare will pay and pay handsomely. An effort will also be made to abolish the skip-stop system.

Would Grant Ten-Cent Fare.—Fearing that the New York & Queens County Ry., Queens Borough, New York City, will discontinue operation unless it secures more revenue, manufacturers of College Point, which is served by the company, have announced that they will ask the Board of Estimate of New York to allow the company to raise its fare from 5 cents to 10 cents. The manufacturers declare that, if service is abandoned, their employees will be unable to reach their work. If the fare is raised they propose to purchase the tickets and to sell them to their employees at 5 cents each.

Brooklyn Bus Case Argued.—Supreme Court Justice Corpsey heard argument on Jan. 16, in a suit brought by the Brooklyn (N. Y.) City R.R. to restrain Grover A. Whalen, Commissioner of the Department of Plant and Structures of New York City, from operating buses in competition with the company's lines. Counsel for the company contended that the buses were operated in violation of the provisions of law in that they were practically unregulated. Justice Cropsey reserved decision. Commissioner Whalen recently announced that, from Oct. 27, 1919, to Jan. 6, 1920, the buses carried on an average 45,000 persons daily.

Would Compel Transportation of Firemen and Policemen.—Mandamus proceedings have been started in the Superior Court by the city of Seattle, Wash., through Corporation Counsel Walter F. Meier, against the Seattle & Rainier Valley Ry., to force the company to carry uniformed policemen and firemen without charge. The declaration is made that when the company obtained its franchise, it was specifically provided that firemen and policemen in uniform should have free transportation. The company replies that it carried out this agreement until Nov. 17, 1919, when it filed new tariffs with the Public Service Commission, and discontinued the practice.

Wants Seven-Cent Fare Enjoined.—The St. Joseph Railway, Light, Heat & Power Co., St. Joseph, Mo., filed suit on January 7 against the State Public Service Commission in the Federal Court at Jefferson City, asking a permanent injunction to restrain the commission from enforcing a 7-cent fare in St. Joseph. For rate-making purposes the commission last month valued the holdings of the company in its various lines at $5,800,000. The company contends that a fair valuation would be $11,521,639. It asks the court to order an 8-cent fare and higher lighting and heating rates than the commission awarded. The company contends that the rates of the commission are confiscatory and in violation of the fourteenth amendment to the Federal Constitution.

Fines for Running by Stops.—St. Louis motormen who pass by persons waiting at street corners to board cars, can be charged with a misdemeanor and, upon conviction, punished with a fine of from $5 to $100 or a jail sentence of one to thirty days, or both fine and imprisonment. This fact was established when a motorman of the United Rys. was arraigned in police court after having been arrested by a patrolman who had been passed up along with a number of other people waiting to board the car. When the case was called a City Court attorney remembered that there was an old ordinance on the subject. The matter was looked up and an ordinance dating back to early horse-car days was found, providing the fine and improisonment for passing up passengers.

Injunction Hearings at Houston.—Hearings have been resumed before Federal Judge Otis P. Hamblen, sitting as referee in the case of the Houston (Tex.) Electric Co. against the city of Houston. The company is seeking an injunction to prevent the city from interfering in the promulgation of higher fares. The company claims that the present 5-cent fare is not sufficient to yield an adequate return on the value of the plant and system in Houston, and that it is losing $1,000 a day due to the 5-cent fare and jitney opposition. The hearing was begun on Dec. 3, 1919, before Judge Hamblen and continued several days, the company putting its witnesses on the stand to show reproduction value of the plant and cost of operating. At the conclusion of the testimony of witnesses for the company, the court adjourned to meet on Jan. 5.

Few Cars Added in St. Louis.—Figures made public recently by the United Rys., St. Louis, Mo., show that the increase of the number of cars in service is not keeping pace with the increase in the number of passengers carried. During the quarter ending Dec. 31, 1919, the company collected 65,152,120 fares, or 9,515,150 more than during the corresponding quarter of 1918, while the average number of cars operated daily was increased by only fifty-seven. The total number of passengers carried during the last quarter was 13,713,856 greater than during the first quarter of 1910 and the average daily number of cars operated was 269 greater. Receiver Rolla Wells of the company announced that the company was making every effort to improve the service, but said that unless it was able to obtain needed funds the service could not be bettered.

Trainmen's Lunchrooms Improve Morale.—To meet the needs of their trainmen the El Paso (Tex.) Electric Ry., The Northern Texas Traction Co. and the Houston Electric Co., Stone & Webster properties, are operating lunch rooms at the main carhouses in these three cities. The carhouses are situated on the outskirts of the respective cities at a distance from restaurants where wholesome food can be obtained. Investigation of cases of illness among the trainmen showed that poor food was the cause of much inefficiency and loss of time. The company managers, after several attempts to improve conditions in the eating places in the vicinity of the carhouses, decided to

open lunch rooms where food should be served at cost. Designed to meet the needs of the night and early morning trainmen, these operate only from 7 p.m. to 7 a.m. The plan has met with much favorable comment and has increased their efficiency to an appreciable extent.

Wants Smoking Abolished.—Arguments for and against smoking on cars were submitted to the Public Service Commission of Missouri recently when Commissioner Blair took testimony in connection with the application of the United Railways, St. Louis, for an order prohibiting smoking in any part of cars at any time. Commissioner Blair announced that the commission would pass on the question in the near future. Col. Albert T. Perkins, manager of the company, testified that many complaints had reached his office about promiscuous smoking on cars and that upon investigation he found the complaints were justified. Conductors had been disciplined, he said, for failing to enforce the "no-smoking" rule and many of them had protested that they were unable to enforce it because of the large number of men who were smoking in all parts of the cars. Trouble for the company had resulted in several cases where conductors had ejected passengers for smoking. In the past the company has permitted smoking on the three rear seats of cars when the weather permitted the windows to be open.

Staten Island Company Suspends.—The Staten Island Midland R.R., Staten Island, N. Y., has carried out its threat to suspend service. The line is entirely shut down and as noted elsewhere in this issue its affairs are in the hands of a receiver. The company has been insisting for some time that it could not continue at a 5-cent fare. Its plea fell upon the deaf ears of the officials of the city of New York. The only attention they paid to the matter was to secure a temporary injunction against the shut down from Justice Faher of the Supreme Court for New York sitting in Brooklyn. Efforts to serve this order on R. L. Rand, vice-president and general manager of the company, failed, but Harry J. Blackam, superintendent of the company, was located and duly served. He is not an elected officer of the company. Meanwhile the Supreme Court stepped into the case and appointed a receiver. This official has ignored the order of the State Court, to which of course he is not responsible. In explaining the suspension to the newspapers Mr. Rand said that he was sorry for the commuters. The company, however, gave them and the city fair warning. He personally had no choice in the matter. The road belonged to the Roger's Estate, which had instructed him to cease operations. He had to obey. An emergency service with buses has been installed by the city to replace the facilities of the railway, but the buses appear to be entirely inadequate to meet the demands made upon them.

New Publications

Manila and Wire Rope

No. 26 in the series of safe practices pamphlets issued by National Safety Council, Chicago, Ill.

A Study of the Forms in Which Sulphur Occurs in Coal

By A. R. Powell and F. W. Parr. Engineering Experiment Station, University of Illinois, Urbana, Ill.

Results of researches are given and an appendix is devoted to the constitution of coal, a chapter which will be of great value to all coal users.

Trucks and Wheelbarrows

No. 30 in the series of safe practices pamphlets issued by the National Safety Council, Chicago, Ill.

This pamphlet is a brief treatise on the subject of materials handling in shops, warehouses and railway terminals. It was drafted by R. H. Duerrant, safety engineer of the council.

Technischer Literaturkalender, 1919

Published by R. Oldenburg, Munich and Berlin, 320 pages.

This is a sort of "Who's Who" of German technical writers, arranged to give name, residence, title, date of birth, list of principal works and other cognate matter. Some 4,000 names are listed.

The Orifice as a Means of Measuring Flow Water Through a Pipe

By R. E. Davis and H. H. Jordan. Bulletin No. 109 of the Engineering Experiment Station, University of Illinois, Urbana, Ill.

This bulletin contains the results of researches in the subject indicated by the title, the data and conclusions being put into such form as to be of assistance in the making of accurate water flow determination by means of the loss in head in an orifice.

Commercial Explosives

No. 28 in the series of safe practices pamphlets of the National Safety Council, Chicago, Ill.

This leaflet contains valuable information for men whose work obliges them to handle dynamite, blasting powder, etc. It was drafted by the safety engineer of the council with the assistance of the E. I. du Pont de Nemours & Company and the helpful criticisms and suggestions of the conference committee of fifty safety engineers.

Passenger Train Resistance

By E. C. Schmidt and H. H. Dunn. Bulletin No. 110, Engineering Experiment Station, University of Illinois, Urbana, Ill.

This bulletin gives the results of tests on resistance met by heavy railway passenger cars (not motor cars) at speeds up to 75 m.p.h. for car weights ranging from 30 to 75 tons. The data given are the results of tests extending over a period of more than ten years. The well-known dynamometer car of the university was used in the tests.

Tests on the Holding Power of Railroad Spikes

By A. H. Beyer and W. J. Krefeld. Bulletin No. 1 of the Civil Engineering Testing Laboratory, Columbia University, New York City.

This bulletin gives results of tests on cut, screw and grip spikes, including direct-pull tests and redrive-and-pulling tests. The data are presented in tabular and graphic form, and are used as the basis of a number of conclusions.

Timber, Its Strength, Grading and Seasoning

By Harold S. Betts, M. E., Forest Service, U. S. Department of Agriculture, 234 pages, McGraw-Hill Book Company, Inc., New York, N. Y.

Complete technical data relative to steel and concrete have long been available to engineers. Although one of the first materials used by man for structural purposes, accurate data relative to the properties of timber have not been available in a convenient form. This book is an effort to supply this deficiency and it attains its purpose in an admirable way. Complete data on all of the commonly used woods are incorporated in the text. In fact, it is a complete manual on the use of timber for engineering construction as it not only gives the physical properties of timber but also discusses methods of testing, seasoning and preservation and collects in convenient form the specifications of various timber associations. It should form a valuable addition to the working library of a maintenance or construction engineer.

Electrical Engineering Papers

By Benjamin G. Lamme, chief engineer Westinghouse Electric & Manufacturing Company. Published by the company, East Pittsburgh, Pa. 773 pages.

The Westinghouse Company has done the electrical industry a great service by reprinting from various sources the technical papers which have been prepared by its chief engineer during thirty years of activity in this field. Many of the papers were presented before the American Institute of Electrical Engineers. Electric railway engineers will be particularly pleased to have in such convenient form the papers on the development of the electric railway motor in America, on the development of direct current generators, on alternators, on the single-phase commutator-type railway motor, on 60-cycle rotary converters and many others. Mr. Lamme has the happy faculty of being able to put technical theory in readily understandable form. His papers are non-mathematical in character, but they go thoroughly into the theory underlying the particular aspect of engineering which they discuss. Taken together the papers form a remarkably complete and logical treatise on the subject of electrical machinery development. They will be useful as reference text in connection with college courses and can be read with profit by engineers generally.

Personal Mention

Ira Piper has been appointed roadmaster of the Caldwell (Idaho) Traction Co.

Richard L. Jones, master mechanic of the Massachusetts Northeastern Street Ry., Haverhill, Mass., has resigned.

Ross E. Luellen has been appointed to the newly created office of safety engineer of the Union Traction Co. of Indiana, Anderson, Ind.

William A. Underwood has tendered his resignation as superintendent of the Wheeling (W. Va.) Traction Co. after sixteen years of service. He will leave on Feb. 1 for Chicago, where he has accepted a position with the Bayton Food Product Co.

C. B. Barnhart, formerly connected with the Oskaloosa Traction & Light Co., Oskaloosa, Iowa, has been appointed general auditor of the Urbana & Champaign Railway, Gas & Electric Co., with headquarters at Champaign, Ill. He succeeds James R. Wood, who has been named assistant superintendent of the company.

James R. Wood has been appointed assistant superintendent of the Urbana & Champaign Railway, Gas & Electric Co., with headquarters at Champaign, Ill. The position is a new one, having been created for Mr. Wood. He has been associated with the company for the past twenty-four years and, prior to his recent promotion, served as its auditor.

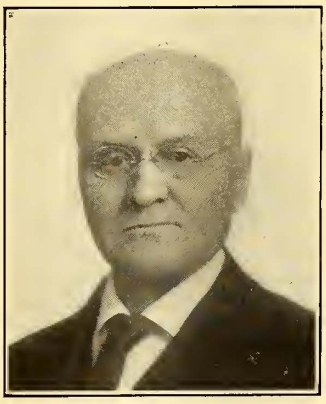
D. W. Pontius, formerly traffic manager of the Pacific Electric Railway, was appointed to be general manager of the San Diego & Arizona Railway, passenger traffic on Dec. 1. Mr. Pontius began railroad work more than twenty-five years ago as a supervisor of track for the Pennsylvania System. The San Diego & Arizona Railway will operate in connection with the Southern Pacific Railroad to form a new direct trans-continental route between San Diego and the East.

William M. Rank has sailed from San Francisco, Cal., on the Pacific Mail liner *Venezuela* as the representative of an English and American syndicate that proposes to build a modern electric railroad where once stood the great walls of the city of Canton, China. Mr. Rank is well known in the railroad construction field in the West and more particularly in California. He was the associate of the late George Meyers and in conjunction with Mr. Meyers had a prominent part in building electric lines in Oakland and Alameda. It is understood that the American International Corporation is interested in the project at Canton with which Mr. Rank has become associated.

W. A. Smith Heads Omaha Traction System

William A. Smith, vice-president of the Omaha & Council Bluffs Street Ry., Omaha, Neb., has been elected president of the company by the board of directors. Mr. Smith succeeds the late Frank T. Hamilton, who died several months ago.

Mr. Smith has been connected with the street and electric railway industry for nearly fifty years. He joined the Omaha traction system in 1872 when it consisted of two miles of single track and five horse cars. Today the Omaha & Council Bluffs Street Ry., which owns the electric railway system in Omaha and several neighboring towns, operates more than 160 miles of track and has 1250 employees. Mr. Smith has been a director of the company since 1874 and for many years served as general manager. In 1901 he became treasurer, retaining the general managership. He was elected second vice-president in 1910, and subsequently became first vice-president.



W. A. SMITH

He resigned as general manager following the death of Mr. Hamilton and, as first vice-president, had charge of the company's affairs pending the selection of a new president. The system in Omaha and Council Bluffs consists of 162 miles of road.

George N. Brown, formerly electrical engineer for the New York State Rys., Syracuse-Utica Lines, has been appointed district manager for the Buffalo office of the Shiefer Electric Co., Rochester, N. Y. Mr. Brown joined the New York State Rys. in 1912 as assistant engineer of the Syracuse-Utica lines, becoming electrical engineer in the following year. As a first lieutenant of engineers he was assigned to the 303rd Regiment, 78th Division at the outbreak of the war, later being promoted to the rank of captain. He went overseas in the spring of 1918, was with the British in Flanders for four months, and later served with the A. E. F. at St. Mihiel and in the Argonne.

H. Hobart Porter, vice-president and general manager of the Brooklyn (N. Y.) City R.R., has been elected a director to succeed Seymour L. Husted, Jr., resigned. Mr. Husted was the oldest member of the company in point of service of the Brooklyn City board, having been elected on Jan. 8, 1894. In a letter to Frank Lyman, president, Mr. Husted, who is now in San Remo, Italy, said that his stay in Europe might be a long one and for that reason he felt that he should relinquish his place as director. Mr. Porter became general manager of the Brooklyn City R.R. when the lines of that company were separated from the Brooklyn Rapid Transit system and returned to their owners on Oct. 19, 1919. He is a member of the firm of Sanderson & Porter, engineers, and is connected with numerous large enterprises, including the American Water Works & Electric Co., of which he is president.

Obituary

Charles Williams died at his home in Lynn, Mass., on Jan. 17. Mr. Williams entered street railway service in 1880 as a conductor on the Boston & Lynn R.R. He later became cashier for the same company and was appointed treasurer in 1891. He became assistant treasurer of the Bay State Street Ry. in 1900 and also served as a director of the Boston & Revere Electric Street Ry. and the East Middlesex Street Ry. He is survived by a widow and a son.

Henry T. Jones, general superintendent of the United Railroads of San Francisco, died suddenly on Jan. 13. Mr. Jones was born in Bristol, England, in 1866. He aided in the construction of the first cable railroad in England, operating the first car over the line in 1884 with the Lord Mayor of London as a guest. When Sir Clifton Robinson, his employer on the cable railroad in London, undertook the construction of a similar line in Los Angeles in 1887, Mr. Jones came to this country and served as assistant superintendent of the Los Angeles line. In 1890 he voluntarily returned to the ranks to learn more about car operation. He went to San Francisco, where he became a conductor on the Market Street Cable Ry. Upon the organization of the United R.Rs. in 1902 he joined the company as superintendent of employment. In 1904 he became division superintendent and in July, 1913 was made general superintendent.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Rail Prices May Go Higher

Steel Corporation's Prices of $45 and $47 Still Hold—Other Producers Are Quoting Up to $57 Per Ton

Some rail producers are holding off as to rail prices for first and second quarter deliveries. The United States Steel Corporation is still quoting prices of March 21, 1919, which were $45 a ton for bessemer and $47 a ton for open hearth T-rails. Recent quotations by the Cambria Steel Company, however, are $55 for bessemer and $57 for open hearth. No large orders have been reported at these prices although it is probable that this latter company is getting some tonnage in small lots. Orders for rails have been such that the United States Steel Corporation could probably roll all requirements at the prices given, but it is probable that it will accept only its own share of the business and will take care of its old customers. Those companies which have not already contracted for rollings may be compelled to buy where they can and at the best price possible. The cost of production for the steel corporation is of course low, as seen by its pig-iron requirements, which are figured at the old price of $27 per ton as compared to present pig prices ranging from $33 to $40. A large independent is quoting $57 for standard open hearth rails and some orders have been placed at this price.

Steel Shortage May Affect Car Builders

Shortage of Raw Steel Prevents Increase in Production—Plates and Fabricated Steel Affected

Failure of the steel mills to receive raw materials, thus causing a lessening of production, is assuming serious proportions in some lines. One of the largest manufacturers of fabricated products advised that although the company had plenty of inquiries and orders on hand, the situation as to deliveries was so uncertain that for the most part they were principally engaged in writing their customers that orders would be accepted subject to mill conditions and to the prices ruling at the time of delivery.

In addition to a pig-iron shortage, many localities are short of coke. The shortage in coke is blamed directly to the coal shortage which in turn has been charged to a lack of cars to move the coal from the mines. Again the amount of coal coked has been less than usual, first on account of a labor shortage, then later by a lack of cars to move the product. Also the price is at present restricted by the government to $6 per ton for furnace coke and $7 for foundry coke. According to reports operators believe that they can better afford to sell their coal at this price than to convert it into coke. This may add to the seriousness of the coke situation and in turn to the steel shortage.

Car builders in the electric railway field may be affected within the near future, for although the shortage of material up to the present time has been chiefly in the lighter grades, plates, shapes, and fabricated pieces are getting scarcer and scarcer. In most instances car builders are covered by contract, but they would no doubt be affected in the case of a decrease in production. In the steel manufacturing plants, production is now from 65 to 75 per cent of normal. Electric sheets are sold up for the first half of 1920 and wire products of all kinds are practically impossible to obtain.

Coal Production for 1919 Falls Off 20 Per Cent

Prospects for 1920 Believed to Be Good—Production Depends Largely Upon Seasonal Buying, Transportation and Labor Conditions

Seasonal buying of coal supplies by railway and other consumers will go a long way toward solving present difficulties in coal mining. The past year has held much of uncertainty, including car shortages at critical times and even a strike which undoubtedly was caused from irregular working time as much as from any other specific cause. In many cases railway operators were forced to cut their services 50 per cent and in some cases many trains on interurban schedules were taken off altogether, resulting in great inconvenience to the public as well as reduced revenues to the railways. Production of coal for 1919, which is figured as commencing in April, according to the Geological Survey, amounted to 367,470,000 tons as compared with 460,890,000 tons for the preceding coal year from April 1, 1918, to March 31, 1919. This is a decrease of 93,420,000 tons or approximately 20 per cent. Although this decline is naturally discouraging, it is believed that the decrease will be wiped out during 1920, after the reasons have been made known and an opportunity given to all large coal consumers to save themselves trouble and money by seasonal buying.

In the early months of 1919 the demand for coal was rather light because industrials and dealers were well supplied to handle the let-up in industrial needs following the war. Over the same period in previous years, however, the demand for coal has been heavy, as that is part of the normal heavy buying season. It is not till April that this demand usually lets up, from which time on for a few months the mines operate intermittently.

Were it possible to operate at full capacity during these months of the second quarter, there would be plenty of coal to serve all domestic needs, even allowing for car shortages here and there, although it would require that certain large interests purchase their winter requirements during the spring and summer. The urgent need is for increased production and for forehanded buying. As the coal is brought out of the ground it must be taken away since there are no storage facilities at the tipple.

Production which reached a high rate during the week ended Jan. 3, according to the Geological Survey figures, declined somewhat during the following week. The daily rate is estimated at 1,905,000 net tons as compared with 2,060,000 tons on the five full working days of the week before. Up to the present time, production during the first two weeks of 1920 so far is well above that of 1919 and 1918 and even slightly more than the line on the chart which represents 1917. The total output for the week ended Jan. 10 is estimated at 11,432,000 net tons, which is an increase over the corresponding week of last year of 10.3 per cent. In fact, the week's production was exceeded but five times during the entire year 1919.

Westinghouse Brake Co. Changes

Westinghouse Traction Brake Company, Wilmerding, Pa., announces that J. R. Ellicott, manager of the Eastern district, has retired after a long service. He will, however, act with the officers of the company in a consulting capacity. Mr. Ellicott was general manager of the Standard Traction Brake Co. until it was taken over by the Westinghouse Air Brake Co. He will be succeeded by his son, C. R. Ellicott, who has also been with the company a good many years.

C. H. Beck, heretofore special representative Safety Car Devices Co., succeeds C. R. Ellicott as assistant Eastern manager at New York. Robert Burgess, representative at At-

lanta, becomes Southeastern manager, Munsey Building, Washington, D. C. A. K. Hohmyer, formerly of the Chicago office, becomes assistant Western manager.

J. B. Wright, assistant Southeastern manager, is made assistant district manager at Pittsburgh. F. H. Parke, resident engineer, Southeastern district, is appointed general engineer, Westinghouse Building, Pittsburgh, Pa. T. W. Newburn, assistant resident engineer, Southeastern district, becomes district engineer, Southeastern district, headquarters Munsey Building, Washington, D. C. J. C. McCune, special engineer, Wilmerding, is appointed assistant to district engineer, Eastern district, 165 Broadway, New York, N. Y., and J. H. Woods of the commercial-engineering department, Wilmerding, is appointed engineer, export department, with headquarters in the Westinghouse Building, Pittsburgh.

Insulators and Hardware Advance 5 to 10 Per Cent

Deliveries Gradually Improving—Two to Three Months Being Quoted by Large Producers

Effective Jan. 17, pintype insulators and suspension insulator hardware are advanced 10 per cent. Suspension insulators, bushings and all other porcelains are up 5 per cent. Labor charges are principally responsible for the latest increase although difficulties in the raw material situation also enter into the increase.

Good sales are reported in the high-tension insulator market. In addition to the domestic business, some large orders are coming in from Europe and South America. Although prices of the American-made goods are much higher than those in England and Germany, delivery is of prime importance and it is for this reason that many orders are coming to this country. Large orders have been placed recently in Sweden. Other foreign countries have placed orders of fair size. During the week an order of 4,000 high-tension units was reported from South America. Also a large order for third rail insulators has been received from a European road.

There is much difficulty at the insulator factories in obtaining raw material, and especially malleables, for insulator manufacture. Conditions are not becoming any better and with the rather heavy demands from foreign countries for insulators, many domestic customers may be seriously embarrassed unless they get into the market early.

Should a decrease in the insulator manufacture become effective as it has in some other lines, manufacturers will be compelled to distribute their capacity to take care of the best interests of all its customers, which usually means cutting down each individual order. Deliveries are now quoted at from sixty to ninety days on both pintype and on suspension units.

Old Engineering Firm Changes Name

Barclay Parsons & Klapp, consulting engineers, 60 Wall St., New York, N. Y., announce the change of the firm name to Parsons, Klapp, Brinckerhoff & Douglas, the personnel remaining unchanged. Mr. Brinckerhoff is a graduate of Stevens Institute of Technology, and in 1892 and 1893 was assistant engineer for the intramural railway at the World's Fair in Chicago. Later he became electrical engineer and in 1898 general manager of the Metropolitan West Side Elevated Ry., in which capacity he remained until 1906. He then left railway work to join the firm of Barclay Parsons & Klapp, of which he has been a partner for a number of years. Since leaving Chicago he has investigated and reported upon many of the operating conditions of the largest companies in this country and visited the systems in Europe as well. In 1916 he was appointed chief engineer of the Chicago Traction & Subway Commission for the investigation of traffic conditions. Mr. Brinckerhoff recently has been engaged on a series of reports on traffic conditions in Cleveland and Detroit, abstracts of which have appeared from time to time in the ELECTRIC RAILWAY JOURNAL.

Recent Incorporations

Houston, Richmond & Western Traction Co., Houston, Tex.—The Houston, Richmond & Western Traction Co. has filed amendments in the office of the Secretary of State changing its name to the Houston, Richmond & San Antonio Traction Co. and increasing its capital stock from $50,000 to $250,000. Ed. Kennedy, vice-president of the company, has announced that the company would within a short time begin actual construction of an interurban line between Houston and San Antonio, passing through the towns of Richmond, Wharton, Yoakum, Gonzales, Willow Springs and New Berlin.

Power Houses, Shops and Buildings

Mesaba Ry., Virginia, Minn.—The Mesaba Ry., will build a passenger station and a freight house at Hibbing, Minn. and at Kitsville, Minn., respectively.

Kansas City, Clay County & St. Joseph Ry., Kansas City, Mo.—The Kansas City, Clay County & St. Joseph Ry. plans an extension to its car shops in North Kansas City. The dimensions of the structure will be 50 x 140 ft.

Jamestown Street Ry.; Chautauqua Traction Co.; Jamestown, Westfield & Northwestern Ry., and Chautauqua Lake Navigation Co., Jamestown, N. Y.—These companies plan to purchase a 3,000-kw., 60-cycle, 3,600-r.p.m., 2,200-volt turbine. Also 2,500 hp. in boilers, superheaters and stokers.

Marine Ry., New York, N. Y.—This company plans during the year to purchase new charging apparatus.

Cincinnati & Dayton Traction Co., Cincinnati, Ohio.—This company has purchased a Brown Hoisting Company's 15-ton steam locomotive crane.

Cincinnati, Milford & Blanchester Traction Co., Cincinnati, Ohio.—This company proposes during 1920 to purchase two new substations comprising transformers, rotaries and panels and also three new cars complete.

Cleveland Union Terminals Co., Cleveland, Ohio.—The City Council of Cleveland, Ohio, has passed an ordinance authorizing the Cleveland Union Terminals Co. to build a passenger station facing the public squares. Work must be begun by March 1.

Ohio River Electric Railway & Power Co., Pomeroy, Ohio.—This company expects during the year to purchase about $400 worth of tools and also some additional equipment.

Pacific Power & Light Co., Astoria, Ore.—This company expects to purchase a new 3,750-kva. generating station for use of light and street railway departments jointly. The contract has already been let.

Montoursville (Pa.) Passenger Ry.—This company contemplates some powerhouse changes which will enable them to produce more power. The lines will also be built heavier to carry the increased output. Turbo blowers will be purchased.

Jackson Railway & Light Co., Jackson, Tenn.—This company recently contracted with the Babcock & Wilcox Co. for a 505-hp. Sterling boiler to be installed during the first quarter of 1920.

Track and Roadway

Virginia Railway & Power Co., Richmond, Va.—The Virginia Railway & Power Co. has accepted the recommendation of the State Corporation Commission for an extension of its line in Monticello Avenue, Norfolk, to Ninth Street.

Seattle (Wash.) Municipal Railway.—The City Council of Washington, D. C., is considering an ordinance providing for the construction of a double-track railway on East Marginal Way, providing improved transportation service for residents of South Seattle, to be commenced in the near future, and to cost $275,000. The sum has been appropriated out of the 1919 railway betterment fund of $790,000. Mayor Fitzgerald urges the immediate commencement of work, so that employment may be provided ex-service men in the city. Plans call for a double-track line, beginning at the intersection of East Marginal Way and Carleton Avenue and extending on East Marginal Way to the intersection of that street with First Avenue South. The line will be 2½ miles long

Trade Notes

Walter A. Zelnicker Supply Co. announces that Hugh L. Siegel, formerly general sales manager for the Ford Roofing Products Co., has joined the company as assistant to the president.

General Electric Co., Schenectady, N. Y., has awarded contract for the construction of a new four-story addition to its plant on Boyd Street, Newark, N. J., about 60 ft. x 80 ft., which will cost $66,000.

Fairbanks Company, New York, N. Y., announces that it has been given the exclusive distribution for industrial applications of Lincoln electric motors, manufactured by the Lincoln Electric Co., Cleveland, Ohio.

Link-Belt Co., Chicago, Ill., announces an addition to its Belmont foundry at Indianapolis, Ind. The building will be about 70 ft. wide by 400 ft., and when finished will complete the foundry as originally laid out.

Bryant Electric Co., Bridgeport, Conn., has completed plans for the construction of a new four-story addition to its plant, for increased capacity. The structure will be about 60 ft. x 218 ft. and is estimated to cost $120,000.

Rome Wire Co., Rome, N. Y., advises that it is adding a new electric furnace for bronze, a heat-treating furnace for annealing, new machinery and enlarging its buildings. The company hopes by spring to be in better shape on shipments.

General Electric Co., Schenectady, N. Y., is preparing plans for the construction of a new six-story structure at its Schenectady plant to facilitate operations. The structure will be about 54 ft. x 219 ft. and is estimated to cost $400,000.

Standard Underground Cable Co., Pittsburgh, Pa., announces that the St. Louis sales office of the company, E. J. Putzcker, manager, will on Feb. 1 be removed from the Security Building, where it has been located since 1897, to the Arcade Building.

Cooper Hewitt Electric Co., Hoboken, N. J., to secure more room for factory expansion, moved departments of its offices, about Dec. 1, to 95 River St. The engineers' department will remain at the present location in the factory, at Eighth and Grand Sts.

William J. P. Simpson, consulting engineer, Seattle, Wash., recently returned from France, where he has been a major connected with the Engineering Corps since September, 1917, and will re-enter private practice, with offices at 317 Railway Exchange Building.

Fairbanks, Morse & Co., Chicago, Ill., will erect a building to cost $315,000, three stories, 150 x 300 ft., located at Thirty-eighth Street and Loomis Place, in the central manufacturing district. The new structure will be built so as to carry two additional stories if needed.

Crescent Insulated Wire & Cable Co., Olden and Taylor Streets, Trenton, N. J., is considering plans for the construction of an addition to its plant. The company has completed negotiations for the acquirement of additional property on Webster Street as a site for the proposed structure.

Goulds Manufacturing Co., Seneca Falls, N. Y., manufacturer of pumping machinery, has completed negotiations for the acquirement of the seven-story building, about 25 ft. x 152 ft., now occupied by the company, at 19 Park Place, and extending through to 16 Murray Street, New York City.

John F. Vaughan, Engineers, 185 Devonshire Street, Boston, Mass., announce that they have secured the services of Henry D. Abbott, recently resigned as New England manager of the United States Shipping Board, Emergency Fleet Corporation. Mr. Abbott becomes an associate of the firm.

F. S. Montgomery, for the past six years advertising manager of the National Metal Molding Co., Pittsburgh, Pa., tendered his resignation which took effect Dec. 31, since which date he has been associated with the Ivan B. Nordhem Co., outdoor advertising, 8 West Fortieth St., New York City.

C. G. Boyden has resigned from the Eastern Massachusetts Street Ry. to become sales engineer of the Lincoln Electric Co., with headquarters at 10 High St., Boston, Mass. Mr. Boyden is making a specialty of electric welding and is covering the New England territory in that connection, including industrial plants as well as utilities.

Black & Decker Manufacturing Co., Baltimore, Md., has opened an additional office on the Pacific Coast, at 201 Maynard Building, Seattle, Wash. This office is in charge of A. E. Nordwall, who will have charge of the distribution of Black & Decker products in the State of Washington, working under the direction of the main Pacific Coast office in San Francisco.

Francis H. M. Riley, formerly associated with Vaughn & Meyers, consulting engineers, Milwaukee, Wis., announces his appointment as Wisconsin representative for the Vulcan Soot Cleaner Co. of Dubois, Pa., the Vulcan Fuel Economy Co. of Chicago, Ill., and the Green Engineering Co. East Chicago, Ind. Mr. Riley is established at 614 Security Building, Milwaukee.

J. E. Mellett, formerly commercial engineer with the Georgia Railway & Power Co., has joined the executive staff of the Carter Electric Co., Atlanta, Ga. Mr. Mellett has resided in Atlanta for eight or nine years, and before joining the Georgia Railway & Power Co. he had been one of the sales engineers of the General Electric Co. and at one time manager of its Chattanooga office.

A. L. Mercer, for several months assistant director of sales of the War Department, has tendered his resignation effective Jan. 1, 1920. It is reported that the board of directors of the Needham Tire Company, Charles River, Mass., will elect Mr. Mercer president of the corporation at its annual meeting in January, and that he will take up his new duties on Feb. 1. This company expects to manufacture a complete line of rubber goods for all purposes.

B. F. Goodrich Rubber Co., Akron, Ohio, announces through T. L. Barnes, manager of sales, insulated wire department, that this department of the Goodrich company has been sold to the Rome Wire Co. of Rome, N. Y., in order that the Goodrich company might expand still further in manufacturing goods entirely of rubber. The kind of wire concerned is National Electric Code, automobile wires and cables, mining machine and other types of rubber-insulated wire.

New Advertising Literature

Caille Brothers Co., Detroit, Mich.: A booklet in which are described its electric ticket sellers and electric ticket choppers.

General Electric Co., Schenectady, N. Y.: Bulletin No. 47,702A, superseding No. 47,702 and covering rheostat and compensator operating mechanisms.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.: Bulletin No. 1632C, a fifty-two page publication covering the centrifugal pumps and pumping units made by this company.

National Association of Manufacturers, 30 Church Street, New York City: Through its foreign trade department the second edition of its publication "An Export Order and Allied Topics." The original issue of this publication was brought out in 1918.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.: Booklet containing a brief outline of the opportunities offered to technical graduates in its shops. It contains the statement that during twenty years more than 5,000 men have entered graduate students' courses in its plants.

E. I. du Pont de Nemours & Co., Wilmington, Del.; indicating device applicable in electric railway safety campaigns. It is called the "Accidometer," and is simply a large bulletin board to which have been attached accident thermometers for every craft at work on one of the company's large engineering jobs. Painted above each group of thermometers is the name of the general foreman of the particular craft, with the names of the foremen directly under him. A horizontal twelve month scale, subdivided into quarterly periods, indicates the relative standings of the several crafts at the end of any month. Supplementing the effect of the accidometer in the creation of departmental competition, bronze and silver medals are awarded to foremen and general foremen for clear accident records for six and twelve months respectively.