

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Nail the Lie at the Right Time

MESSRS. SCHWAB AND GARY have done a good work in nailing the lie that the steel makers are more interested in war than they are in peace. Among the unthinking it has been accepted at 100 per cent that the steel men were the accomplices of Mars. Even dramatists no less renowned than Shaw, in his "Major Barbara" with its millionaire Undershaft, have done much to keep the silly idea alive. The limitation of armament conference, however, afforded just the necessary background for the authoritative statement by Mr. Schwab, a statement which, if made at any other time, would have provoked derision except from the few who knew it to be true. It has been the despair of leaders in industry everywhere, this lie about their business, which persists in spite of the fact that its disproof is so simple.

In the electric railway business the number of erroneous notions about the industry that persist through the ages is probably greater than surrounds any other industry with the exception of the steam railroads. First there is the prevalent idea of overcapitalization. Again there is the idea that the interests of the company and the public cannot possibly be the same—the idea that the railway manager lives only to carry as many passengers in as few cars as physical limitations will permit. Another is that rush-hour traffic is immensely profitable. These are just a few that occur offhand.

It would do no good for the industry to disclaim all these things out of hand, but it would be well for electric railway managers everywhere to be on the lookout for just such opportunities as the disarmament conference presented to the steel makers to disprove these silly notions. A fixed plan for carrying the message of disproof to the public would fail of its purpose, but coupled with the proper incident in the history of the company at the time of the making of that history a great deal more can be done than has been accomplished in the past toward correcting misconceptions about the industry such as those which have been cited.

Momentous Decision for Des Moines

NEW YORK has its Mayor Hylan. Chicago has its Mayor Thompson. And Des Moines has its former Corporation Counsel Byers. All of them are of the same political kidney. They are traction baiters first, last and all the time. They are the type of politicians that are the despair of the statesman and a conundrum to the historian.

Mr. Byers doesn't like the proposal for a new grant to the Des Moines City Railway to be voted on by the people of that city at the election there on Nov. 28 and has aligned himself with a property owner as the instigator of a suit for an injunction to prevent the election. He sees lurking in the franchise a gentleman of dark persuasion discernible to none but him. The trouble with Mr. Byers is of course not with his eyes, but because he is suffering from the gall of previous

defeat. If he came to the court without prejudice the case might be different. Under the circumstances the chances appear to be slight that this avowed hater of the railway will be permitted to thwart the will of the Council and jeopardize the future of the city.

However unwise Des Moines may have been in the past in her dealings with the railway, it seems altogether unlikely that the city will do anything less than overwhelmingly adopt the new railway grant. For Des Moines the choice that she makes on Nov. 28 will be momentous. Unless the city has gone stark mad there can be but one outcome at the impending election.

Who Will Buy Junior Issues?

THE practical difficulties of financing junior issues of public utility corporations at the present time have been set forth on a number of occasions, but perhaps never more clearly than in a paper presented by Mr. Peirce, a banker of San Francisco, at the last meeting of the Investment Bankers' Association of America and published in the issue of this paper for Nov. 12. Admittedly, the question of a proper and adequate return on a public utility security is a difficult one. When the average member of the public is paying his trolley fare or lighting bill an 8 or 10 per cent return looks high, although it takes on a ridiculously small appearance to that same individual when he is considering what investment he shall make with his savings. Nevertheless, as the number of people who pay fare is much larger than those that have to consider how they are going to invest their savings, commissions have felt that they had to be conservative in their allowance of the percentage of return permitted. But if bonds or preferred stock have to be put out at around 8 per cent, how are the junior securities to be marketed? Obviously there is very little opportunity of marketing them at all. Nevertheless, a corporation without a large part of its assets represented by common stock is top heavy and a menace to all who have to do business with it.

There are two possible solutions to the problem. One is that the public will become reconciled to the earning of a higher return by the successful utilities so that there will be a chance to issue more common stock. The theory upon which the return permitted has been kept down in the past has been that the utility had a monopoly of a necessity and so was immune in a very large measure to the risks encountered by ordinary commercial undertakings and that the safety of the investment was a compensation for the smallness of the return permitted. This idea will have to be revised, at least to some extent, in view of the events of the last few years. Many investors are now disposed to look upon utility enterprises as possessing a considerable number of hazardous factors.

The other solution, or rather a condition which will help in financing junior issues of utilities, is a general lowering of interest rates. This may not be so far off as many believe, in spite of the large amount of finan-

cing which will have to be done by our own government and foreign governments during the early future. Already the cost of call money on the New York Stock Exchange is considerably less than the average of the last three or four years, although of course it is still high compared with the pre-war situation. Some recent financing of utility securities in New York, as cited in our financial and corporate department this week, indicate that for certain securities there is a good demand. While this reduction in interest rates is due to some extent to the depression in business and lack of demand for money for commercial undertakings, it is probably also due to the general building up of surplus credit.

Organization Plan of C. E. R. A. Engineering Council

ONE of two things will likely prove necessary if the section meetings of the Central Electric Railway Association Engineering Council are to meet with a success equal to that of the meetings of the Pennsylvania-Ohio master mechanics which were superceded. Either a substantial attendance of track, overhead and power engineers as well as equipment engineers must be brought about, or the different classes of engineers must be segregated into separate meetings.

In organizing the engineering council, it was thought that the geographic grouping of all classes of engineers of the C. E. R. A. territory into four sections would reduce the average distance of travel necessary in attending meetings and that there would be broadening benefits and perhaps more comprehensive conclusions reached from the joint consideration of questions. There is some logic in this reasoning but it is certain that little can be accomplished in discussing a track problem, for example, at meetings attended by only one or two track men but many mechanical men.

Even if it were possible to insure a more representative attendance than has been had at the early meetings of the engineering sections, there is room for much doubt that the present plan is the best. Nearly every one seems to be agreed that the much-talked of success of the Pennsylvania-Ohio master mechanics' meetings was due to the fact that all present were master mechanics—every one interested in the same topics. In the joint gathering of all engineers, it is quite to be expected that discussions of equipment problems will dominate the meetings because there are ten or maybe a hundred equipment problems to one track or power problem. And there is much greater uniformity of practice in the track, line and power work than with rolling stock. Consequently it is a question whether there will be enough good resulting from the attendance of these other engineers at the meetings of the master mechanics, in the few cases where a joint discussion of the problem is desirable or necessary, to justify the former in sitting through a great deal of discussion in which they have only a secondary or remote interest. Those few non-mechanical men who attended the Youngstown meeting, reported in this issue, felt that their time was largely wasted—and it was, for the double reason of small attendance of these men and natural predominance of mechanical questions.

In view of these aspects of the new engineering organization, it may be well worth while for the annual meeting of the C. E. R. A. in January to give consideration to a change in the organization scheme. It would seem to be a more efficient plan to continue the

geographic sections now organized, but make them exclusively for the equipment engineers and retain the present schedule of meetings. In addition, one or two meetings a year of the line and power engineers of the entire C. E. R. A. territory, and similarly one or two meetings for the civil engineers, would probably provide ample opportunity for interchange of ideas in these branches of the engineering work. Then all engineers would have contact and opportunity for joint consideration of any common problems at the time of the annual meeting as provided in the present plan.

One outstanding advantage of the new C. E. R. A. engineering council over the Pennsylvania-Ohio master mechanics' association is evident. The C. E. R. A. has provided the instrumentality through which these meetings can be made to show real accomplishment. Before, the men just met and discussed, and each learned from the other. Now, in addition, the discussion can be directed toward a definite conclusion and the adoption of standards or the recording of best practice.

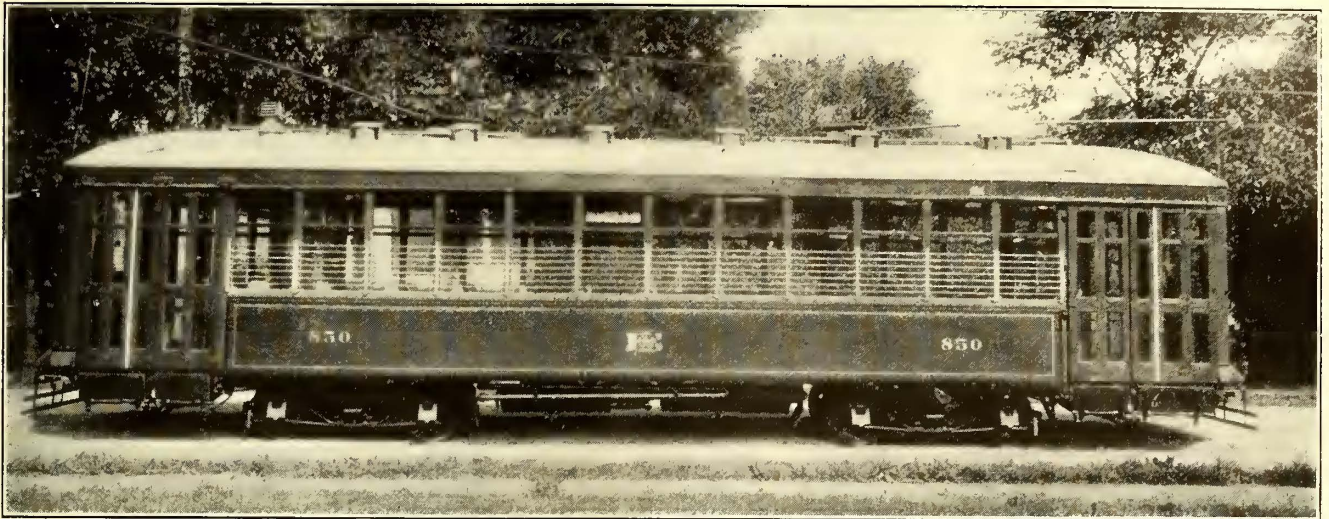
Increased Train Operation Does Not Mean Less Popularity of the Safety Car

THE large increase in the practice of train operation which has taken place this year shows that electric railway companies favor the use of trailers in many cases of congested traffic. The justification of train operation depends, of course, upon the extent to which the saving in time from a reduction in number of units, plus the saving in platform labor, overbalances the loss caused by the increased number of stops required by a train over two individual cars to receive and discharge passengers. Hence, train operation is particularly adapted to heavy traffic and to congested centers, because it is here that street congestion would require many stops in any event and a reduction in the number of operating units is most effective in speeding up the whole line. Of course, such trains have also to run to some extent into the outlying districts, but where the required stops are fairly far apart, the net decrease in running time caused by the use of two cars is not seriously felt.

This increase in train operation, in many cities, should not be interpreted as a tendency away from the use of safety cars, which are adapted to an entirely different set of conditions. These small units have proved of exceptional value for light and average service requirements. The increased tendency toward train operation has also been influenced to some extent by the fact that trailers have a low first cost and operating cost in comparison with the motor cars. In this latter respect it enters the field of one-man car operation.

On systems where safety cars are in use train operation during the peak period does not interfere with the safety car operation. In many cases the safety cars are operated over the same tracks through the congested sections that are used by the trains, but in most instances they are on different lines. The safety car headway is determined largely by the service necessary in the outlying sections which they serve rather than in the dense centers.

Both multiple-unit and trailer operation have individual advantages, and it is difficult to make an accurate comparison between the two because multiple-unit operation has certain inherent flexibilities that cannot be obtained with trailers. Both, however, are essential factors in the solution of heavy traffic problems and do not encroach on the safety car field.



MILWAUKEE'S NEW ONE-MAN, TWO-MAN DOUBLE-TRUCK CAR

Double-Truck, One-Man, Two-Man Cars in Milwaukee

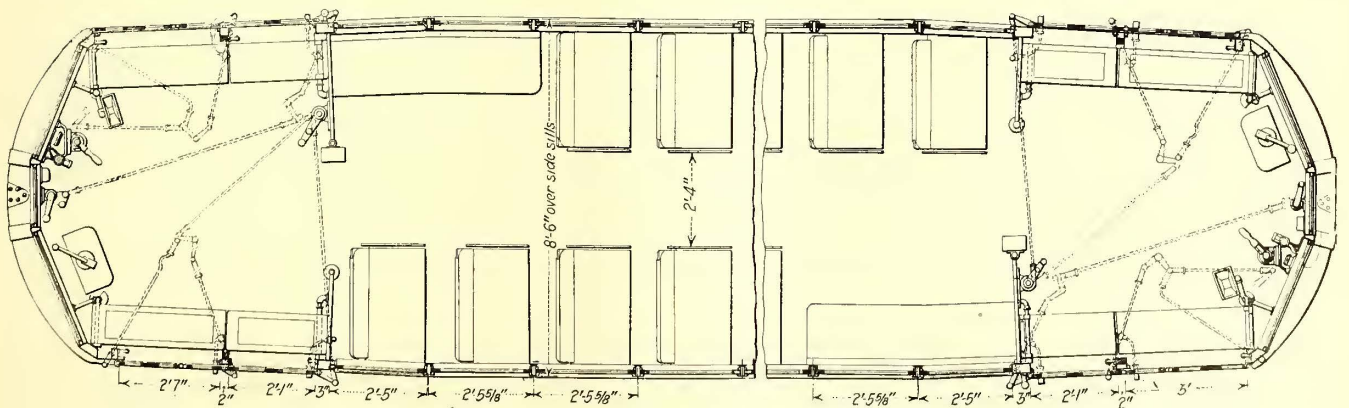
Distinctive Features Are Their Adaptability to Light or Heavy Traffic, Unusually Light Weight. Separate Exit and Entrance, Special Design of Trucks, and Advantages to the Patrons in Safety, Comfort and Improved Service

THE ELECTRIC RAILWAY JOURNAL of Aug. 20 made mention of the commencing of one-man car operation in Milwaukee and discussed briefly the new light-weight, double-truck, low-floor cars equipped with standard safety devices which were developed by the Milwaukee Company in preparation for this installation. This Milwaukee car, embodying as it does distinctive features of design, is believed by the company to be an up-to-date and satisfactory solution of the problem of adapting one-man car operation to the use of a metropolitan community in such a way that the new service does not suffer by unfavorable comparison with the old. The Milwaukee installation offers to the riding public there such superior advantages in the way of speed, safety and comfort that this innovation in service was practically assured of successful acceptance and support before it was started. The time and careful thought spent by the Milwaukee management in analysis of construction and operating features of design are plainly in evidence. The fundamental ideas of the design are accredited to S. B. Way, vice-president and general manager, the details having been worked

out by T. W. Faber, engineer of car construction, though due acknowledgment is made by these gentlemen to advice and suggestions received from the transportation and other company departments.

The arrangement of this car for either one or two-man operation makes it readily adaptable for use on any line of the system, hauling either heavy or light traffic or for operation on the same line as a one-man car in non-rush and as a two-man car in rush hours. At the time of this writing, two lines are being operated with the new cars as one-man cars all day, using the two-man three-truck trains, described in the ELECTRIC RAILWAY JOURNAL for Jan. 15, 1921, page 131, for the additional rush-hour equipment required, as this keeps the line entirely on the basis of one man per car.

To speed up loading at congested points, auxiliary street collectors are used, these cars being equipped with a shaft extending out from the steps and connected to the door-operating mechanism by beveled gears, so that these collectors are enabled by using a crank, to open the rear right-hand door and admit passengers. By this



FLOOR PLAN SHOWING LAYOUT OF SEATS AND PLATFORM EQUIPMENT AND VARIOUS DIMENSIONS

means, it has been possible to maintain practically the same schedule speed as that prevailing when the lines were operated with all two-man cars.

The arrangement of the separate entrance and exit doors makes possible a rate of loading and unloading equal to that of the older two-man cars on the system, and these doors are arranged for independent operation, so that the operator can close the exit when all passengers have alighted and confine the ingress of passengers to the entrance door. This independent operation of doors is similar to that provided for the rear

operation. Despite the 28-in. clear aisle space, the seats are wider than most of the other cars, the width being 36 in.

IMPROVED SERVICE AFFORDED

Because of the more economical operation possible with these cars, the company has been enabled to give its patrons a more frequent service. On the Thirty-fifth Street line, on which operation of the new cars was begun on June 19, a base headway with forty-four seat two-man cars of eight minutes in the morning and nine minutes in the afternoon was replaced with an eight-minute headway all day using the fifty-eight seat one-man cars. A stretch of single track made it impossible readily to shorten the headway under eight minutes. The average schedule speed of 9.67 m.p.h. of the two-man cars on this line was reduced to 9.24 m.p.h. with the new cars. The seats per hour past a given point was formerly 330 in the morning and 293 in the afternoon as compared to the present 435 all day.

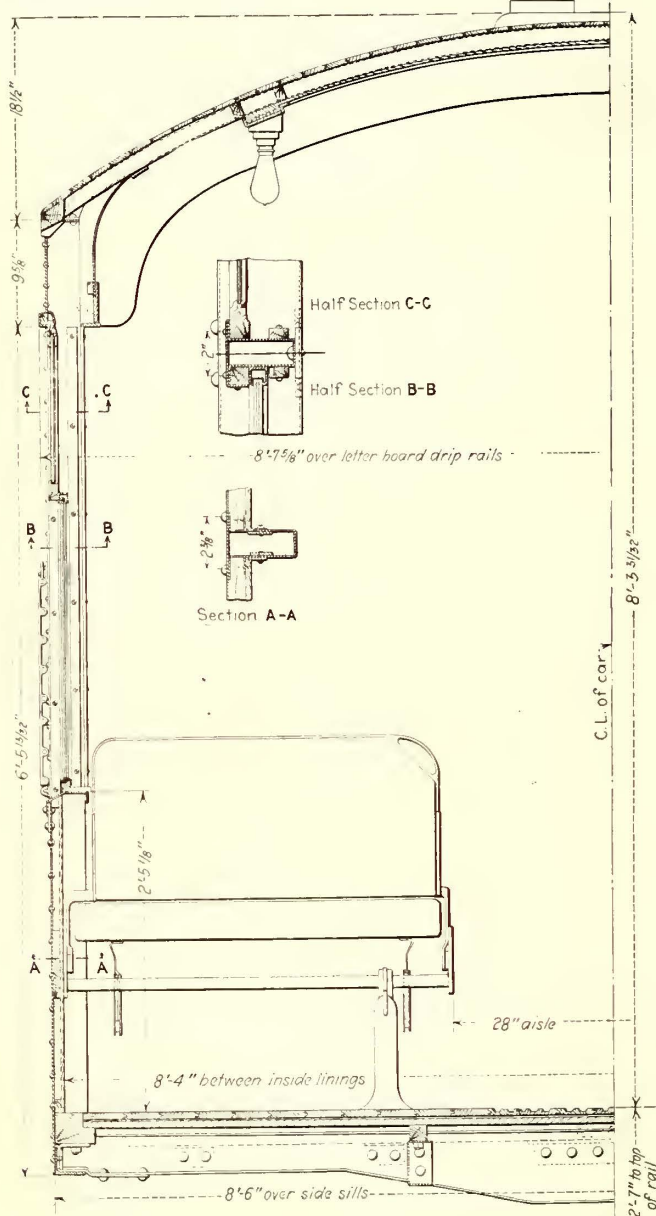
A further improvement in service was made on the Twenty-seventh Street line, on which the new cars were installed on Aug. 1. Here the former base service was ten minutes in the morning and eight minutes in the afternoon, while the new headway with one-man cars is eight and one-half minutes in the morning and seven minutes in the afternoon. The former schedule speed was 11.05 m.p.h. and is now 10.97 m.p.h. The very slight reduction in schedule speed is more than compensated for from the standpoint of the patron by the shorter period he must wait for a car. The relative number of seats per hour on this line in the morning was 264 with the two-man forty-four seat cars and 406 with the new cars. On the afternoon schedule, the former service provided 330 seats per hour as compared to 545 in the new service.

An idea of the density of traffic on the two lines on which these new cars have been installed can be gained from the following figures: On the Twenty-seventh Street line, the average number of passengers per car-mile as computed from recent figures is 10.51, while that of the Thirty-fifth Street line is 9.88. These may be compared with a city system average of 9.53 passengers per car-mile and with the heaviest city line which carries 13.54 passengers per car-mile.

With the lower cost for operating these cars, lower cost for platform labor, less for power on account of the light weight and the small motors used, less for maintenance of equipment and reduced track maintenance the company is able to give the patron more for his money.

GENERAL LAYOUT OF THE CARS

The new Milwaukee cars known as the "800" series are of semi-steel, arch-roof construction with underframe, side framing, posts and letterboards of steel, and roof, doors and interior trim of wood. The bodies are mounted on special arch-bar trucks designed by the Milwaukee Company and equipped with 26-in. rolled-steel wheels and four motors. Thirty of the cars are equipped with General Electric type 264 motors and seventy with Westinghouse type 508 motors. The comparatively low weight per motor gives these cars a good running speed. They accelerate rapidly, coast freely and get over the line in better time than the bigger and heavier cars. The energy consumption of this car is about 1.75 kw.-hr. per car-mile as averaged from a week's operation of one car. The air brakes are the



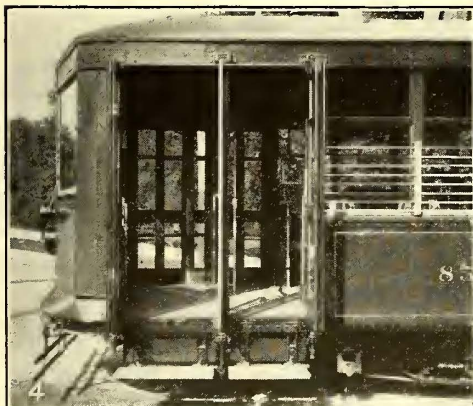
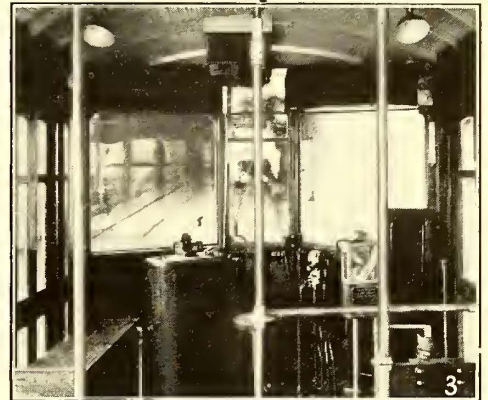
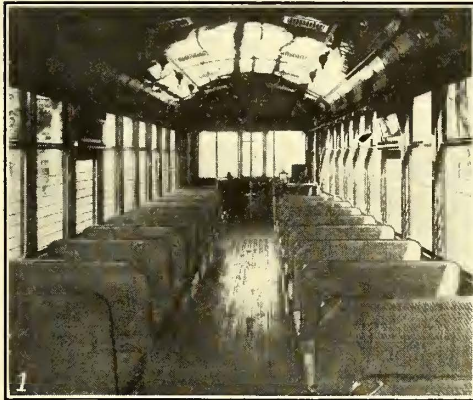
CROSS-SECTION SHOWING FLOOR, SIDE POST AND ROOF CONSTRUCTION

platform and is of advantage in preventing loss of fares and also minimizes the loss of heat in cold weather. The platform floors are practically on the same plane with the body floor, a very slight ramp giving easy step heights, facilitating passenger movement. Weight and cost in construction are economized to a great extent by the elimination of platform wells, and this feature should also reduce accidents. Aisles wider than those on any other cars on the system give greater freedom of movement of passengers through the car, which is very necessary in a car where the passenger movement is to and from the same platform as in the one-man

standard safety-car control equipments of the Safety Car Devices Company, interlocking operation of power, brakes, doors, steps and sanders to insure maximum safety in operation, the same as on the safety car.

As indicated in the tabulated matter accompanying this article, a very detailed study was made of the weight distribution, and every effort consistent with adequate strength was made to produce a car of minimum weight, and the result of such careful designing is shown in the actual scale weight of 31,820 lb. of car completely equipped. With a seating capacity of fifty-eight in summer (one cross-seat being removed to make room for the stove in winter) this gives a weight per seat of 548 lb. The Milwaukee climate requires insulation in the steel car body, headlining under the roof, an inside lining of the body, double floors and

Differing from the platform arrangement of the common type of safety car, the operator's position was made in the center of the platform behind the middle window instead of at the left-hand side. The operating department considers that the center location gives safer operation, while it sacrifices but little of the loading well space available when the operator is stationed at the left side of the platform. The two locations of the fare box for one-man and two-man operation are shown in the drawing. Platforms are as long as required to provide for separate entrance and exit passageways. Railings are used to separate boarding and alighting passengers. The pipe rail dividing the entrance and exit passageways is carried in a vertical position on the rear platform when the car is operated with one man, thus leaving the rear platform seats clear



**INTERESTING
FEATURES OF THE
MILWAUKEE CARS**

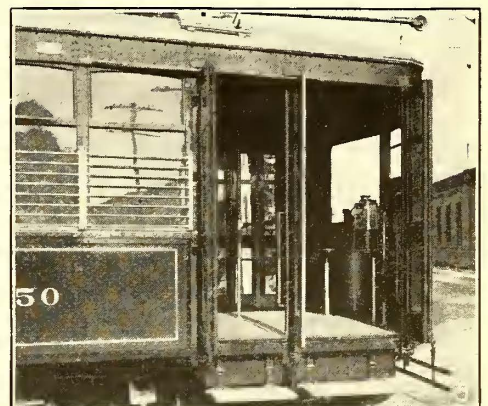
No. 1—Wide aisle and wide cushion cross seats are features of interior.

No. 2—Straight front view of the new Milwaukee car.

No. 3—Arrangement at front end for one-man operation.

No. 4—Rear doors and location of fare box when conductor is employed.

No. 5—Double doors and fare box location at front end when used as one-man car.



coal-burning, hot-air, forced-circulation heaters. The full spring cushion seats weigh slightly more than a springless type which might have been used, but their desirability, from the viewpoint of the passenger who has to ride any distance, is obvious.

The car is 45 ft. long over buffers and approximately 30 ft. long over the body corner posts, each platform being 7½ ft. long. The trucks are at 20 ft. 9 in. centers, giving an overhang of 12 ft. 1½ in. The width over the side sills is 8 ft. 6 in. Other dimensions are: Height from rail to top of floor at door, 30⅝ in.; height from rail to top of step, 16 in.; height from step to floor, 14⅝ in.; height from rail to top of roof, 11 ft. 11½ in.

The seating arrangement, position of conductor when one is used, arrangement of control equipment on the platform, etc., are seen in the accompanying drawings. It will be noted that the seating arrangement has been laid out to give the maximum number of cross seats, which are more popular with the public, one three-passenger longitudinal seat being used at either end at diagonal corners to provide a small well.

of obstruction. This rail is reversible, so that it can be used for pay-as-you-enter fare collection arrangement on either end of the car by motorman or conductor.

At the front end of the car, the entrance doors only are air operated and controlled from the brake valve handle. The exit doors are operated by hand. Both conductor's doors are mechanically operated by hand. The conductor's rear or entrance doors are the ones connected to the auxiliary shaft and opened from the outside by street collectors when the cars are operated with one man. The conductor, under two-man operation, is stationed opposite the rear exit door at the far side of the platform. All doors have been made to open outward in order to retain all possible platform space for loading purposes, particularly when using a conductor. As explained earlier, selective operation of all entrance and exit doors on both ends of the car is provided to make most of the advantages that independent operation gives in the control of fare collection and the minimizing of loss of heat in the winter season.

Ample ventilation is provided through twelve Gar-

Table I—Weight Analysis of Milwaukee One-Man Double-Truck Car

	Total Weight Lb.	Percentage of Total Weight		Total Weight Lb.	Percentage of Total Weight
Two trucks without motors.....	8,600	27			
<i>Electrical Equipment</i>			<i>Sash Glass</i>		
Two K-35 controllers.....	554		250.4 sq.ft. at 1.64 lb.....	410 lb.	
One economy meter.....	26		Storm sash fixtures.....	10	
Two No. 563-D canopy switches.....	50		Sash.....	250	
Four GE-264 motors.....	3,840		Sash racks.....	10	
Two U. S. thirteen trolley bases.....	240		Total for sash, including fixtures.....	680	2.1
One controller handle.....	2		<i>Doors</i>		
One grid resistance (large).....	112		Wood.....	229	
One grid resistance (small).....	82		Class.....	113	
One armature circuit fuse box.....	56		Castings.....	632	1,536
One M. P. lightning arrester.....	7.5		Steel (including door operating mechanism).....	562	4.8
One choke coil.....	1.5		<i>Underframe</i>		
One fuse box—main.....	11.5		Center construction steel.....	1,938.66	
Four axle collars.....	68		Center construction rivets.....	110.82	
Two trolley poles, harps and wheels.....	76		Center construction bolts.....	8.72	2,058.20
Two trolley catchers.....	37		<i>Superstructure</i>		
260 ft. trolley and ground cable (7—.0974) (290 lb. 1,000 ft.).....	75		Steel.....	2,933.73	
1,220 ft. motor and res. cable (7—.0545) (120 lb. 1,000 ft.).....	146		Castings.....	182.00	
130 ft. motor cable (7—.0688) (170 lb. 1,000 ft.).....	22		Rivets.....	85.27	3,201.00
Two trolley catcher sockets.....	2.5		<i>Roof</i>		
Steel supports.....	25		Roof carlines steel.....	126.37	
Wood supports.....	30		Roof carlines, wood.....	130.00	
Bolts.....	10		Roofing.....	417.00	
28 ft. 1/2-in. conduit.....	30	5,504	Running boards and saddles.....	133.00	
		17.3	Trolley baseboard.....	18.00	
<i>Brake Apparatus</i>			Roof side stringers.....	86.10	
One Westinghouse D.II.—16 air compressor.....	585		Bolts.....	6.50	
One set air compressor suspension irons.....	23.75		Canvas.....	31.50	950.47
One 8-in. suction air strainer.....	12		<i>Floor</i>		
One type S-6-B compressor governor.....	35		Floor stringers.....	390	
One 3/4-in. air strainer for compressor governor.....	2.25		Floor stringer steel supports.....	64	
One 8x12-in. type "S" brake cylinder.....	125		Floor stringer bolts.....	35	
Two 12x48-in. enameled air reservoirs.....	174		Flooring (double).....	1,274	
Two sets air reservoir hangers and blocks.....	14		Nails.....	15	
One type E-1 safety valve.....	3		Paper.....	50	1,828
One 10x12-in. sanding reservoir.....	35		<i>Inside Finish</i>		
One sand reservoir hanger and block.....	2.75			550	1.4
One type K-1 emergency valve and bracket.....	33		<i>Light Fixing</i>		
One No. 15 double check valve.....	7		Lamp receptacles.....	6	
Two circuit breaker cylinders.....	10		Lamp blocks.....	7	
Two foot and cutoff valves.....	21		Wire moulding.....	24	
Two 3/4-in. check valves for sand line.....	.75		Wire—550 ft. No. 14.....	36	
Two 3/4-in. single pointer air gauges.....	2.25		Lamps.....	2.5	
Two M-28 brake valves.....	48		Reflectors.....	1	
Two door and step controllers.....	194		One three-way switch, 3 amp.....	.75	
Two snap switches.....	1.25		Three three-amp. switch and cutouts.....	3.75	
Two controller handle base portions.....	18		Screws.....	1	82
Two controller pilot valves.....	1.5		<i>Passenger Signal</i>		
One 3/4-in. cutout cock.....	1.25		Twenty-six push buttons.....	7	
One fuse block and fuse.....	1		One interrupter resistor.....	9.5	
Two 1/2-in. drain cocks.....	1		Two buzzers—1 lb. 5 oz. each.....	2.5	
Apparatus supports, rods, levers, chain etc.....		1.6	Wire—490 ft. No. 18.....	20	39
184 ft. 3/4-in. pipe.....	105		<i>Motorman's</i>		
248 ft. 1/2-in. rope.....	212		Six motorman's roof steps.....	6.00	
2 ft. 1/4-in. pipe.....	0.5		Two push pole pockets.....	17.00	
21 ft. 1-in. pipe.....	35.25		Two coupling pin pockets.....	18.00	
23 ft. 2-in. pipe.....	84		Drawbar, pin and bracket.....	125.00	
2 1/2 ft. 1 1/2-in. pipe.....	5.68		Two gongs.....	14.75	
Pipe fittings.....	105		Twelve ventilators, complete.....	145.00	
Total weight of brake apparatus.....	2,334	7.3	Twenty-four side curtains.....	100.00	
<i>Fenders</i>	450	1.4	Two motorman's curtains.....	16.00	
<i>Seats</i>			Two motorman's seat sockets.....	3.50	
Twenty cross seats at 59 lb.....	1,180		One motorman's seat.....	8.50	
Eight vestibule folding seats.....	117		One switch hook and two holders.....	11.75	
Two longitudinal seat cushions.....	63		Two sand traps.....	24.00	
Two longitudinal seat backs.....	44		Eight grab handles and sockets.....	63.00	
Two longitudinal seat frames.....	53		Heater duct and shields.....	65.00	
Wall end supports for cross seats.....	80		One jack 98-lb. and one jack stick 7 lb.....	105.00	
Pipe supports for vestibule seats.....	43	1,580	Two turtles.....	46.00	
		5	One tool box.....	146.00	
<i>Sash</i>			Window guards.....	185.00	
Twenty side lower sash.....	110		Pipe railings.....	145.00	
Four lower side sash.....	20		Two front destination signs and boxes.....	48.00	
Two vestibule center top sash.....	3.88		Two headlights.....	22.00	
Two vestibule center bottom sash.....	8.63		Step treads.....	40.00	
Two vestibule storm sash center.....	7.75		Safety treads.....	48.00	
Four vestibule sash side.....	22.25		Two single stroke bells.....	6.87	
Four vestibule storm sash side.....	21.00		Two door signal boxes.....	12.00	
Twenty side upper sash.....	48.00		Eight step springs.....	16.00	
Four side upper sash.....	9.00		Door signal switches.....	2.00	
<i>Sash Glass</i>			Two sand boxes.....	15.00	1,464.37
Four lights side upper, 24 1/4-in. wide.....	9.3 sq.ft.		<i>Paint</i>	600	
Twenty lights side upper, 25 1/2 in. wide.....	47.4		Total estimated summer weight.....	31,316	
Four lights side lower, 25 1/2 x 26 1/2 in.....	18.8		<i>Actual scale weight of car complete, ready for summer operation</i>	31,820	
Twenty lights side lower, 25 1/2 x 26 1/2 in.....	96.1				
Two vestibule center top glass, 6 1/2 x 16 1/2 in.....	.7				
Two vestibule center bottom glass, 27 x 16 1/2 in.....	6.1				
Two vestibule center storm glass, 16 1/2 x 34 1/2 in.....	7.9				
Four vestibule side glass, 34 1/2 x 33 1/2 in.....	32.5				
Four vestibule side storm glass 33 x 34 1/2 in.....	31.6				
	250.4 sq.ft.				

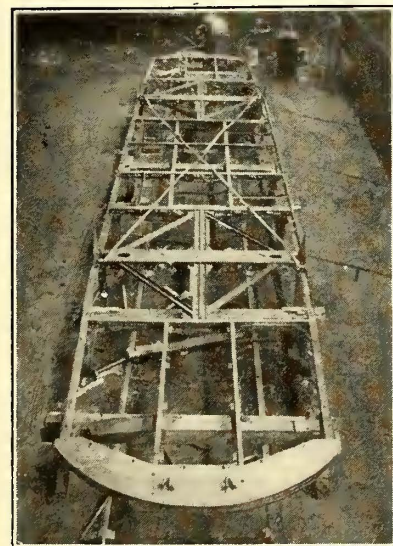
land exhaust ventilators, and with good ceiling height the results obtained in eliminating odors and changing air even under crowded conditions are most satisfactory. The lighting consists of five circuits of 23-watt Mazda lamps, the bare lamps being set in such relation to the ceiling as to make best use of the light-colored enameled surface as a reflector. The number of lamps used is rather more than is ordinarily thought necessary for a car of this size, but the bright and cheerful appearance of the car by reason of the extra light is very pleasing to the passenger.

In this Milwaukee car, brass sash has been used to good effect in adding to the appearance of an exceptionally bright, neat equipage. In engineering for weight reduction, it was determined that, including the 1 sq.ft. of additional glass required, the brass sash was 13 oz. heavier per unit than the wood sash of equivalent size would be, but appearance and reduced maintenance cost weighed more in making the decision for its use. In other words, while saving in weight was important and wonderful results in this direction were accomplished, it was not obtained by any sacrifice of strength, safety, comfort or appearance, such as has been the case with some of the efforts along this line in the past. Window curtains of standard material and full length are provided for all windows, push-button buzzer signals are available for the passengers, and the car carries a full equipment of illuminated destination signs, jacks and necessary tools for emergency purposes.

SOME DETAILS OF BODY CONSTRUCTION

A side girder of steel is made the main carrying member of the car. Pressed channel cross members are employed to transmit the load to the side girders. The side sills are made of 3-in. x 2½-in. x ⅝-in. rolled-steel angles extending on either side of the car from buffer channel to buffer channel. At the door openings, the

side sills are reinforced with ⅝-in. pressed-steel channels and a 1½-in. x ⅝-in. open-hearth steel bar extending from the first body side post to the buffer channel. The side sheathing consists of ⅝-in. patent leveled plate steel made up in three pieces on each side of the car. The belt rail at the window sills consists of a 3-in. x ⅝-in. bar extending from corner post to corner post on each side of the body. Rolled channels, 4 in. x 5½ in., bent to a 5-ft.

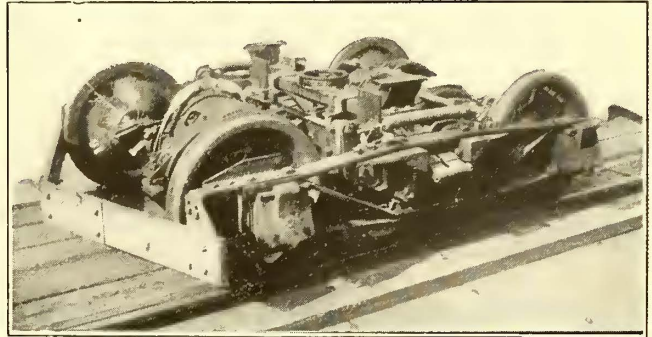


STEEL UNDERFRAME OF MILWAUKEE CAR

radius, form the buffers. The superstructure is of particularly light construction. The side posts are "U" shaped pressings made from ⅝-in. open-hearth steel. They are 1¼ in. wide and 3 in. deep with flanges at the open side of the "U" to which are riveted the side girder plates. The letter-boards are also made of ⅝-in. pressed steel and reinforced at the door openings with ½-in. pressed steel plates extending from the second body side

posts to the vestibule corner posts. At each side post a 1½-in. x ⅝-in. steel carline forged to a shape to conform to the roof curvature is riveted to the top flange of the letter-boards. To each steel carline is bolted a 1½-in. x ⅝-in. ash carline, and an additional intermediate wood carline is provided between each set of main carlines between bulkheads.

A very light roof construction was secured by using



SPECIALLY DESIGNED ARCH BAR TRUCK OF LIGHT WEIGHT

¾-in. x 2¼-in. poplar, tongue and grooved, covered with No. 8 cotton duck laid in white lead and oil. Inside the body, headlining of ⅝-in. agasote is used, but no headlining is provided in the vestibules. The interior trim is in cherry, with all furring designed to serve its purpose with the least possible weight. The double flooring is made up of an under layer of ¾-in. yellow pine with ¾-in. maple on top.

DESIGN OF THE TRUCKS

The low weight of 4,300 lb. per truck without motors was obtained through the use of chrome vanadium steel in the arch bars. The use of this special alloy steel for the side-frame members made it possible to employ a lighter section with safety and hence reduce the weight. The elastic limit of these special steel members is 50 per cent greater than that of ordinary steel, a characteristic which is expected to avoid the trouble which some companies have had in the past with breaking the bottom arch bar. The top arch bar of these trucks is made of ¾-in. x 3½-in. flat bar, the bottom arch bar of ¾-in. x 3½-in. bar and the arch bar tie bar of ¾-in. x 3½-in. flat bar. No springs are provided over the journals. Full double elliptical springs with long (34-in.) centers and comparatively thin (⅝-in.) leaves are provided in the bolsters. The springs have six leaves and are very resilient. While no auxiliary springs are employed over the journal boxes and no equalizer bars are used, the car rides well. Simplified truck design contributes materially to reduced maintenance cost.

The brake head on the dead lever side of the trucks is hung directly by the dead levers, eliminating the customary brake hangers. The axles are of special design, made of heat-treated carbon steel and are 3½ in. in diameter with 3¼-in. x 6-in. journals. A hole 1¼ in. in diameter was bored through the entire length of each axle, producing a saving of 115 lb. per car and reducing by that much the unsprung weight. As a result of this hollow boring, the strength of the axles was decreased but slightly over 3 per cent. Ninety-nine car bodies are being constructed by the St. Louis Car Company and the trucks for these cars are being built in the company's own shops, where the car bodies and motor equipment are mounted.

Adequately to prove out all the ideas incorporated in the design, the Milwaukee Company constructed a sample car in its own shops early last year. This car has been in operation since March 1, 1920, or about eighteen months, and a considerable number of this type of car have been in operation for six months or more this year. The cars have been in the heaviest service, carrying 100 to 125 passengers per car in rush-hour trips, on occasions, although the rush-hour standards for a three-day average on this property would limit the load to eighty-five passengers. Actual operation of the cars has developed no structural or other weaknesses nor has it suggested any substantial modification in design.

Chicago Loop Rerouting Proposed

Beeler Plan Submitted to Public Utilities Commission by Chicago Surface Lines Will Equalize Traffic and Materially Improve Movement of Cars

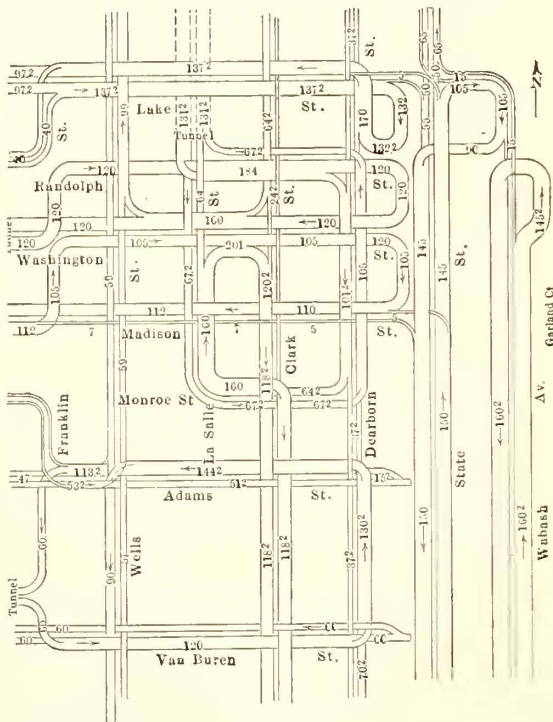
ON DEC 30, 1920, the Illinois Public Utilities Commission ordered the Chicago Surface Lines to submit within sixty days "preliminary plans for such switch and turn-back service and such revision of routing as they may deem practicable and calculated to facilitate the movement of cars, reduce congestion of traffic in the Loop, or otherwise bring about improvements in

tribution of the cars within the district, a more evenly balanced traffic on each street, a minimized turning movement and the substitution, so far as practicable, of right-hand movements for the more difficult left-hand ones.

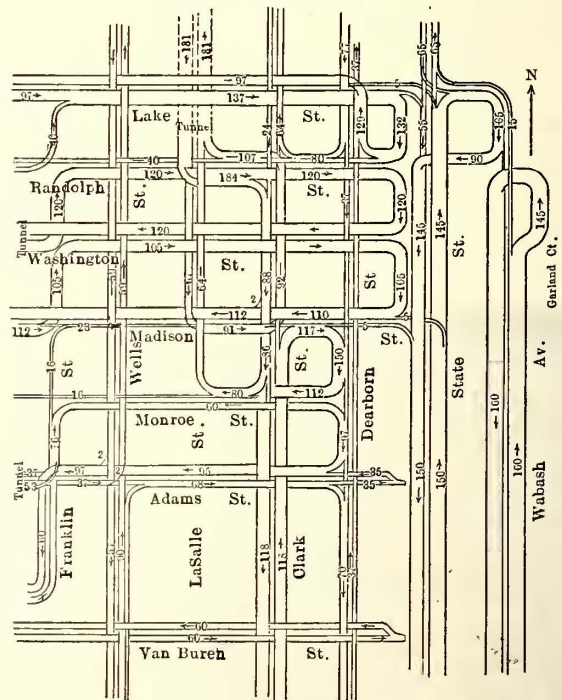
BEELER REROUTING PLAN

The accompanying car flow charts show the present and proposed routing. The plan contemplates no changes on State Street or Wabash Avenue. On the other streets it requires the addition of special track-work only for four quadrants at four different street intersections.

The number of straight intersectional movements would be reduced from 7,518 to 7,187 during the maximum hour, or an average reduction of 331 per hour. The simple right-hand turns would be increased from 1,200 to 1,340 per hour, while the left-hand turns would be decreased from 1,120 to 855. Other benefits derived include the removal of curve movements from Washington Street between Franklin and State Streets, a very heavy traffic section; the removal of one-half the cars from the eastbound track on Van Buren Street, now badly congested; provision of good car service between the Union Station and the Loop hotels, where none is now given; greater utilization of the eastbound Madison Street track, now but little used, and release of the



CAR FLOW CHART IN DOWNTOWN DISTRICT, CHICAGO UNDER PRESENT ROUTING



CAR FLOW CHART IN DOWNTOWN DISTRICT, CHICAGO, UNDER PROPOSED ROUTING

service." Accordingly, on Feb. 23, the Surface Lines forwarded to the commission a suggested plan of rerouting in the Chicago Loop district as prepared by the Beeler organization, which had been working on various service improvements for the company. The proposed plan did not become public at that time, but recently, in connection with the fare case before the Illinois Commerce Commission, Mr. Beeler and Mr. Buck testified against the rerouting plan submitted by the city and offered their plan as one which would better accomplish the results sought.

Ten changes in routing are recommended. They are based on the principle of obtaining a more equitable dis-

tributed terminal at Adams and State Streets for the exclusive use of the Harrison Street line.

The principal advantages claimed for this plan may be briefly summarized as follows:

1. A more even distribution of the cars in the Loop district will be obtained.
2. There will be no radical changes in the present Loop routing, the proposed loops conforming to the present routing as far as practicable.
3. The interlocking features of the present loops will be minimized.
4. Greater segregation of the routes should prevent confusion and facilitate loading.

5. A reduction in car traffic through the heaviest intersections will be obtained.
6. The car traffic will be more evenly balanced on the two sides of the street.
7. The total number of turns required in the Loop district will be decreased.
8. Right-hand turns will be substituted for one-sixth of the present left-hand turns.
9. Better service will be provided between the Union Station and the Loop hotels.
10. All turning movements will be eliminated from Washington Street between Franklin and State. Since this is one of the heaviest east-and-west traffic thoroughfares street congestion should be reduced materially.
11. Greater use will be made of the eastbound Madison Street track in the heart of the Loop district.
12. The stub terminal on Adams Street at State will be released for the exclusive use of the Harrison Street line.
13. One-half of the cars now operated eastbound on Van Buren Street will be removed, thus balancing the car traffic on that street.
14. The traffic flow at several other heavy points will be reduced. Eastbound on Washington Street between La Salle and Clark the maximum flow will be reduced from 201 cars per hour to 105 cars per hour, and westbound on the same street between Clark and Wells the maximum flow will be reduced from 160 to 120 cars per hour.
15. No changes will be made in the State Street or Wabash Avenue lines.
16. The proposed plan requires but a minimum amount of track construction, this being limited to four new connecting curves, all of the simple inside type.

One great feature of the entire plan is that but little change in the habits of the car riders will be necessary, and only minor changes in transfer arrangements will have to be made. No claim is made for greater economy of operation, although there will be with the present service a reduction of some 300 car-miles per day, amounting to a saving of about 100,000 car-miles in the course of a year. This alone was not considered of sufficient importance to feature as a reason for making the change.

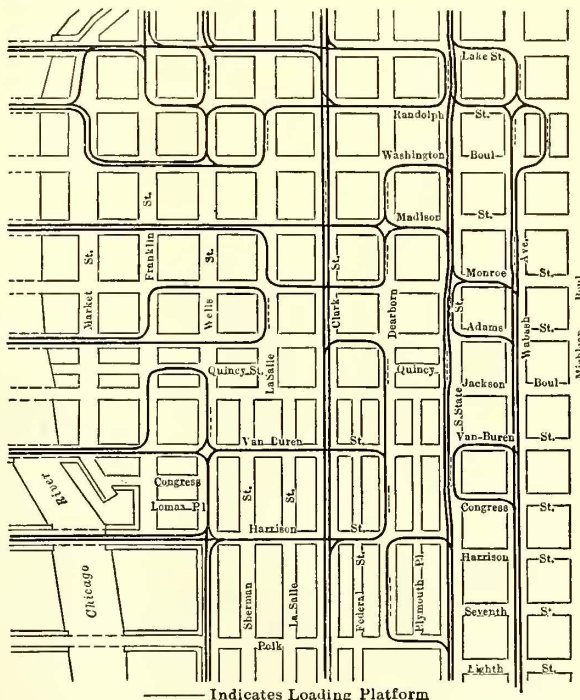
JACKSON REROUTING PLAN

The routing plan in the Loop district as proposed by George W. Jackson, whose testimony formed the backbone of the city's case, is reproduced herewith. It consists almost entirely of single-track loops and would do away with the necessity for special work intersections now in use to the extent of an investment of approximately \$2,000,000, which would have a scrap value estimated at \$137,000. It would also cost considerably over a million dollars to take up the track and special work not required and repave the streets. There would also be a cost of \$1,000,000 required for rebuilding cars to permit the left-hand loading contemplated on State Street and Wabash Avenue, where it was proposed to use long loading platforms located in the devil strip.

Mr. Jackson claims that this Loop routing plan would increase the capacity of the system from a present ability to take in and out of the Loop 75,000 people hourly to a capacity of 150,000 people per hour, it would save 60 per cent of the time now required for running cars in and out of the Loop, would save at least 60 per cent in operating costs of all cars operated in and out of

the Loop, would save the enormous cost of installing two, three and four-way switches, would make a very large saving in the cost of repairs to the special work and maintenance of equipment, and would do away with the noise made by the cars operating over the special trackwork.

Questioned for their opinion of the Jackson plan, Mr. Beeler and Mr. Buck testified before the commission that the Jackson plan would terminate routes two to eight blocks away from where the people wanted to go. This would greatly add to the congestion of the sidewalks, which are already overtaxed. It would virtually do away with the present transfer system, which is limited by ordinance to distances of 200 ft. The amount of short riding would be reduced as compared to the



— Indicates Loading Platform
**REROUTING OF STREET CARS IN CHICAGO LOOP DISTRICT
 PROPOSED BY CITY**

present routing and there would be less service to the railroad stations.

Operation of cars in the Loop would be at a lower speed than at present because there would be the same number or a larger number of turning movements to be made in a shorter distance. The plan would involve more left-hand turns, would introduce the loading of greater numbers of passengers per stop because of the fewer stops, and hence would make the length of stop very long. The plan would also result in making fewer outlets from the Loop, which would mean a greater number of cars per outlet, and introduce a headway which would probably exceed the capacity of the track. Cars would be taken out of the tunnels where they operate at high speed and put onto bridges, where the speed is low, and thus again reduce the speed. It would result in greater interference from left-hand turns and would at the same time provide so few connections for emergency routing that it would be practically fatal to good service.

Mr. Beeler testified that the service given by the Chicago Surface Lines in general compared very favorably with that in other large cities and that he knew of no city in the country where a better schedule speed is made.

Featherweight Pressure Gate on the Interborough

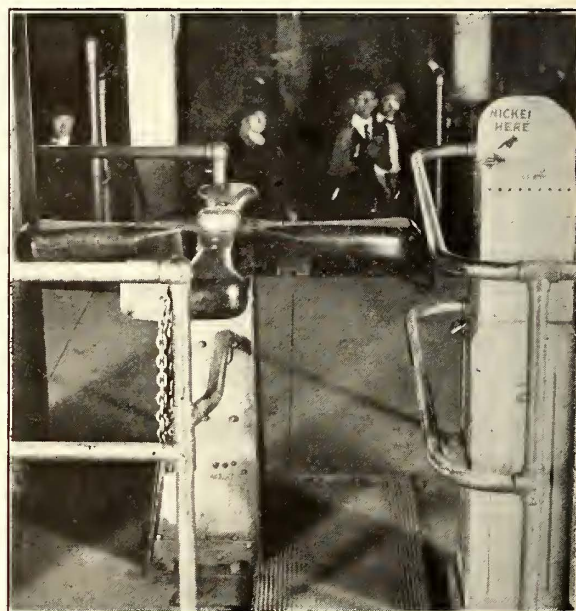
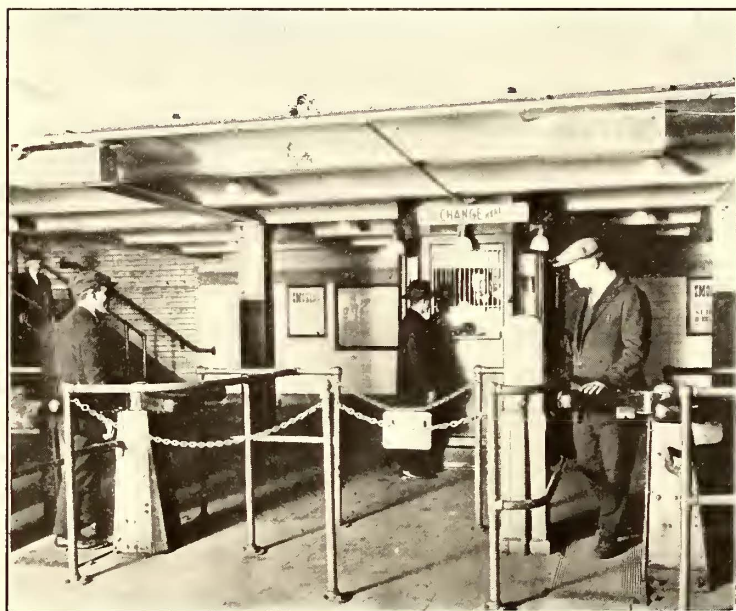
Congestion Will Be Relieved and About 1,500 Station Employees Released by Complete Installation of This Type of Turnstile, Which Makes a Nickel the Ticket

THE Interborough Rapid Transit Company, New York, after more than two years study of the problem of how to save the annoyance to and time of passengers in buying subway and elevated tickets, has now developed a light-weight, foolproof turnstile, several of which are being installed in each station of the Lexington Avenue line. Where these gates have been installed a nickel will be the ticket, while no other coin will unlock the gate. Any other which is inserted in the slot will be returned without unlocking the gate. When the gate is unlocked the passenger need exert scarcely more than featherweight pressure to pass through.

The initial installation of the featherweight pressure gate was made at the Fifty-first Street station of the Lexington Avenue subway some six months ago, since which time more than 3,000,000 passengers have passed

The new gates serve as exits as well as entrances, as they turn freely in the opposite direction for persons going out. The incoming and outgoing passengers do not interfere with each other. During the rush hours there is little conflict, for the great flow of traffic is unidirectional.

Not only will these gates facilitate fare collection and reduce the passenger's delay to a minimum, but it will also effect a very substantial saving to the company. Hereafter, only one man to make change will be necessary instead of two ticket agents and two choppers, as were formerly necessary in most of the stations. When the system is completely equipped about 1,500 station employees will be released, whose services will then be utilized in other departments. As a fare-collecting and recording device the machine leaves little to be desired. It is evident that there is no way for a passenger to enter without paying. The human element of employees is entirely eliminated, because every coin that is inserted is automatically counted on a recorder. There is no longer the opportunity for either the passengers or employees to practice the abuses formerly common.



AT LEFT, SUBWAY STATION SHOWING TWO OF THE TURNSTILES IN USE—AT RIGHT, CLOSE-UP OF A COMPLETE "FEATHERWEIGHT PRESSURE GATE" UNIT

through these gates. During that time there has not been a single line-up of more than three or four passengers at the change booth or the slot machine. At the ordinary ticket selling booth from ten to forty people in the rush hours have frequently formed in line. Twenty passengers a minute may pass through a single gate, or about 160 passengers a minute can enter the Fifty-first Street station through four gates. Their combined capacity exceeds any anticipated demand.

A very interesting observation has been made which goes to show that the traveling public will take advantage of any device to save their time. From the very beginning, the regular patrons using this station acquired the habit of having their nickel ready. For some time an actual count was kept of the number of passengers passing through these gates and the percentage of those who, coming without the proper change, had to procure it at the change booth. For a few days only was the change clerk kept even fairly active in busy hours. At the present time only four passengers out of each hundred, on the average, require change.

The mechanical operation of this gate is extremely simple yet very reliable. The insertion of the nickel makes an electrical contact, which operates a solenoid. Air is admitted to a piston through a valve actuated by this solenoid. The gate is then free to turn, for the piston has withdrawn the dog which held it from turning. In the same operation the gate has also been locked against rotation in the opposite direction. However, there is a commutator on the gate shaft which releases the dog holding the gate when turning in that direction after the passenger has advanced about half way through it. Since both air and 110-volt current are available from the signal system, conditions are quite favorable to their rapid installation.

Frank Hedley, president, and J. S. Doyle, superintendent of equipment of the Interborough Rapid Transit Company, are the inventors of this gate. About 500 machines have already been built, the contracts having been divided among the National Pneumatic Company, the Columbia Machine Works & Malleable Iron Company and the Westinghouse Air Brake Company.

Statistics of New York Traffic

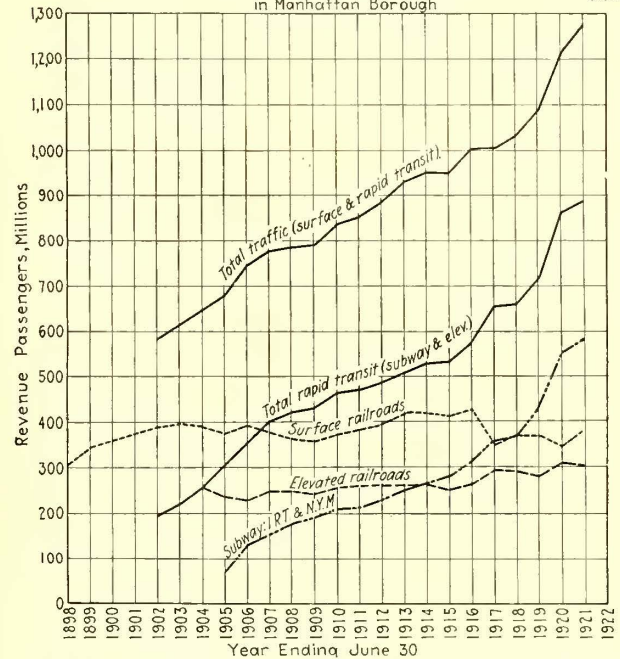
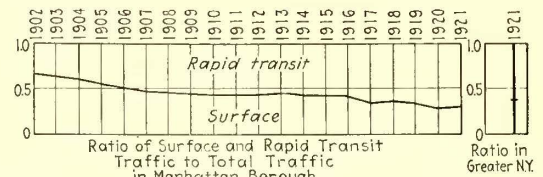
Statistics Presented at the Hearing Into the Affairs of the Railways Before the New York Transit Commission Last Week Show Intimate Facts Regarding the Various Properties

DURING the hearing now being conducted by the New York Transit Commission into the affairs of the railways in New York City to determine the best method of straightening out the existing tangle, much interesting information has been presented in the way of statistics by the engineers and other experts of the commission. Included in this information are the two charts presented herewith, compiled by Daniel L. Turner, consulting engineer of the commission and formerly chief of the Transit Bureau of the Public Service Commission of New York, First District.

The first chart shows graphically the increase in traffic in the Borough of Manhattan during the past twenty-two years for the surface lines and nineteen years for the rapid transit lines. The statistics are for the fiscal year ended June 30 in each case. Table I contains the information upon which this chart was based.

In discussing this chart Mr. Turner said it showed that the total traffic in Manhattan doubles about every fifteen years. For the entire city the total traffic on all lines last year was approximately 2,365,000,000, or approximately double the number of passengers on all of the steam railroads of the country during the same time. The increase over 1919 was 285,000,000 passengers. The figures quoted in each case are for revenue passengers, and one reason for the apparent increase during the past two years is the decrease in the number of free transfers given.

Another chart shows car-miles and number of revenue passenger receipts in cents per car-mile on the surface lines in Manhattan by routes. The left side of the drawing carries two vertical lines, one showing the average operating expenses for all lines and the other

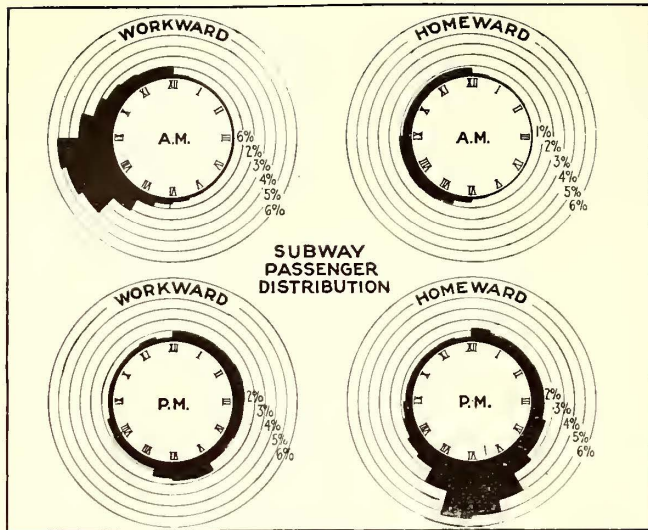


PASSENGER TRAFFIC IN MANHATTAN BOROUGH

The line showing the total number of passengers carried is constantly climbing and has doubled in the last fifteen years. The surface traffic is about continuous. The upper diagram gives the percentage of division between rapid transit and surface traffic by years and for the whole city for 1921.

TABLE I. STREET RAILWAY PASSENGER TRAFFIC—MANHATTAN, 1898-1921
(Revenue Passengers in Thousands)

Year Ended June 30	Total : Surface and Rapid Transit		Surface Railroads		Ratio of Surface to Total Transit	Rapid Transit Traffic				N.Y.M. Subways and Center Street Loop
	Total	Per Cent Increase	Total	Per Cent Increase		Total	Per Cent Increase	Second and Third Aves. Elevated R.R.	Sixth and Ninth Aves. Elevated R.R.		I.R.T. Subways
1898	.....	.....	305,116	.....	.....	.....	.....	.....	.....	.....
99	.....	.....	343,559	12.60	.....	.....	.....	.....	.....	.....
1900	.....	.....	360,003	4.80	.....	.....	.....	.....	.....	.....
01	.....	.....	373,570	3.80	.....	.....	.....	.....	.....	.....
02	581,845	.....	388,947	4.12	0.668	192,898	.....	88,186	104,712	.....
03	616,460	5.94	396,570	1.96	0.642	219,890	14.0	106,502	113,388	.....
04	646,455	4.86	389,928	-1.67	0.602	256,527	16.7	124,275	132,252	.....
05	679,948	5.17	374,554	-3.94	0.552	305,394	19.05	119,589	116,031	69,774
06	746,558	9.80	391,708	4.58	0.524	354,850	16.20	121,074	106,087	127,689
07	778,624	4.28	377,017	-3.75	0.484	401,607	13.20	133,650	114,791	153,166
08	785,555	0.89	363,292	-3.64	0.463	422,263	5.14	132,621	115,032	174,610
09	789,111	0.46	357,760	-1.52	0.453	431,351	2.15	129,606	112,500	189,245
1910	836,465	6.00	371,166	3.75	0.444	465,299	7.87	139,084	116,817	209,398
11	853,667	2.12	382,047	2.93	0.446	471,620	1.36	142,217	117,871	211,532
12	884,039	3.55	395,238	3.45	0.445	488,801	3.64	141,513	118,656	228,632
13	930,520	5.26	419,722	6.19	0.450	510,798	4.50	141,253	119,153	245,027
14	951,133	2.23	420,662	0.22	0.441	530,471	3.80	144,161	118,925	254,041
15	949,555	1.66	415,551	-1.22	0.438	534,004	0.66	138,725	114,161	257,161
16	1,003,955	5.73	427,374	2.85	0.426	576,581	8.00	141,885	119,914	277,577
17	1,004,743	0.08	349,788	-18.15	0.348	654,955	13.57	157,144	137,572	310,058
18	1,031,909	2.72	371,136	6.11	0.360	660,773	0.95	152,437	137,823	304,546
19	1,088,261	5.46	370,085	-0.28	0.340	718,176	8.70	137,500	143,610	340,677
1920	1,212,350	11.40	348,960	-5.70	0.289	863,390	20.40	155,155	154,800	435,700
21	1,273,343	5.00	384,128	10.09	0.304	889,215	3.00	149,042	155,715	454,729
New York City, 1921.....	2,491,857	.....	977,600	.....	0.392	1,514,257	.....	.....	.....	.....
Ratio Manhattan to New York, 1921.....	0.511	.....	0.393	.....	.....	0.587	.....	.....	.....	.....



CLOCK DIAGRAM OF DISTRIBUTION OF TRAFFIC ON INTERBOROUGH SUBWAY

the average passenger receipts for all lines, both on a car-mile basis. It will be noted that the expenses are slightly in excess of the receipts. The receipts, however, as charted, do not include receipts from other sources than from passengers, as from advertising.

Mr. Turner said it took about five years to build a subway and that the most effective way of immediately caring for traffic growth in anticipation of new facilities is to spread the traffic peak. The two-hour morning and evening peak in New York is from 7:30 a.m. to 9:30 a.m. and from 5 p.m. to 7 p.m. During each of these periods on the Interborough Rapid Transit subway lines about 17 per cent of its total twenty-four-hour traffic is carried. During the maximum fifteen-minute period during the day the traffic in each direction on the subway is about 20 per cent of that of the maximum two-hour period in each direction and is 3.4 per cent of the total twenty-four-hour traffic in both directions. Similarly, the maximum half-hour period in one direc-

tion is 31.2 per cent of the maximum two-hour period in one direction and is 5.3 per cent of the total twenty-four-hour period in both directions. Similarly, the maximum one-hour traffic in one direction is 60 per cent of the maximum two-hour traffic in one direction and is 10.2 per cent of the total twenty-four-hour traffic in both directions. The maximum half-hour period is between 8:30 and 9 a.m. and in the evening between 6 and 6:30 p.m. During the fifteen-minute period the Interborough Rapid Transit Company provides 23,300 seats in one direction as against 68,000 passengers, and during the half-hour period it provides 46,600 seats as against 106,000 passengers.

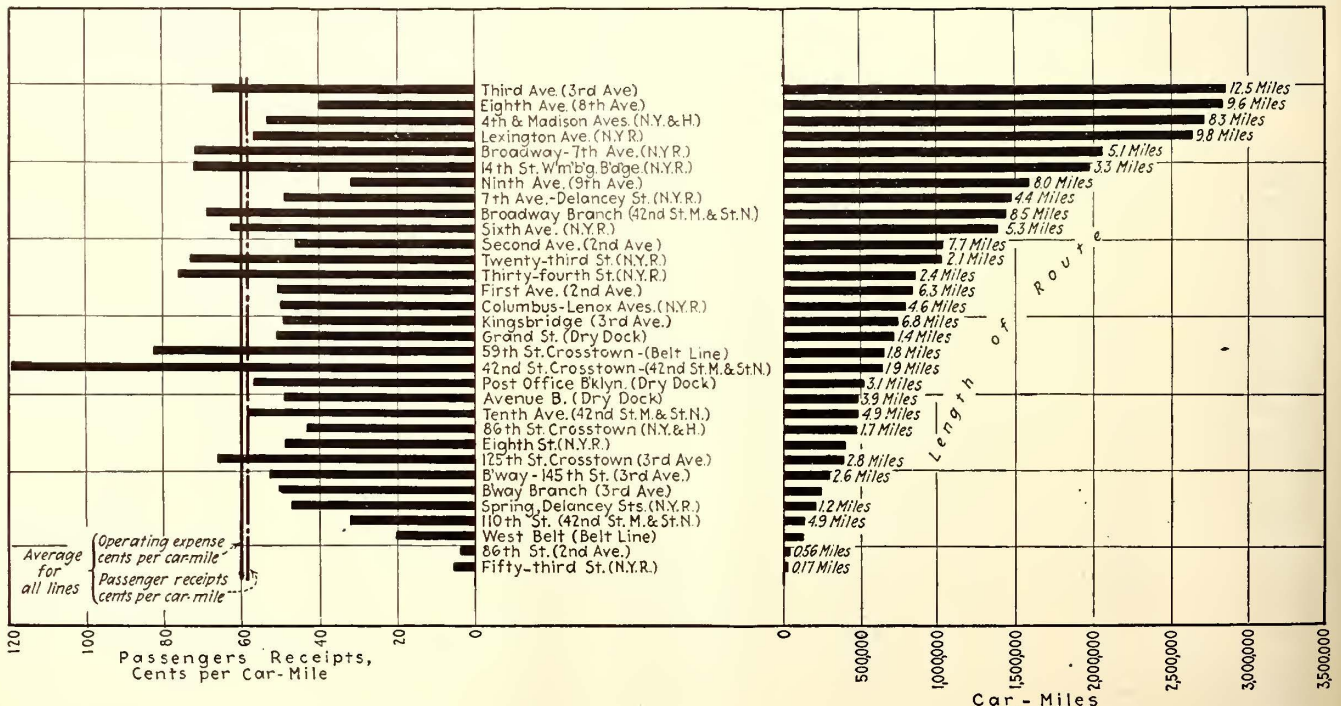
Mr. Turner presented with these figures a clock chart published herewith but explained that the chart and the statistics quoted herein are based on Interborough subway traffic figures which are not fully up to date. Nevertheless, conditions vary from day to day and month to month and it is believed the percentages are approximately correct at the present time.

SPREAD OF PEAK PERIOD ADVOCATED

Mr. Turner declared in his testimony that it would be very desirable if this fifteen-minute peak could be spread over a longer time by means of staggering the hours of business as was done during the influenza epidemic in New York. He estimated that if the fifteen-minute peak was spread over two hours it would increase the subway capacity 60 per cent. His detailed analysis follows:

The maximum daily traffic which has been carried on the Interborough subway system is 2,361,822 passengers on Feb. 9, 1920. On what may be called a normal business day, during the busy season of the year, namely Dec. 22, 1919, 2,118,753 passengers were carried. For the purposes of my calculations, I have assumed a maximum daily traffic of 2,000,000 passengers. Using the percentages set forth above and with the assumed daily traffic of 2,000,000 passengers, we obtain

(a)	Maximum fifteen-minute period.....	68,000 passengers
	Maximum half-hour period.....	106,000 passengers
	Maximum one-hour period.....	204,000 passengers
	Maximum two-hour period.....	340,000 passengers



THE LINES AT THE RIGHT SHOW THE CAR-MILEAGE OF THE ROUTES IN MANHATTAN BOROUGH. THE LINES AT THE LEFT SHOW THE PASSENGER RECEIPTS PER CAR-MILE. THE FIGURES ARE FOR THE LAST FISCAL YEAR

If it is assumed that some plan could be effected which would distribute the two-hour traffic evenly throughout the two hours, then there would be carried during the

(b)	
Fifteen-minute period.....	42,500 passengers
Half-hour period.....	85,000 passengers
One-hour period.....	170,000 passengers
Two-hour period.....	340,000 passengers

as compared with the maximum figures as set forth in (a). At the present time, from information furnished me by

TABLE II. RAPID TRANSIT AND SURFACE RAILROAD COMPANIES NEW YORK CITY

Comparative Statement Showing Total Cost (Cents) per Revenue Passenger for Operating Expenses and Fixed Charges for the Fiscal Years Ended June 30, 1915 to 1921, Inclusive

	Total, All Companies (b)						
	1915	1916	1917	1918	1919	1920	1921
Operating expenses.....	2.78	2.74	2.92	3.07	3.65	4.06	4.30
Taxes.....	0.32	0.33	0.37	0.42	0.38	0.31	0.30
Fixed charges:							
Interest.....	0.91	0.93	0.83	0.86	1.00	0.98	1.05
Rents.....	0.75	0.76	0.78	0.76	0.76	0.64	0.65
Other.....	0.02	0.02	0.05	0.06	0.12	0.13	0.13
Total.....	4.78	4.78	4.95	5.19	5.91	6.12	6.43
Interborough Rapid Transit Company (Subway)							
Operating expenses.....	1.79	1.85	1.96	2.20	3.12	3.10	3.41
Taxes.....	0.13	0.14	0.19	0.39	0.19	0.07	0.07
Fixed charges:							
Interest.....	0.77	0.74	0.69	0.80	1.30	1.23	1.24
Rents.....	0.68	0.64	0.58	0.57	0.53	0.41	0.38
Other.....	.....	.....	0.00	0.09	0.26	0.25	0.26
Total.....	3.37	3.37	3.42	4.05	5.40	5.06	5.36
Interborough Rapid Transit Company (Elevated)							
Operating expenses.....	2.23	2.28	2.42	2.82	3.40	3.67	3.79
Taxes.....	0.56	0.59	0.59	0.60	0.65	0.59	0.61
Fixed charges:							
Interest.....	.....	0.11	0.21	0.32	0.54	0.60	0.63
Rents.....	1.95	1.90	1.74	1.77	1.85	1.74	1.74
Other.....	.....	.....	.....	0.03	0.11	0.12	0.13
Total.....	4.74	4.88	4.06	5.54	6.55	6.72	6.90
Manhattan Surface							
Operating expenses.....	3.28	3.12	3.73	3.59	4.08	5.08	6.15
Taxes.....	0.37	0.38	0.46	0.47	0.50	0.46	0.44
Fixed charges:							
Interest.....	1.25	1.38	1.23	1.16	1.18	1.40	1.30
Rents.....	0.50	0.49	0.60	0.57	0.55	0.47	0.44
Other.....	0.04	0.05	0.23	0.13	0.18	0.31	0.24
Total.....	5.44	5.42	6.25	5.92	6.49	7.72	7.57
The Bronx Surface							
Operating expenses.....	3.66	3.52	4.52	4.14	4.41	4.42	4.52
Taxes.....	0.31	0.33	0.35	0.36	0.35	0.29	0.28
Fixed charges:							
Interest.....	0.60	0.60	0.72	0.64	0.68	0.63	0.62
Rents.....	0.25	0.40	0.52	0.46	0.53	0.49	0.41
Other.....	0.04	0.05	0.06	0.06	0.06	0.05	0.04
Total.....	4.86	5.00	6.17	5.66	6.03	5.88	5.87

	1915	1916	1917	1918	1919	1920	1921
	New York Consolidated Railroad Receiver (Subway and Elevated)						
Operating expenses.....	2.80	2.82	2.80	2.95	3.48	4.00	4.63
Taxes.....	0.32	0.28	0.33	0.31	0.28	0.26	0.27
Fixed charges:							
Interest.....	1.18	1.03	0.89	0.78	0.65	0.52	0.51
Rents.....	0.11	0.38	0.54	0.69	0.78	0.78	1.04
Other.....	0.00+	0.00+	0.00+	0.00+	0.01	0.00+	0.00+
Total.....	4.41	4.51	4.56	4.73	5.20	5.56	6.45

	Brooklyn (a) Surface						
	1915	1916	1917	1918	1919	1920	1921
Operating expenses.....	3.20	3.14	3.23	3.38	3.88	4.62	4.72
Taxes.....	0.25	0.27	0.33	0.31	0.35	0.30	0.25
Fixed charges:							
Interest.....	0.70	0.70	0.69	0.72	0.81	0.74	0.82
Rents.....	0.73	0.69	0.67	0.67	0.54	0.21	0.19
Other.....	0.00+	0.00+	0.00+	0.00+	0.00+	0.00+	0.00+
Total.....	4.88	4.80	4.92	5.08	5.58	5.87	5.98

	Queens Surface						
	1915	1916	1917	1918	1919	1920	1921
Operating expenses.....	4.27	4.31	4.56	5.05	5.21	5.38	5.63
Taxes.....	0.21	0.21	0.23	0.28	0.28	0.28	0.24
Fixed charges:							
Interest.....	0.76	0.74	0.96	1.16	1.10	1.05	0.96
Rents.....	0.21	0.21	0.22	0.26	0.25	0.23	0.24
Other.....	0.01	0.01	0.01	0.02	0.01	0.01	0.00+
Total.....	5.46	5.48	5.98	6.77	6.85	6.95	7.07

	Richmond Surface						
	1915	1916	1917	1918	1919	1920	1921
Operating expenses.....	4.05	3.98	4.21	4.69	5.25	5.99	7.80
Taxes.....	0.20	0.20	0.25	0.30	0.30	0.36	0.31
Fixed charges:							
Interest.....	1.29	0.31	1.37	1.36	1.30	1.46	1.09
Rents.....	0.16	0.16	0.18	0.17	0.17	0.18	0.20
Other.....	.....	0.00+	0.00+	0.01	.....	0.01	.....
Total.....	5.70	5.65	6.02	6.53	7.02	8.00	9.40

(a) Includes Bush Terminal, Van Brunt Street and Erie Basin, Manhattan Bridge 3-Cent Line and Marine.
(b) Includes Hudson & Manhattan Railroad.

the transit bureau of the commission, I estimate that the Interborough Company provides during the

(c)	
Maximum fifteen-minute period.....	23,300 seats
Maximum half-hour period.....	46,600 seats
Maximum one-hour period.....	78,200 seats

Assuming the seats provided in (c) as having to accommodate the traffic estimated in (a), and further assuming that the load has been evenly distributed as in (b), we find that on the average there would be carried with

(a) Loads during the	Whereas with (b) Traffic the Loads Would Be Reduced
Maximum fifteen-minute period.....	182 per cent
Maximum half-hour period.....	182 per cent
Maximum one-hour period.....	217 per cent

In other words, if the traffic could be distributed over the two hours, instead of a large part of it being concentrated in fifteen minutes, the overloading in the trains, assuming the same daily traffic carried, would be greatly reduced—from 190 per cent overloads to 82 per cent overloads.

But this is not the most important thing that would be accomplished by the spreading of the traffic peak. The most important thing is the increased traffic which the

TABLE III. NUMBER OF DELAYS EXCEEDING FIVE MINUTES ON VARIOUS NEW YORK RAILWAYS, 1915 AND 1921

(Compiled by the Bureau of Equipment and Operation, Accident Division, New York Transit Commission)

	UNDERGROUND CONDUIT LINES		Increase
	1915	1921	
New York Railways Company:			
Car-miles.....	34,891,203	13,606,428	
Deraillments.....	321	315	
Defective equipment.....	273	384	
Total deraillments and defective equipment per million car-miles.....	594	699	
	17.02	51.37	34.35
Third Avenue in Manhattan			
Car-miles.....	16,641,462	9,744,156	
Deraillments.....	678	663	
Defective equipment.....	152	515	
Total deraillments and defective equipment per million car-miles.....	830	1,178	
	49.87	120.89	71.02
Second Avenue Railroad			
Car-miles.....	3,013,016	1,916,730	
Deraillments.....	24	2	
Defective equipment.....	34	29*	
Total deraillments and defective equipment per million car-miles.....	58	29*	
	19.25	15.13	4.12
Eighth Avenue Railroad			
Car-miles.....	‡	2,848,693	
Deraillments.....	.....	15	
Defective equipment.....	.....	256	
Total deraillments and defective equipment per million car-miles.....	.....	271	
	.....	95.13	
Ninth Avenue Railroad			
Car-miles.....	‡	1,549,379	
Deraillments.....	.....	13	
Defective equipment.....	.....	124	
Total deraillments and defective equipment per million car-miles.....	.....	137	
	.....	35.92	
New York & Harlem Railroad			
Car-miles.....	‡	3,175,011	
Deraillments.....	.....	0	
Defective equipment.....	.....	1,469	
Total deraillments and defective equipment per million car-miles.....	.....	1,469	
	.....	462.67	

OVERHEAD TROLLEY LINES

Brooklyn Rapid Transit System			
Car-miles.....	61,819,359	47,207,892	
Deraillments.....	1,359	994	
Defective equipment.....	574	1,217	
Total deraillments and defective equipment per million car-miles.....	1,933	2,211	
	31.27	46.83	15.56
Third Avenue System in Bronx			
Car-miles.....	14,396,815	11,006,305	
Deraillments.....	288	647	
Defective equipment.....	220	542	
Total deraillments and defective equipment per million car-miles.....	508	1,189	
	34.28	108.03	72.75
Queens Surface Lines†			
Car-miles.....	8,734,190	6,740,681	
Deraillments.....	351	980	
Defective equipment.....	200	1,136	
Total deraillments and defective equipment per million car-miles.....	551	2,143	
	63.08	317.92	254.84

(*) Second Avenue Railroad figures for 1921 not reliable.
(†) Long Island Electric, New York & Long Island Traction and New York & Queens County Railway.
(‡) Formed part of New York Railways in 1915.

spreading of the peak would permit the existing facilities to carry.

If the traffic could be evenly spread over the two-hour maximum traffic period, and, as the increase in traffic occurred, if the facilities could be utilized throughout the entire two-hour period to the same extent that they are now utilized during the maximum one-hour period, then during the two-hour period, twice as much traffic could be accommodated as is now accommodated in the maximum one-hour period—or the traffic which would be developed under such conditions would amount to $(200,000 \times 2)$ 400,000 passengers during the two-hour period. This is an increase of 60,000 passengers over the present maximum two-hour traffic of 340,000—or it is a 20 per cent increase. Similarly, as the traffic increases, if the facilities are utilized throughout the entire two-hour period to the same extent that they are utilized during the maximum half-hour period, then $(106,000 \times 4)$ 424,000 passengers could be carried during the two hours, or an increase of 24.7 per cent. Similarly, if the facilities are utilized throughout the entire two-hour period to the same extent as they are utilized during the maximum fifteen-minute period, then $(68,000 \times 8)$ 544,000 passengers could be carried during the two hours, or an increase of 60 per cent. This would mean in the case of the Interborough alone, that it could carry 3,200,000 passengers instead of 2,000,000 passengers a day. But what this would really mean in the case of all city-owned lines can best be shown by measuring the increase in capacity with the cost of new facilities which would be necessary to provide for it with the present degree of use.

COST OF NEW FACILITIES

Contracts 1, 2, 3 and 4, covering all of the city-owned rapid transit lines in operation, have cost the city and companies together to produce to date, approximately \$454,000,000. Sixty per cent of this is \$272,000,000. A large portion of these facilities were constructed under pre-war prices. To reproduce them now would probably cost at least \$500,000,000. Therefore, spreading the traffic peak evenly over the two hours morning and night, would in this sense increase the capacity of the existing facilities as much as new facilities costing perhaps from \$200,000,000 to \$300,000,000 could represent.

During the five years that must elapse before new traffic facilities can be made available, there will be a gradual increase in traffic, which judging from past growths will be from 7 to 10 per cent annually, or say a total of 40 per cent at the end of five years. This increase must in some manner be taken care of.

The traffic volume has already reached the point where during the peak the overloading of the trains and the crowds on the platforms are such that the train movement is retarded and thereby the capacity reduced at the very time when the need for it is greatest. If the traffic could be evenly spread over the two hours maximum traffic period, not only would the discomfort of traveling be lessened, but there would be an increased capacity, sufficient to provide for the growth of traffic. Even if the 60 per cent increase indicated above cannot be obtained, but instead 40 per cent increase were secured (two-thirds of the maximum possible) the conditions would be greatly improved.

Since a transit line will develop during the twenty-four hours of the day an amount of traffic proportional to its capacity at the peak traffic, an increase of 40 per cent during the two-hour peak would be accompanied by a corresponding increase during the remainder of the day, so that the maximum daily capacity on the basis of present carrying would be 2,800,000 instead of 2,000,000.

Table II was introduced by Frederick W. Lindars, chief accountant of the commission, giving a comparative showing in total cost per revenue passenger, operating expenses and fixed charges for the fiscal years ended June 30, 1915 to 1921. He explained that the figures given for fixed charges represented sums that in many cases had not been paid and that there were also some earnings in addition to those received from passengers. He also said that one reason why the taxes on the elevated were materially higher than on the subway was because the subway was partly city owned.

Harry N. Latey, engineer of equipment and operation of the commission, presented the figures given in Table III, covering the delays for pull-ins of cars for defects. These figures, he explained, did not include the delays to cars caused by traffic congestion.

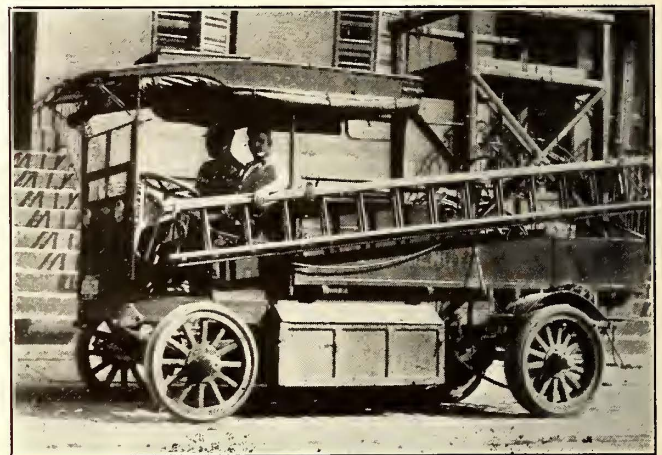
Electric Trucks for Line Repairs

By G. H. MCKELWAY

Engineer of Distribution Brooklyn (N. Y.)
Rapid Transit Company

AN ELECTRIC truck fitted with a tower as used for electric line work in Johannesburg, South Africa, was described in the Aug. 20 issue of the *ELECTRIC RAILWAY JOURNAL*. While the use of this type of truck for such work in the United States is somewhat unusual when compared with the number of gasoline-driven trucks used still there are quite a number in successful operation in various parts.

Some of the disadvantages found with electric trucks are: High first cost, as they average almost twice as much as a gasoline truck of the same capacity; they have a comparatively low speed, and their working radius is limited by the necessity of recharging the battery. The truck used in Johannesburg was said to



ELECTRIC TRUCKS FOR OVERHEAD LINE REPAIRS

be able to run at a rate of 20 m.p.h., and to make 50 miles on a single charge of the battery. For city work, where the paving is good and where there is little interference from snow, the working radius of this type of truck will undoubtedly be ample.

The electric truck has some advantages over the gasoline truck, which include reliability, ease of handling, low maintenance cost and long life. Results from the use of such trucks indicate that they are seldom in the shop, and that an expert chauffeur is not required for their operation. The accompanying illustration shows an electric truck used in emergency service eight and one-half years and is still giving good satisfaction.

New Model Calculating Machine

THE Monroe Calculating Machine Company, New York, has just brought out a new model calculating machine to be made up in three sizes—of twelve, sixteen and twenty place capacity. The machine case and carriage case are aluminum castings and the background under the keys is an enameled green.

Some of the advantages claimed by the manufacturers for this machine include a light key touch with short stroke which insures speed and accuracy; the crank motion is fast and smooth and the key and dial numbers are large and conveniently placed. Mechanical locks are provided to eliminate errors. In operating, the repeat key is pressed if it is desired to retain numbers on the keyboard and the non-repeat key when it is desired to release them at each turn of the crank.

Burning Pulverized Anthracite Mine Waste

Results of Tests Obtained by Burning Pulverized Anthracite Coal in the Philadelphia Rapid Transit Company's Power Plant—Pulverizing Equipment Installed for Ten Boilers
—One Boiler Put in Operation to Date

BY O. M. RAU

Consulting Engineer, Philadelphia, Pa.

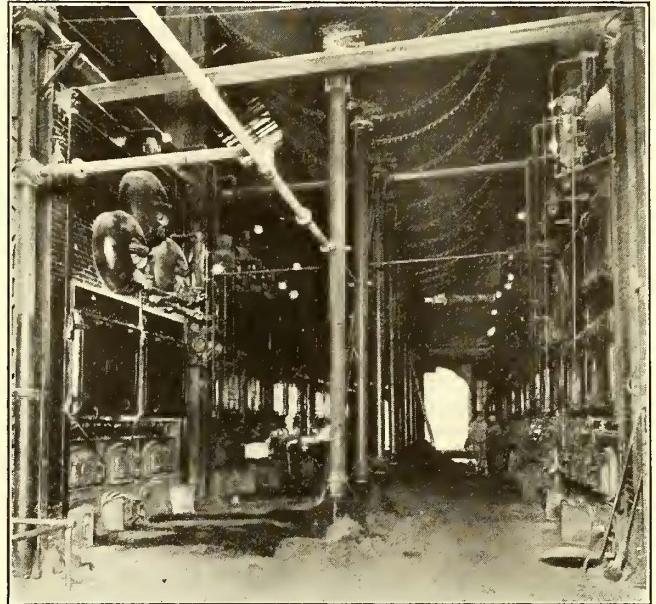
ACCUMULATION of culm from anthracite mines has been going on for years until mountains of this material have formed in these mining regions. The creeks and streams draining this area of the country contain deposits which, if recovered, would add materially to the anthracite fuel supply. Estimates of the total tonnage of these accumulations vary from fifty to one hundred million tons and the recoverable coal in the streams alone is estimated at millions of tons.

This material in the past was considered waste incident to anthracite mining and averaged approximately 10 per cent of the coal mined, and up to the time of the fuel shortage during the war, little if any effort was made to use it. At this time the high B.t.u. value of this material attracted the attention of engineers to its possible use as a fuel for steam boilers, resulting in extensive reclaiming operations being started by the mining and other interests to work over these accumulations. The high price of steaming sizes of anthracite left sufficient leeway to sell this reclaimed coal at a price that made these operations profitable, although only a small portion of the fuel was recovered, since only the larger particles found a market, owing to the difficulty in burning the finer material economically.

The use of the fine coal as fuel has not been attended with any great degree of success, although a number of plants have furnaces equipped with suitable grates and stokers. While its use was attractive during the peak prices for coal, this interest is being largely abandoned with the present conditions of the coal market. Particularly is this true in the use of so-called river and creek coal, the reclaiming of which resulted in establishing a substantial industry along the different creeks and streams in the anthracite district, which was reclaiming approximately 10,000 tons a day, up to the time the prices of steaming-size coal were lowered.

As power expert for the United States Shipping Board the author made an extensive survey of the power situation in the Philadelphia district, and as a result of this survey an investigation was undertaken to ascertain the possibilities of utilizing this mine waste in pulverized form. The large percentage of non-combustible and the difficulty of pulverizing to a fineness that would assure efficient combustion were outstanding obstacles. Studies were made of various methods of screening, jigging and other devices for the reduction of the ash. The method known as Trent process, which at that time was being developed at the United States Bureau of Mines, makes possible a reduction of the ash to a predetermined amount.

The pulverizing of anthracite culm, silt or river coal was found to be attended with difficulty and considerably more expense than the cost of pulverizing bituminous or other soft coal. The various attempts to pulverize anthracite were analyzed and the action on mills of the Fuller, Raymond, tube and pebble types was noted,



BOILER ROOM BEFORE PULVERIZED COAL BURNING EQUIPMENT WAS INSTALLED

with the result that it was found to be commercially feasible on a basis of a mill capacity of one-half that obtained with bituminous coal and with about double the maintenance expense.

Experiments were then made to burn pulverized anthracite in existing installations. A 1,000-ton shipment of culm was sent to the Lima Locomotive Works to make a practical demonstration. This plant was selected as it had seven boilers in operation on pulverized bituminous coal. The only change made in the operation of the plant was to deliver the anthracite to the pulverizers in place of bituminous as formerly. The test developed no difficulties in burning this fuel, but indicated the desirability of modifications in the design of the installation if the best results were to be obtained.

With these preliminary studies completed and the possibilities of a material saving in power costs assured, the Philadelphia Rapid Transit Company approved a trial installation in its Thirteenth and Mount Vernon Street power plant. This plant was selected as the boilers were hand-fired, and being located in a semi-residential neighborhood it was restricted to the use of anthracite fuel. The plant operated part time as a peak-load power source and carried upward of 10,000 kw. for short periods during the evening loads, operating at a reduced output during the rest of the day with little or no load nights and Sundays. In addition to the change from hand-firing and the use of low-grade fuel it also would eliminate the use of coal for banking.

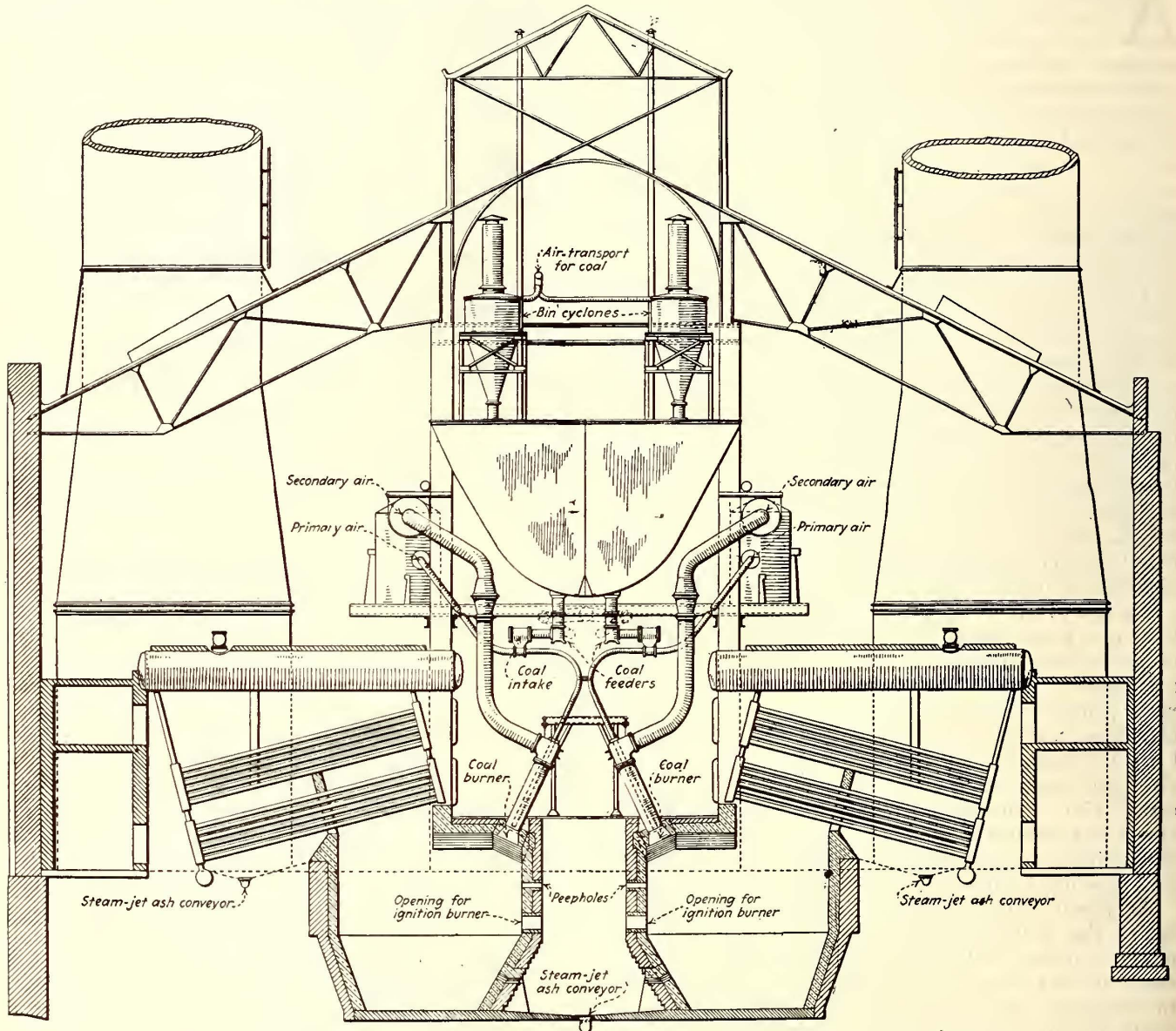
The plant consisted of 20 B. & W. boilers, each having 3,917 sq.ft. of water-heating surface, five Weatherall compound Corliss engines direct-connected to 1,500-kw.

direct-current 500-volt generators exhausting into two 800-kw. direct-current vertical Curtis exhaust-steam turbines, giving the plant approximately a total capacity of 10,000 kw.

A portion of the electric railway system's downtown section is operated from this plant, and until the high coal prices it was able to deliver power to the trolley at a cost that compared favorably with that delivered from the substations in this vicinity. The fuel used was No. 1 buckwheat at \$3.50 per ton; when this coal increased to \$5 and finally reached a price of \$8 per ton,

type coal bunker, so that each boiler would have its own pulverized-coal storage bin with a capacity of approximately 25 tons. Beneath the coal bunker and supported therefrom 20 Quigley screw-type pulverized-coal feeders (two for each boiler) were installed. These were driven from a shaft extending the full length of the bunker and operated by a 15-hp. motor arranged for duplicate installation in case of motor trouble. Each feeder is equipped with a clutch engaging with a chain drive from the main shaft.

Primary and secondary air is provided by two sets



CROSS-SECTION OF BOILER PLANT SHOWING GENERAL ARRANGEMENT OF PULVERIZED-COAL EQUIPMENT

the plant was restricted to peak-load service. This resulted in a considerable expense for coal to maintain fires between peak periods and the cost per kilowatt-hour became excessive.

The boilers are set in two rows of ten each with a stack midway in each row. Only ten boilers on the north side of the stacks were selected to be equipped for burning pulverized fuel, since the increased rating at which the boilers can be operated with this fuel over hand-firing would give ample steam to operate the plant at full capacity.

In the boiler room the principal changes consisted of placing dust-tight partitions in the existing Berquist-

of direct-connected Clarage fans supported on a platform at a level with the top of the boilers, so as to eliminate all unnecessary bends in the air lines. Each set of fans supplies the necessary air for five boilers. The primary fans have 25-hp. motors and the secondary fans 15-hp. motors. The secondary air supply is controlled by grid-type air gates, which insure a distribution of the air through the entire area of the pipe, independent of the quantity delivered. The primary air is controlled with a diaphragm which, after proper adjustment, is permanently set.

The furnace changes consisted of combining the former combustion chamber and ashpit and extending

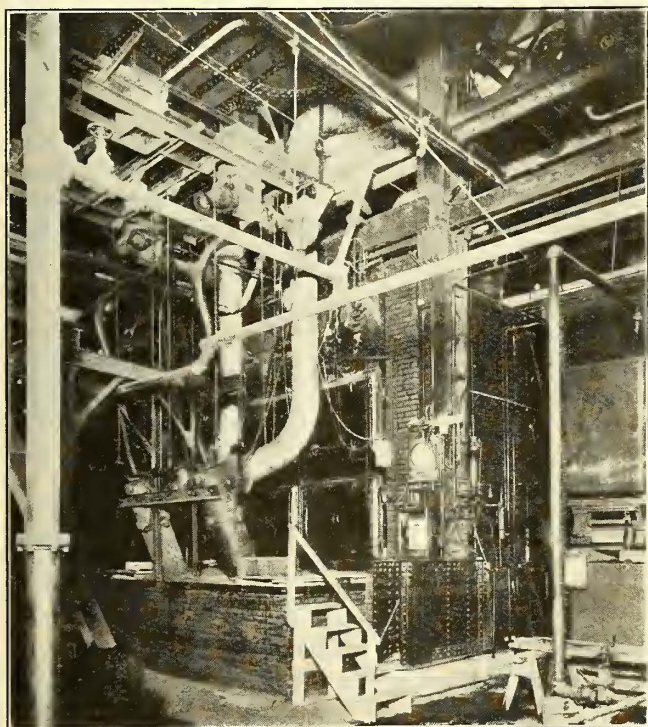
this space in front of the boiler so as to form one large combustion chamber, into this chamber the Quigley burners enter at an angle through the top of the extended portion in front of the boilers. The total volume of the combustion chamber as constructed is 1,542 cubic feet.

Two 14-in. burners are required for each boiler. The fuel is fed into the burners through a 3½-in. pipe entering in the center of the secondary air elbow and extending approximately 2 ft. into the burners. The primary air and fuel enter the burner through this pipe and mix with the secondary air entering through the large opening. This allows for a thorough combination of the mixture into a combustible dust before being discharged into the furnace.

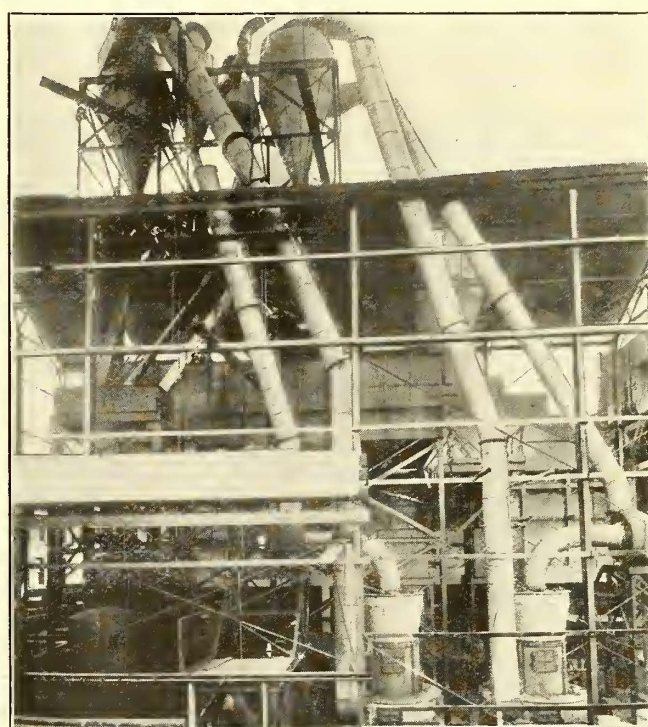
To insure rapid ignition of the anthracite when putting a boiler into service, which, owing to the low percentage of volatile in this kind of coal, does not ignite

Raw coal is elevated to a 100-ton bin and is fed with a screw feeder to the drier, from which it is elevated to the dry-coal bins above each mill, into which the feed is by gravity. The pulverized fuel is discharged through cyclone collectors above the roof of the building into a pulverized-fuel bin over the transport tank. This tank rests on a platform dial scale and can be charged with such amounts of fuel as desired, up to 10,000 lb. Air pressure is then applied and any portion of fuel in the tank can be transported to any one of the coal bunkers in front of each boiler. By means of a signal system the boiler-room attendant can notify the milling plant when coal for any bin is required, and by adjusting the switch valve for the particular bin the amount of fuel required is automatically delivered.

This equipment installation was completed by the Quigley Furnace Specialties Company in the latter part of 1920. As soon as the combustion chamber under one



BOILER EQUIPPED FOR BURNING PULVERIZED ANTHRACITE COAL



VIEW OF PULVERIZED-COAL MILLING PLANT

as readily as bituminous, the furnaces were equipped with two oil burners. These burners are capable of operating the boilers with oil fuel at their rated capacity. Burners of this size were selected so that in case of difficulty in obtaining raw coal, or accident to the pulverized-fuel system, oil could be temporarily used. This arrangement insures continuous operation and avoids expensive duplication of plant equipment. Owing to the similarity of the combustion chambers for burning oil with those for pulverized coal, the latter allow the use of oil with very efficient results, an advantage not possible with furnaces equipped with other methods for burning coal. The amount of oil required to ignite the pulverized coal varies from 30 to 40 gal. with a cold boiler and 10 to 20 gal. between peak-load operating periods.

The milling plant, which is adjacent to the boiler plant, is in a separate steel structure covered with corrugated iron and equipped with two highside Raymond mills, one Ruggles-Coles drier and a Quigley air-transport system.

boiler was ready, this boiler was put into service and operated for a short period, during which time some modifications were made in the combustion chamber and the burners were equipped with mixing vanes. On Nov. 23, 1920, the formal test was made, indicating full performance of the guaranteees with the exception of the amount of combustible in the ash. However, as the effect on the efficiency was negligible, the plant was accepted.

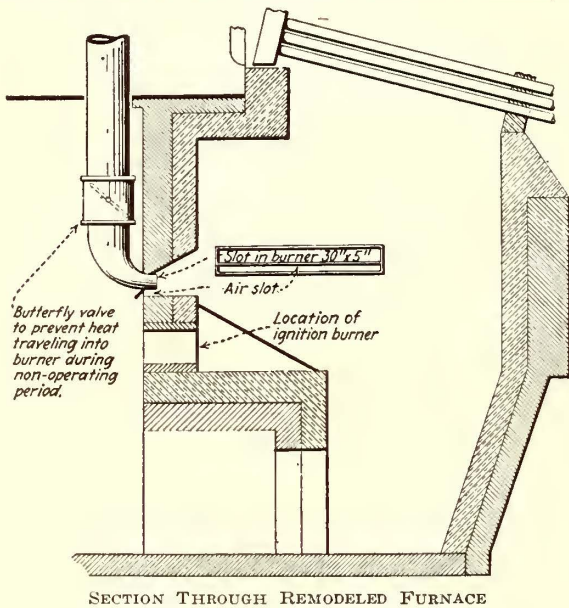
These test data were limited to the conditions of the guarantee, which did not take into consideration the boiler efficiency, but were based on the specific performance of the furnace and were specified as follows:

- (a) Capacity of pulverized fuel plant.
- (b) Fineness of pulverized coal.
- (c) Capacity of feeders.
- (d) Percentage of unconsumed combustible in ash.
- (e) Percentage of CO₂ in products of combustion.
- (f) Abrasion or effect on refractories in combustion chamber.

Further experimental operations were continued by

the Philadelphia Rapid Transit Company's engineers to determine the most effective procedure for the equipment of the additional nine boilers. Careful observations were made of all parts of the installation to note developments of any defects or changes that might suggest themselves. Particular attention was paid to the condition of the combustion chamber, and after approximately six months of intermittent operation of the equipment, it was decided for comparative observation to reconstruct the combustion chamber, change the burners and install a new feeder.

The feeders furnished with the installation are of the screw type, having a capacity of 2,200 lb. per hour each, and when the coal supply is permitted to become low in the bins and then filled up, there is a tendency for the feeder to flush, which is inherent to all screw feeders of this type, and which can be practically eliminated in regular operation by keeping the proper amount of coal in the bins. To avoid the necessity of close attention to the coal bins it was decided to install a feeder, sug-

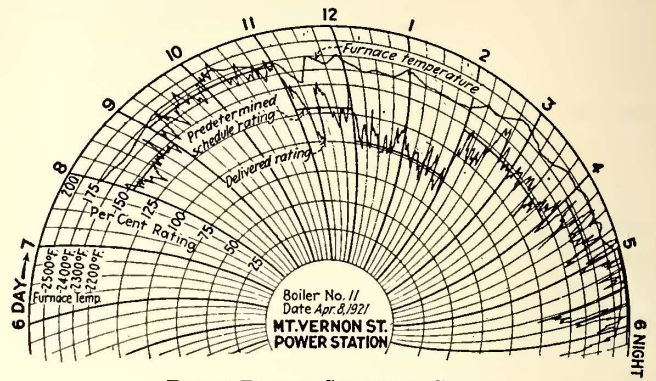


gested by the writer and designed and built by the Bailey Meter Company, of the bucket type with an attachment to record accurately fuel fed to the furnace.

The burners were replaced by two multi-mix burners, and the combustion chamber was redesigned and considerably reduced in size. It was assumed that by providing these special means of mixing the air and fuel

Kind of boiler	Original Installation B. & W.	Revised Installation B. & W.
Volume of combustion chamber, cu.ft.	1,542	800
Number of burners	2	2
Distance of flame path to heating surface, ft.	24	14
Water-heating surface	3,917	3,917
Ratio of combustion-chamber volume to water-heating surface	1 to 2.54	1 to 4.87
Date of test	11/23/20	8/23/21
Duration of test, hours	12	10
Steam pressure, gage	148	149.2
Temperature of feed water entering boiler, deg. F.	45.4	77
Temperature of escaping gases leaving boiler, deg. F.	447	487
Temperature side walls of combustion chamber, deg. F.	2,400	2,500
Moisture in coal as fired, per cent	0.87	0.46
Total weight of dry coal	25,987	25,950
Percentage of ash in pulverized coal	18.2	18.5
Total combustible fired	21,304	21,150
Total water evaporated	182,217	168,270
Factor of evaporation	1.218	1.185
Total equivalent evaporation	221,941	199,400
Dry coal fired per hour	2,165.6	2,595
Dry coal burned per hour, per cu.ft. of furnace volume, lb.	1.4	3.25
Equivalent evaporation per hour from and at 212 deg. F., lb.	18,495	19,940
Per cent of rated capacity developed	143	154
Calorific value of 1 lb. of dry coal	12,029	11,990
Calorific value of 1 lb. combustible	14,630	14,720
Per cent efficiency of boiler and furnace	69	62.2

to a theoretically perfect combustible mixture, it would relieve the combustion chamber of functioning as a mixing chamber. Therefore the combustion chamber

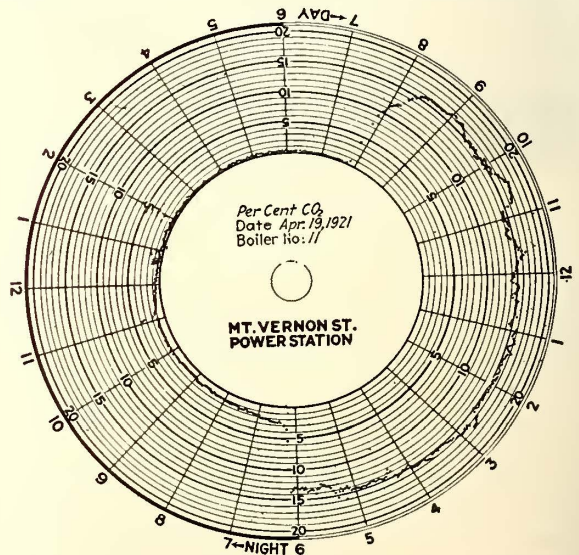


BOILER-RATING SCHEDULE CHART

could be materially reduced in size, which is a desirable advantage in the application of pulverized coal to old installations.

In rebuilding the combustion chamber, a change was made in the location of the burners so as to allow for the construction of an ignition chamber to be built around the burner nozzles as they enter the furnace. Instead of the burners entering the top of the furnace as in the original designs, they were installed as near the bottom as practical.

With these changes further tests were conducted, the conclusion of which indicated that as good or better results were obtained with the original equipment with the exception of the combustible in the ash. By adding an ignition chamber to the original design, placing the burners in the lower portion of the furnace and maintaining the volume of the combustion chamber as first installed it is believed that the complete burning of the combustible in the fuel can be accomplished, with efficiencies equal to mechanical stokers on high-grade fuels.



PER CENT CO₂ CHART FOR BOILER FIRES WITH PULVERIZED ANTHRACITE COAL

These tests were limited to furnace performance, as the boilers were of a very old type and therefore the guarantees were confined to furnace results only. The tests, however, include general data on boiler and mill-plant operations.

Abstracts of the principal items of the tests covering the results of the original and of the revised installations are shown comparatively in the table.

It will be noted that the efficiency of the test with original equipment was higher than after the changes were made, although the combustibile in the ash was less in the revised installation. The burned-out ash is accounted for by the effect of the ignition chamber, and the lower efficiency by the failure of completing combustion of the fuel in the smaller chamber, causing a larger percentage of combustibile to escape up the stack.

The results of these experiences remove all doubts as to the successful burning of anthracite mine waste or river coal in pulverized form. When the remainder of the installation at the Thirteenth and Mount Vernon Street plant is completed, with the improvements and changes suggested by the preliminary operation, it is expected that efficiencies in excess of 76 per cent at ratings as high as 250 per cent will be obtainable. The

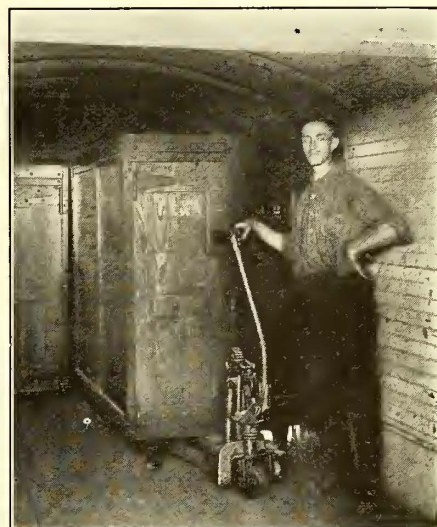
works. Both were hives of industry and output was high. The electrical works wrote down their book value during the war to a nominal sum. There had been no taxes like the munitions levy and the excess profits duty in England so the industry had been able to collect working capital. Wages ran about four marks per hour for an eight-hour day. It will be noted that at the present rate of exchange between Germany and Britain four marks is little more than a nominal rate of wage in sterling.

Cincinnati Road Uses Containers

Freight Is Collected and Placed in Containers' in the Business Section of the City and Then Is Hauled to Terminal at Edge of City for Loading on Cars

THE Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, which operates between the outskirts of Cincinnati and Aurora, Ind., has introduced a new method for handling freight by traction lines. The freight is collected from shipping points in Cincinnati and assembled in containers which are conveyed by motor trucks to the Cincinnati terminal, where they are loaded on cars for shipment.

When L. C. Van Ness, general manager, took charge of the road for the receivers last July he saw possibilities for increasing the revenues through the freight package system which the management already had under consideration. Due



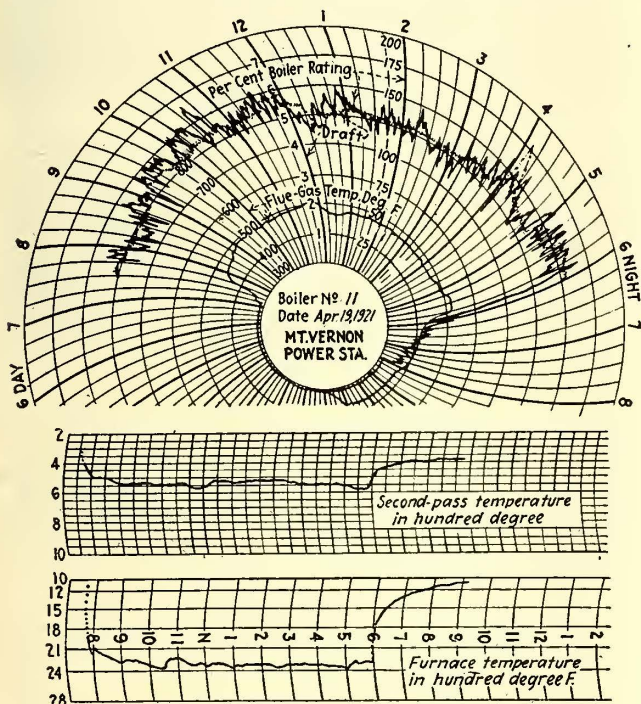
LOADING SMALL CONTAINERS INTO LARGER ONE

to the fact that the company has no entrance into the heart of Cincinnati, some plan had to be devised to overcome this disadvantage because prospective shippers could not be induced to convey freight at their expense to the company's Cincinnati terminal, which is far removed from the commercial activities.

It was vitally necessary that any plan of freight movement adopted should be satisfactory to prospective shippers with reference to the time consumed in making shipments because of the fact that the traction company was obliged to meet the competition of two large railroads, the Baltimore & Ohio and New York Central Lines, both of which parallel the line of the traction company. In addition there were a number of independent truck lines which were bidding for the business of hauling freight. To be successful any plan of freight transportation must therefore combine speed and thoroughness to the manner of shipment.

METHOD OF HANDLING

With the plan as adopted freight is assembled at a receiving station almost in the heart of the Cincinnati business district, loaded into wooden containers and transported on trucks to the Cincinnati terminal of the



BOILER-OPERATION CHARTS

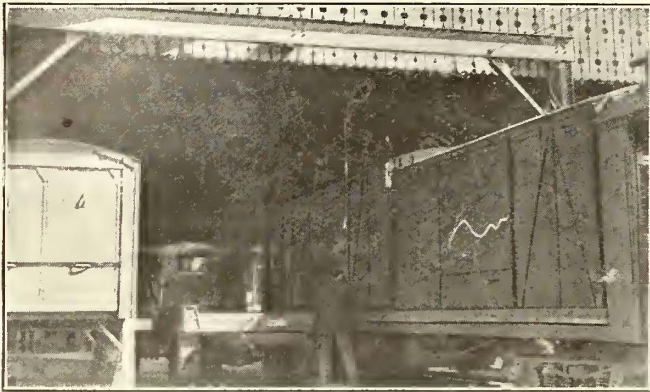
tests and operation of this boiler have fully demonstrated the exceptional control possible by pulverized-coal firing, comparing very favorably with oil or gas firing. As shown by the boiler-meter chart, which recorded the performance of the boiler during a ten-hour period on a predetermined schedule of rating, the results were as follows:

Time	Schedule Rating, per Cent	Delivered Rating Average, per Cent	Furnace Temperature, Average, Deg. F
8 to 9	150	145	2,375
9 to 11	175	170	2,372
11 to 12	125	136	2,350
12 to 2	100	107	2,320
2 to 4	150	145	2,425
4 to 5	175	170	2,570
5 to 6	200	190	2,510

Industrial Rehabilitation in Germany

IN VIEW of the growth of German competition both with British and American manufacturers, a quotation will be of interest from a speech by Sir Trevor Dawson, managing director of Vickers, Ltd., at a shipbuilding, engineering and machinery exhibition held in London during September. He said that, when in Germany a month previously, he had visited a large electrical works and an important steel and engineering

traction company, a distance of 6 miles, and then is transferred to an electric freight car and shipped over the line at one cost to the shipper. The transferring of the containers from the trucks to the freight cars or vice versa can be done in five minutes. The lifting is



PLACING A CONTAINER IN POSITION ON A FREIGHT CAR

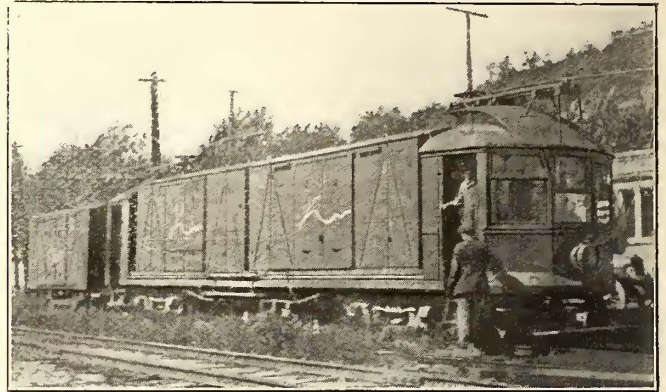
done by overhead cranes at the receiving station and at the terminal.

These cranes have a hoisting capacity of 10 tons and are electrically operated with the exception of the one located at the terminal, which has a hand traveler. In order to place two containers on the freight car at one time it was necessary to cut the cars in the middle and lengthen them 12 ft. Trailers are also used to haul freight to a designated point, where they are put on a siding and the freight distributed to points surrounding the station.

The containers are furnished by the Cincinnati Motor Terminal Company, which also does the hauling. They measure 17 ft. 6 in. long, 7 ft. 6 in. wide and 7 ft. high. In addition to the large containers, which are of 5 tons capacity, there are several small containers of which six can be placed in one large container. Each one of the small containers has approximately 152 cu.ft. of space. They are made of wood with hinged end doors. Legs at the four bottom corners elevate the containers so that a jacklift truck can be run underneath either at the ends or sides. The trucks used are manufactured by the Lewis-Shepard Company of Boston, Mass. After the jacklift is in position under the small container it is elevated to provide clearance by operating the handle. This raises the load by means of a simple mechanical jack mechanism. The load can be raised or lowered with the handle in any position and the lifting is vertically, so there is no tendency for the load to shift. With the container free from the floor it can be readily hauled into or out of the large container and thus the necessary time and labor are greatly reduced. The small containers are used principally for shipping perishable goods and when their destination is reached they are removed by a jacklift and left for the station agent to empty. The company started the freight business on Aug. 15 and there has been a noticeable increase in the volume of freight tonnage weekly. The cost to the traction company for transportation of the containers from the receiving station to the Cincinnati terminal is figured both by tonnage and mileage. If the container is loaded to capacity the transportation is computed on tonnage basis, and if partially filled on a mileage basis.

The freight rates of the company are on a par with the railroads, and the classification of freight is based

on the same method except that classes 5 and 6 are omitted and incorporated in class 4. The rate is computed from the receiving station to all points on the line. If the company had been compelled to haul the freight in loose shipments instead of using the container system



ELECTRIC FREIGHT CAR AND TRUCKS LOADED WITH CONTAINERS

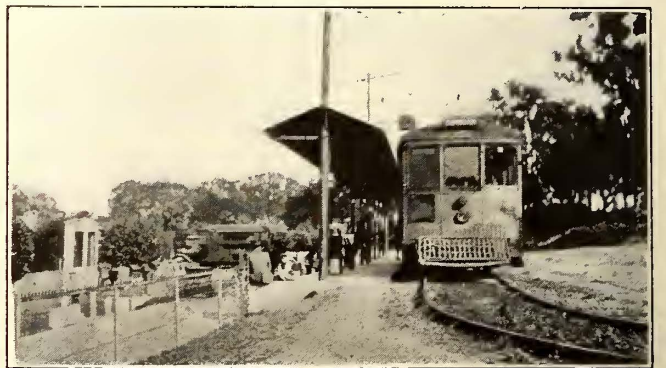
from the receiving station to the terminal the freight package business would not be possible because the transfer costs would consume the earnings. As the company is not equipped to handle carload shipments this class of business is not sought.

Livestock is not handled except when crated. A list of commodity rates for such items as eggs and chickens is being worked up. Commodity rates will only be in effect on such items as are in abundance and where other carriers are offering competition.

While the plan of using containers is new to the shippers along this road, they are gradually realizing that it eventually will prove to their advantage and get their products to Cincinnati in quicker time than otherwise and in some instances at a reduced cost.

Presidio Terminus of Union Street Line in San Francisco

THE Presidio terminus of the Union Street line of the Municipal Railway of San Francisco consists of a loop and a concrete landing platform with a galvanized iron umbrella shed adjacent to the track furnishing shelter for railway patrons. The Municipal Railway contributed the sum of \$1,000 from the operating funds and the national government spent almost

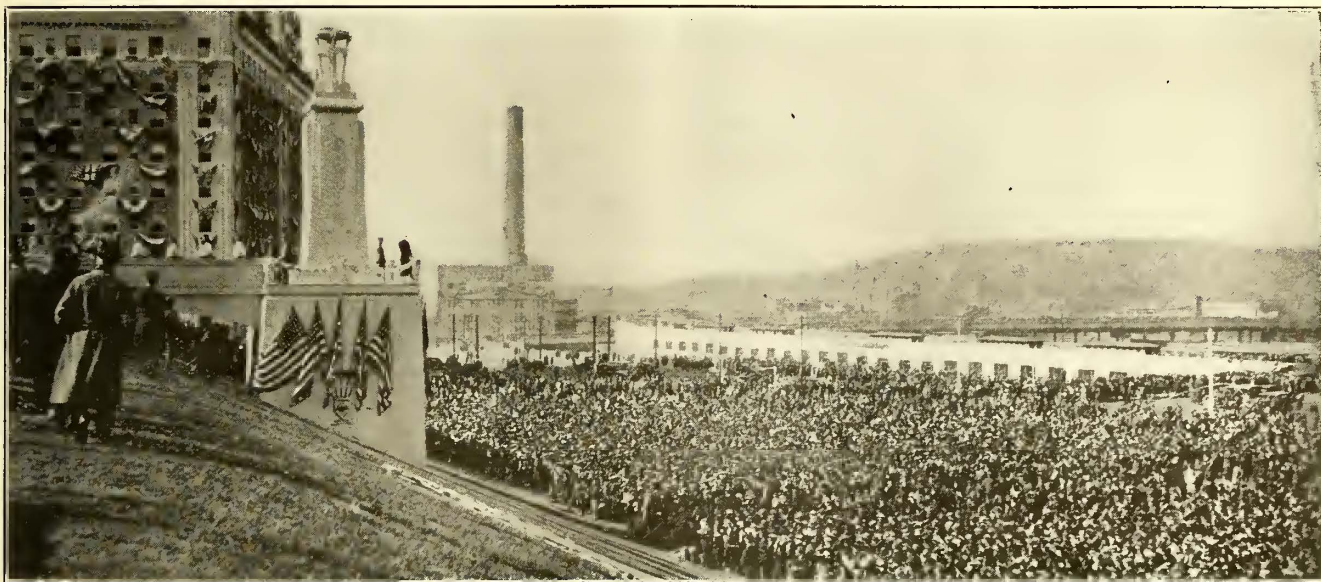


PRESIDIO TERMINUS OF MUNICIPAL RAILWAY OF SAN FRANCISCO

\$4,000 additional in the erection of a small stucco finish building near the landing platform, which contains a news stand, bootblack stand, restaurant, toilet facilities, and a room for the storage of tools and sand for the railway, and a telephone.

Handling Doubled Traffic with Dispatch

Kansas City Railways, with Half of Its Personnel ex-Service Men, Earns Widespread Commendation on the Effectiveness of Its Preparations to Carry the Crowds Brought to the City by the Recent American Legion Convention



CARS HAD TO BE OPERATED THROUGH CROWDS LIKE THIS AT THE SITE OF THE KANSAS CITY LIBERTY MEMORIAL MONUMENT

THE experience of the Kansas City (Mo.) Railways during the American Legion convention held in that city during the four days from Oct. 30 to Nov. 2, presents an interesting example of efficient service in transportation by a street railway. The traffic demands upon the company on one day reached nearly twice the usual requirements. The company met the emergency in an excellent manner by maintaining schedules and operating without serious accident to person or property. Perhaps the most remarkable incident of the performance is the fact that the company, owning 723 cars, had 723 cars in continuous operation during the entire convention, and had 723 cars still in service the night the convention closed.

The American Legion convention brought to Kansas City the largest crowd it had ever entertained. The total reached around 150,000 on Nov. 1, the day of the parade and of the dedication of Kansas City's Liberty Memorial. There were more than 50,000 men and women in the parade on that day, which was viewed by a crowd estimated at nearly half a million. About half this number attended the dedication of the Liberty Memorial, the services closing at noon. Within an hour and a quarter after the close of the dedication service, the crowd had been moved, and within an hour and a half after the close of the parade in the afternoon the street cars had finished their task.

One item in the Legion program was the aerial meet at a flying field southwest of the city. The Sunset Hill line with a single-track terminal was the nearest track to that locality, while the next nearest was the double-tracked Country Club line. Of the 150,000 people attending the aerial meet, the great majority was carried by street cars. There were football games, and other events in other districts on various days, for which the street railway provided the bulk of the transportation facilities.

To take care of the visitors as they arrived special schedules were maintained from the station to the business district, the headway on this line being as close as thirty seconds at certain times. This headway was maintained even when the streets bore crowds totaling as high as hundreds of thousands, swarming over the tracks ahead of and behind the cars.

TRAFFIC CHANGES PUBLISHED IN BOOKLET

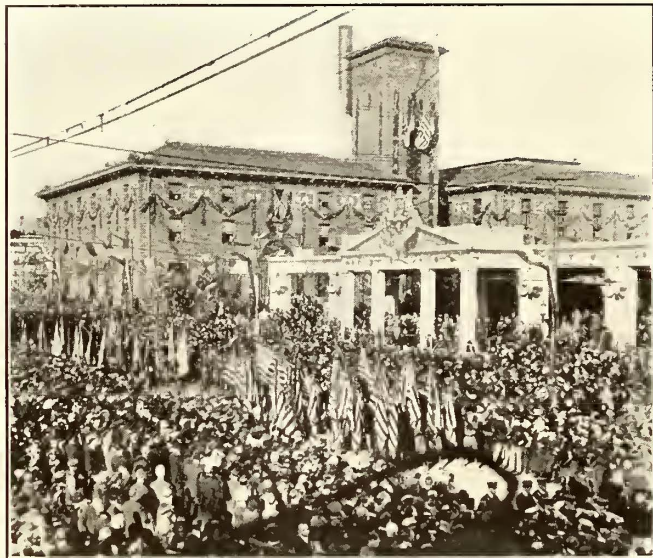
Many reroutings were necessary for the convention period to provide for the special events in various parts of the city, and to carry the crowds from downtown congestion. The reroutings and other information concerning the transportation department were scheduled in a booklet prepared by the company. These were issued to all employees, the police and the legion departments before the convention opened.

The preparedness of the company with reference to the condition of its equipment was not due to special effort, for it had been in practically perfect condition for several weeks under the program of maintenance already well established. No additional men were employed for the occasion so that the special training of extra men was unnecessary. It was found possible to draw from the various departments about 450 employees with experience in the departments to which they were specially assigned for the convention. These extra men were assigned to transportation facilities in the following capacities: 60 car dispatchers; 40 inspectors; 125 street fare collectors; 30 special officers; 50 mechanical and electrical workers and 150 conductors and motormen. These served in the capacities mentioned together with the regular employees.

Preparedness consisted chiefly in planning and in the distribution of the workers. The motor repair cars and trucks of the company were so distributed, for instance, that any point on the system where trouble

might arise could be reached within five minutes after the failure had occurred. And in fact, in no instance was traffic delayed more than ten minutes by any accident.

The accident record presents an interesting display. For the five days of extraordinary traffic volume, from Saturday, Oct. 29, to Wednesday, Nov. 2, there were 161 accidents. This contrasts with a total of 141 accidents during the five days immediately preceding the period mentioned—showing an increase of only four a



(© Wide World Photo)

LEGIONNAIRES PASSING IN REVIEW ALONG THE CROWDED STREETS OF KANSAS CITY

day in accidents of all kinds during the period of the convention. No person was even seriously hurt in any street railway accident, although there were several fatalities during the convention due to automobile accidents in which no street cars were involved.

The list of accidents presents a curious situation in view of the large volume of traffic, the crowds on the streets, and the natural haste of the traveling public. For instance, there was not a single accident in which a person was hurt alighting from a moving car; and there was only one person slightly hurt due to a car starting while the passenger was boarding. A total of but 161 accidents during the period suggests a remarkable degree of safety even for persons ignorant of practice and in congested circumstances of present-day street railway equipment and operation. Only two of the company's employees were injured.

Among accidents to property, the largest number consisted of collisions with automobiles—ninety of these. There were only nine collisions of street cars, six collisions with persons and three with vehicles. Only one street car was damaged in any accident, requiring that it be taken to the shop. This car was again in service the same evening.

The record of only six collisions with persons is the most interesting to one who observed the packed masses of people on the downtown streets, extending for many blocks. Yet the cars moved through these crowds with little or no delay in schedules, and few accidents. At the same time, there were hours during which motor cars could not pass through these crowds. The density was not the only bar, for the hilarious celebrants frequently turned back motor cars, or forced them to other routes.

But Legionnaires, assuming direction of traffic during the high fever of the celebration in evenings, were solicitous to keep street cars moving. With Twelfth Street almost a solid mass of people for hours, street cars moved the length of Twelfth Street and across it without hindrance. Ex-top kickers with whistles arbitrarily directed traffic, each having twenty-five or thirty assistants. While celebrants manhandled automobiles, rode on bumpers, and attached trash cans to motor cars, there was not an instance of molestation of street cars.

HALF OF EMPLOYEES EX-SERVICE MEN

Several factors contributed to the efficient handling of the crowds, one of which was the high degree of efficiency and loyalty of the street railway employees. More than 50 per cent of the employees are former service men, totaling 1,500 men who themselves had a vital interest in the success of the American Legion convention. Each of these wore a badge announcing his former service. Every employee worked an average of fourteen hours a day, while many were on duty as long as fifteen hours, even though they were doubtless eager to attend meetings and sporting events. The visitors recognized the legion character of the personnel.

Another factor was the familiarity of Kansas citizens, and indeed of a great many visitors with the fare tokens used in Kansas City. Local people who might often be careless regarding purchase of tickets or tokens supplied themselves before the convention, and visitors soon "caught the idea." Dash cards on cars, signs at the Union station, and suggestions by street fare collectors and conductors advised the riders to buy two tokens for 15 cents when boarding a car or five tickets for 35 cents at stations. This advice was generously heeded for 70 per cent of the fares were paid with tokens, 17 per cent with tickets, and only 13 per cent with the 8-cent cash fare.

There was no power-house accident, nor suspension of current, and there was ample power for the service.

A HALF MILLION PASSENGERS DAILY

The largest volume of traffic in number of passengers was on Monday, Oct. 31, when 522,000 passengers were carried. The receipts on the four big days were as follows: Oct. 30, Sunday, \$26,802; Oct. 31, Monday, \$39,411; Nov. 1, Tuesday, \$38,458; Nov. 2, Wednesday, \$35,791.

These were the four largest days in the history of the company. But it is interesting to note that the largest previous day was but two weeks before the convention period—on Oct. 15 when receipts were \$33,724. On other big days during the past ten years the passenger revenue has averaged at such times about \$26,000.

There was not a complaint made against the service publicly during or after the convention, but many letters were received complimenting the company and individual employees.

The *Kansas City Post* published the following editorial, on Nov. 4 regarding the street railway service:

Public commendation is due the Kansas City Railways for the admirable way in which it operated the street car service during the American Legion convention. The task was terrific, but the job was handled literally "with neatness and dispatch." The cars carried the crowds and carried them safely. No street car passenger suffered serious injury and no pedestrian was run down. No complaints of discourtesy upon the part of the car crews were made. To the contrary, many visitors were heard to compliment the conductors and motormen on their cheerfulness under extremely aggravating conditions.

"They simply laughed their way through," said Senator Wilson, one of the receivers for the railway company, alluding to the crews that took cars through the jammed thoroughfares downtown.

Zone Collections by Machine

The Beaver Valley Traction Company Adopts New Method of Issuing Zone Checks on One-Man Cars—The Method Is to Be Extended to the Entire System

FOR fare collection purposes the lines of the Beaver Valley Traction Company of New Brighton, Pa., are divided up into 5-cent zones, and up to recently a conductor would go through the car when it crossed a zone line and collect another nickel from each passenger. A few months ago the company decided to introduce one-man cars on a number of its lines so that some other method of collecting zone fares on these cars had to be adopted. The railway system of the company consists of about 26 miles of street and 51 miles of track, extending along the Ohio River and Beaver River. Its routes vary in length from those of one zone to one with eight zones. A map of the system was published in the ELECTRIC RAILWAY JOURNAL for April 9, 1921.

Obviously on a line with only one or two zones no special method of fare collection is necessary, as the car can be operated pay-enter, or pay-enter in the first zone and pay-leave in the second zone. On the longer zones, however, some zone ticket has to be used with one-man cars. On these routes the company is using Shanklin ticket-issuing machines and these machines have been ordered for all routes which are more than two zones in length.

An illustration of the ticket issued by this machine accompanies this article. The day of the month, "in" or "out" and hour are punched at the terminal, the time punch representing the time at which the car left the terminal. This leaves only the "zone from" and "zone to" to be punched on the trip. The operator on entering a zone presses a button on the machine to the proper "zone from" position. Then, when a passenger boards the car, all the operator has to do is to inquire the passenger's desired destination, see that the right fare

his day card he gives the opening and closing numbers.

If a passenger wishes to transfer, the operator collects the fare only to the next zone beyond the intersecting transfer point, and at the transfer point he lifts the ticket and issues a regular transfer. When the person boards the car to which he is transferred, the con-



ONE-MAN CAR OPERATOR ISSUING FARE RECEIPTS

ductor on that car asks his destination and lifts the transfer, and the passenger drops into the fare box the amount of cash required to carry him to his destination, provided it is beyond the next zone limit on that line.

Outside of the first day or two after this ticket was introduced, when both passengers and trainmen were unaccustomed to both it and the one-man cars, there have been practically no delays due to the use of either tickets or one-man operation. During the first day or two the company used two operators on each car from the time the cars left the carhouse until 10 a.m., and again from 3 p.m. until 7 p.m.

There has been no change in the running time. The route on which the ticket shown is used is 13 miles in length, and the cars make the round trip in two hours and forty minutes with six minutes lay-over at one end of the line and four minutes layover at the other end. This is the same time taken when the cars were operated with two men.

On the first day or two there was considerable difference between the amount shown by the zone checks as due and the amount in the fare box. Now the two amounts are very close each day. The company has equipped seventeen one-man cars with these machines. One important advantage of the machine, in the opinion of the management, is that it is possible by tabulating the slips returned to have an absolute traffic check on the number, time and direction of the trips taken on the cars. This, it is believed, will be found very useful in laying out future schedules.

JAN	JUL	11	12	3	4	5	6
FEB	AUG	7	8	9	10	11	12
MAR	SEP	13	14	15	16	17	18
APR	OCT	19	20	21	22	23	24
MAY	NOV	25	26	27	28	29	30
JUN	DEC	31					

Beaver-Leedsdale		FARE		ZONE		NO.	
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
12-25-21		310-45		8006			

THIS IS A RECEIPT to show that your fare has been paid to the operator. This check must be returned to the operator. This zone receipt system has been adopted to save space and to make it easier for the operator to issue tickets. The amount of fare shown on this receipt is the amount of cash to be collected from the passenger. The amount of cash to be collected from the passenger is the amount of cash to be collected from the passenger. The amount of cash to be collected from the passenger is the amount of cash to be collected from the passenger.

FRONT AND BACK OF FARE RECEIPTS USED WITH ZONE SYSTEM

is deposited in the box, push down one of the buttons and operate a foot lever. The machine then delivers the ticket properly stamped and punched. As the passengers leave the car they hand their tickets to the operator, who has only to notice from the "zone to" punch that the passenger has not over-riden. The tickets thus collected are then bundled up and turned in by the operator at the end of each day's work. On

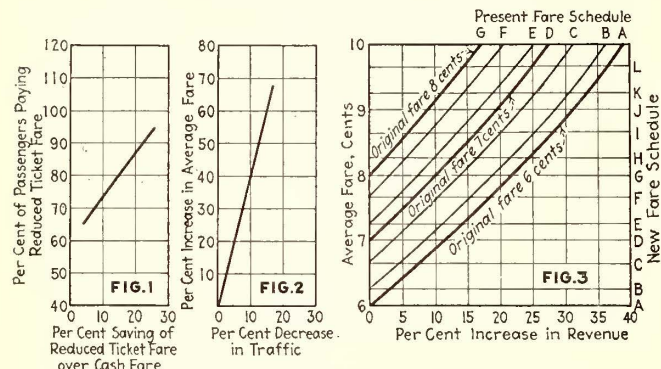
Revenue Increase from Increased Rates

The Writer Shows by Means of Diagrams How to Estimate the Change in Revenue Which May Be Expected from a New Fare Schedule

BY J. KAPPEYNE

Consulting Engineer, Syracuse, N. Y.

IN TIMES of insufficient income, when application is being made for an increase in rates, it is desirable to be able to estimate, within reasonable limits of accuracy, the revenue to be derived from a proposed higher fare schedule. The present tendency of electric railway rates, as established by the regulatory authorities, seems to be toward a basic straight cash fare combined with a reduced rate ticket that can be pur-



CHARTS FOR COMPUTING INCREASE IN REVENUE RESULTING FROM A NEW FARE SCHEDULE

chased in small lots. The average fare realized from such a fare combination depends upon the proportion of passengers which ride on the reduced fare tickets.

A number of statistics are available giving the relative proportion of reduced ticket fares and of cash fares obtained with different fare schedules. In some instances, a certain lack of uniformity exists in the resulting ratios between different cities having the same fare schedule. This is also true as between different months of the same year, nevertheless a fairly constant relation is found when the results are averaged over a long period of time when the basis of comparison is taken as the percentage saving of the reduced ticket fare over the cash fare.

It is realized that the amount of the cash outlay required to purchase tickets at reduced rates is also a factor which will to some extent tend to produce non-uniformity of results. Within reasonable limits, however, the relation as shown in Fig. 1 will be the result.

The revenue to be derived from an increased fare will depend upon the falling off in traffic due to the loss of the so-called short rider. Available statistics are of little value unless local conditions are properly analyzed. Usually increased fares are put in effect at times of general business depression and often the falling off in traffic is only partly due to the fare increase. There seems to be a tendency of traffic coming back, although not to its full extent, after a certain lapse of time, all other conditions remaining unchanged. Furthermore, the normal increase in the population served, the possible variation in the riding habit, the change in frequency of the service furnished, increased competition by other means of transportation, are all factors affecting the volume of traffic.

The relative greatest proportionate loss in traffic occurs when the first increase is made from the con-

ventional nickel fare. Subsequent increases in the amount of fare result in fairly uniform decreases in traffic when the results are averaged over a long period of time and by taking as the basis of comparison the percentage increase in the average fare paid.

Fig. 2 is the result of a number of traffic statistics after modifications have been made to make conditions as nearly comparable as careful analysis will permit. In this analysis statistics relating to the initial increase from the original nickel fare are eliminated.

By properly combining the results shown in Fig. 1 and Fig. 2 the estimated increase in revenue to be

TABLE I—BASIS OF CASH AND TICKET FARE ASSUMPTIONS

Schedule	Cash Fare (Cents)	Reduced Rate Tickets Unit Price (Cents)	Tickets Sold in Lots of	Saving Unit Ticket (per Cent)
A	6	6	4 at 24	14.27
B	7	6	4 at 24	14.27
C	7	6½	4 at 26	7.15
D	7	7	4 at 28	12.5
E	8	7	4 at 28	12.5
F	8	7½	4 at 30	6.25
G	8	8	4 at 30	6.25
H	9	8	4 at 32	11.12
I	9	8½	4 at 34	5.56
J	9	9	4 at 34	5.56
K	10	9	4 at 36	10.0
L	10	9½	4 at 38	5.0
M	10	10	.....	.....

derived from a change from one particular fare schedule to another can easily be computed.

For example, assume the successively increasing fare schedules, shown in the accompanying table.

Fig. 3 shows the expected increase in revenue that will be obtained, all other conditions affecting traffic remaining unchanged, when changing over to any one of the above fare schedules from a straight 6, 7, or 8-cent fare or intermediate fare schedules.

For example a company operating on a straight 7-cent fare, Schedule D, may expect an increase in operating revenue of 16.5 per cent when the rate of fare as shown in Schedule I becomes effective. This 16.5 per cent is arrived at by taking the abscissa of the intersection of the diagonal curve representing the initial fare of 7 cents with the horizontal line representing the proposed fare Schedule I.

Similar diagrams may be computed for any set of initial and proposed fare schedules.

Although the local conditions obtaining during the time the proposed new fare schedule is in effect will undoubtedly alter the actual results, it is believed that, for purposes of calculation, assuming that other conditions remain unchanged, the data as shown in Fig. 3 will give fairly accurate results for average conditions.

Remedy for Trouble with Door Guides

THE Portland (Ore.) Railway, Light & Power Company had difficulty in holding the angle iron door guides on its Birney safety cars due to the screw holes becoming worn in the wood. The company found that by electric welding these guides to a ¼-in. plate that would

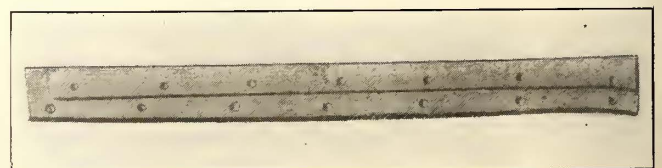


PLATE WELDED TO ANGLE IRON DOOR GUIDE

just fit into the space at the top of the door and by drilling screw holes in a new place the difficulty would be overcome. The accompanying illustration shows a plate welded to the door guide.

Electric Railway Publicity

Devoted to How to Tell the Story

Birney Enters Peoria Amid Newspaper Heralry

LONG before Nov. 16, the inaugural date of the Birney safety car in the city of Peoria, Ill., patrons of the Peoria Railway had been informed through a detailed and comprehensive publicity campaign by means of booklets and advertisements just what the railway was planning in regard to this new method of operation. Preliminary to the starting of the twenty Birney cars on

the Second, Lincoln and Monroe Street lines the company, through its general superintendent, R. F. Palmblade, printed and distributed to the public an interesting booklet containing news of the outside and inside of the car, modern seating and standee arrangement, etc. The booklet gave a short history of the new type

New Type Birney Street Cars Coming to Peoria



Within the next few days the new type Birney car will be put in operation on some of the city street railway lines.

Introduction of the Birney car in Peoria is in no way an experiment, for this modern, light weight car has been thoroughly tried and tested under the most severe traffic conditions in other large and progressive cities.

At the present time the Birney car is being operated in such cities as Detroit, Brooklyn, Kansas City, Boston, Birmingham, New York, Baltimore, Philadelphia, Los Angeles, Seattle, Galveston, Terre Haute and dozens of other representative cities. Today there are more than 5,000 standard "Birneys" such as those to be placed in operation in Peoria in service to the United States. In many cities the size of Peoria, and larger, the street car lines are entirely operated with the Birney type of car.

For the present, only the Second, Lincoln and Monroe street lines are being equipped in Peoria.

In adopting this type of car the company has given prime consideration to the riding public. Experience has proven that it is popular with the street car rider because it makes possible:

New—and More of Them	
More Frequent Service	More Comfortable Service
More Flexible Service	—and Safer Service

Peoria Railway Company

A RECENT ADVERTISEMENT IN A PEORIA PAPER INTRODUCING THE NEW CAR

of car, its use in some of the large cities and its improved features over the old type of car. Specific instructions on the conduct of passengers traveling on the Birney car were also outlined in the pamphlet.

Not only through the distribution of this pamphlet did the railway tell the public about the new system and seek its co-operation in making this safety car experiment a success but also through some newspaper display advertising. One advertisement, entitled "Birney Type Street Car Is Really New," told the story of the long wheelbase which makes it easy riding and the arrangement of the interior so that more passengers are seated. Graphically, it told the story of the crosswise seating arrangement with seats raised in "opera-chair" fashion and also showed an interesting trio waiting patiently to enter the car, but "Doors Cannot Open Until Car Stops and Step Drops." Another instructive advertisement entitled "Things to Remember About New Birney Cars" showed the front entrance of the car, the advantage of having the exact fare ready and the correct method of dropping fare in the box.

Magazine Commemorates P. R. T. Picnic

DETAILED accounts of the events and the success of the August picnic of the Co-operative Welfare Association of the Philadelphia (Pa.) Rapid Transit Company are given in the picnic number of the *Co-operative Record*. Cuts in profusion of babies, of officers, of members, of daughters, of wives, and full stories of all the happenings of the two-day picnic make the magazine a happy commemorative record.

The most striking feature of the publication is the great number of pictures. Approximately 145 halftones are reproduced in the fifty-two pages, and in addition the front and back covers are a continuous picture of the big get-together meeting. Every phase of the two-day outing is covered by the camera. Sports, recreation, entertainment, baby show, first aid contest, the dedication of the colors, find their permanent record in this issue of the *Co-operative Record*.

The message of the magazine is the Fifty-fifty Plan of the Philadelphia Rapid Transit Company, of which the picnic was the manifestation. Excerpts from the speeches at the picnic of Mr. Mitten, president of the Philadelphia Rapid Transit Company; of C. Edward Hendrickson, president of the Co-operative Welfare Association, and of other officers of the employees' organization express the spirit of the plan and reflect the co-operation existing throughout the company.

Mr. Hendrickson showed the stand of the Co-operative Welfare Association in the following statement, quoted from his talk:

Our position as an organization in this time of general depression is one of which we may be proud. By the work of our hands, by good fellowship and by foresight we have built for ourselves a house with a solid rock foundation. Yet in our victories we are not boastful nor unmindful of the wants of others. The entire spirit of this picnic has been as though it were a great Thanksgiving service.



4 THE OPERA-CHAIR STYLE SEATS ARE PLACED CROSSWISE

5 DOOR DOES NOT OPEN UNTIL CAR COMES TO FULL STOP

6

WAIT UNTIL OUTGOING PASSENGERS ALIGHT BEFORE BOARDING CAR

ONE OF THE INSIDE PAGES OF THE BOOKLET USED IN THE PUBLICITY CAMPAIGN

Program of "Get-Together Meetings"

1921 PICNIC

1. P. R. T. Band and Bugle Corps. "Thunderer"
Conducted by Lieut. Commander John Philip Sousa
2. Address of Welcome by President Hendrickson of Co-operative Welfare Association
3. Presentation of { Stotesbury Cups--1st Day
Athletic Cups -- 2nd Day
4. Introduction of Athlete Winning Highest Number of Points
Introduction of Prize Baby
Introduction of Largest Family
5. Community Singing Led by Mr. Rodeheaver
6. Address by President Mitten
7. P. R. T. Band Finale, "The Star-Spangled Banner"
Conducted by Prof. H. R. Anders

P. R. T. Kiltie Band will lead audience to and from Pavilion

CHILDREN'S EVENTS

OPEN TO OWN CHILDREN AND BROTHERS AND SISTERS OF EMPLOYEES

**AUGUST 30th AND AUGUST 31st
10:00 A. M.**

Entries to these events to be taken on the field.
Contestants must report to Judges on Field not later than 9.30 A. M.

CLASS "A"

Children Under 17 Years--4 Feet 10 Inches or Less in Height

BOYS

- 50-Yard Dash
- 3-Legged Race
- Shoe Race

GIRLS

- 50-Yard Dash
- Potato Race
- Egg and Spoon Race

CLASS "B"

Children Under 17 Years--Over 4 Feet 10 Inches in Height

BOYS

- 100-Yard Dash
- 3-Legged Race
- Shoe Race
- Obstacle Race

GIRLS

- 50-Yard Dash
- Potato Race
- Baseball Throw
- Egg and Spoon Race

None but contestants and Sports Officials allowed on the track and athletic field. There is plenty of room surrounding the field for spectators.

Prizes for children's events will be awarded on the field immediately after the close of that group of events.

SENIOR EVENTS

One Special Prize Cup will be awarded to the Department winning most points (total both days) in track and water events

OPEN TO ALL EMPLOYEES

MEN

- 100-Yard Dash
- Sack Race
- 3-Legged Race
- 220-Yard Dash
- Shoe Race
- Tug of War
- Half Mile Relay
- Obstacle Race
- 50-Yard Swim
- 100-Yard Swim
- 400-Yard Swim
- Canoe Tilting Contest

WOMEN

- 50-Yard Dash
- Baseball Throw
- 220-Yard Relay
- Balloon Blowing Contest
- Potato Race
- Obstacle Race
- 50-Yard Swim
- 100-Yard Swim

- 320-Yard Mixed Relay Swim
- Duck Race for all employees

PROGRAM OF EVENTS AT PICNIC OF CO-OPERATIVE WELFARE ASSOCIATION OF P. R. T.

The magazine includes a four-page section called "Service Talks," which are intimate editorial commentaries on matters of method, ethics, results, goals and, of course, co-operation.

A spirit of good will pervades the *Co-operative Record*. The running story of the picnic is told in a chatty, vivid style and lends unity to the various interesting accounts. These opening sentences give the tone of the entire publication:

Another picnic is over—another milestone passed, but the remarkable two-day outing at Willow Grove gave stress to the fact that the miles, in passing, have been carefully measured. In the heart of depressing times, the great P. R. T. family stepped out to demonstrate once again that their Philadelphia "Fifty-fifty plan" which they created and in which they believe, was storm-proof.

The magazine is Number 5 of Volume 1 of the *Co-operative Record*.

United Railways States Issues

IN AN effort to make clear its position, the United Railways of St. Louis has issued a detailed statement of the traction situation there to counteract alleged erroneous reports of the press. Comparison of the St. Louis conditions to those in San Francisco is declared unfair, and a minute comparison with the New York Transit Commission proposals follows. The announcement says "that in St. Louis we have an approach to municipal or public ownership so close that the local situation has many of the advantages of the New York plan without the city itself assuming the transportation obligations."

To eliminate the \$4,000 loss incurred daily by the company, and to give adequate transportation and build the needed extensions, the company states emphatically, "the car fare must be adequate."

The circular closes with the following statement from the company:

"When the valuation of the property is completed by the Public Service Commission, St. Louis will have a car service on a cost basis, absolutely. In the meantime it is getting it at less than cost. What the future service will be is largely a matter for the public to decide."

Railway Exhibit at State Fair

THE accompanying illustration shows an exhibit which the Louisville Railway recently placed in the new \$300,000 Merchants' & Manufacturing Building of the Kentucky State Fair, held at Louisville during the week of Sept. 11 to 17. The company occupied two spaces, one in the name of the Louisville Railway and one in the name of the Louisville & Interurban Railroad. Photographs of cars were shown, beginning with the old horse-drawn cars and including the present most modern equipment.

In the Louisville & Interurban Railroad space views were shown of the terminal building, freight station and



EXHIBIT OF THE LOUISVILLE RAILWAY AT THE KENTUCKY STATE FAIR

of the right-of-way. A pair of wheels mounted on an axle were arranged so that they could be rotated by power controlled through a grid resistance and controller. All parts of the equipment, such as the motors, controllers, resistors, fuse boxes, choke coils, lightning arresters, circuit breakers, etc., were lettered for the public's information. Types of rail in use from the years 1864 to 1921 were displayed. Also steel ties, concrete base, granite paving, etc. The costs of the various parts were posted for the public's information.

Publicity Campaign Launched in Dallas

TRAINMEN of the Dallas (Tex.) Railway have been given an opportunity to do a real worth-while job—to convey a message to the public and patrons of the railway property in that city. In addition to operating cars, collecting fares, etc., they have been asked to “sell service,” to tell residents and visitors to the city what the railway is trying to accomplish, how it is striving to give satisfaction to its customers and what the spirit of the organization really means.

This “selling service” stunt, which has far-reaching effects, will be conducted through the publicity department. All trainmen have been invited to submit copy for the car card advertisements which appear on each end of the car. An acceptable piece of copy will be awarded a prize of \$5.

One need not be learned nor have the gift of beautiful expression, but just the ability to talk to the car patrons in a simple straightforward manner—to have something to say about the service that is offered that will bring home to every rider the fact that the Dallas Railway is “selling transportation.” In announcing the contest Mr. Crampton warned against any formal ad-

vertising copy and said that the determining factor in passing criticism on copy would be the reading matter, which should be such that it could be read easily from the center of the car.

The Nov. 15 issue of *Partners*, the official publication of the Dallas Railway, in explaining the reason for launching this “publicity campaign” tells what the Dallas Railway officials believe is the real relationship which should exist between an agency rendering service and the public whom it serves. In part it is as follows:

The most valuable asset a public utility can have is a satisfied public for its customer. Too many times the public is inclined to think of such enterprises as large corporations without interest in public welfare beyond the income that can be derived from each individual user. Personality in service is lost sight of entirely. The Dallas Railway is fortunate in having a corps of employees who are thoroughly capable, loyal and interested in selling their services. The ordinary rider thinks of the company in terms of motormen and conductors. His opinion, good or bad, is molded by the reaction these men give when he uses their cars.

The purpose of the car card is to convey the spirit of this organization to the passenger who uses the street car. He should be made to feel that he is being cared for by capable men who are interested in his satisfaction and who will go to any reasonable length to give him the highest type of service that is possible.

C. E. R. A. Engineering Section Meets

First Meeting of the Eastern Section of the Engineering Council Points to Real Accomplishment Along Mechanical Lines

THE first meeting of the Eastern section of the newly formed C. E. R. A. Engineering Council was presided over by Director P. V. C. See, superintendent of equipment Northern Ohio Traction & Light Company, at the Ohio Hotel, Youngstown, on Nov. 15. G. T. Seely, chairman of the Engineering Council, was present at intervals and aided the section in establishing procedure. There were thirty-two in attendance, practically all of whom were equipment men, as there was only one track engineer, one overhead superintendent, and two power engineers present. Consequently the discussion of questions propounded on track and power matters presented only limited view and led to no particular conclusion.

However, the equipment problems were the subject of lively and valuable discussion and the interest closely rivaled that at the meetings of the Association of Electric Railway Men, the loosely formed organization of the equipment men of Pennsylvania, Ohio and West Virginia, which was started and sponsored by the Westinghouse Electric & Manufacturing Company and was discontinued with the organization of the Engineering Council of the C. E. R. A. This section meeting differed from the earlier similar meetings of the independent organization in that an effort was made to have the discussion lead to some definite conclusion. The motion to make some definite disposition of the subjects discussed was made by Guy H. Kelsay, superintendent of power and equipment, Cleveland, Southwestern & Columbus Railway. This led to considerable discussion as to what should be the proper procedure of the section. In the absence of any definite plan from the Engineering Council, it was decided that after a discussion developed the fact that wide divergence of opinion or practice existed, a committee was to be appointed to make a thorough study of that sub-

ject and report back to the next meeting, of the section, presenting, if possible, a definite recommendation for the members to discuss, revise and act upon with a view to passing it on to the Engineering Council as a recommendation for a new standard or a recommended practice. Committees appointed by Director See to give special study to subjects discussed at this first meeting were as follows:

Standardization of car wheels, aside from contour — A. B. Creelman, Youngstown, Ohio, chairman; Walter Goodenough and H. P. Meyers.

Building up flanges by electric welding—Rufus Moses, Youngstown, Ohio, chairman; P. J. Wood and C. W. Folwell.

Standardization of length of trolley pole — Terrence Scullin, Cleveland, chairman; Clyde Doolittle and F. C. Martin.

Power saving—Guy H. Kelsay, Elyria, Ohio, chairman; A. A. Crawford and Carl Knittle.

A discussion as to the relative merits and economy of trolley wheels versus trolley shoes brought out some interesting information and a wide divergence in the mileage obtained. C. F. Doolittle, master mechanic Cleveland & Erie Railway, Girard, Pa., said that the trolley shoe is far better as a current collector than the wheel and that on his property the cost has been less than it was with wheels. Shoes have been in use on this property for four years and the maximum mileage obtained was 7,200, with an average mileage of about 4,500. After wearing a groove so that removal is necessary, Mr. Doolittle said that some of these shoes have been built up by electric welding with medium steel and 2,000 miles additional service secured, but he thought it cost about as much to do this as the additional mileage was worth. The trolley wire was calipered for wearing resulting from the sliding contact, and in one year's time the

greatest wear at any of the test points was found to be .003 in, and the average wear .0015 in. He considered that the quieter operation of the shoe was a very important consideration. An important thing is to see that the current shunt on the shoe does not come off, for if it does it is possible for the shoe to catch on a span wire, should the shoe jump off the wire, and pull the overhead down. He said it is impossible to back up with the shoe after it becomes worn and it is necessary for the conductor, therefore, always to take hold of the trolley rope when backing up. In comparing the mileage obtained with wheel and shoe, Mr. Doolittle said he had never been able to get more than 1,500 miles out of 5-in. trolley wheels.

On the other hand, A. B. Creelman, Youngstown, with an average mileage of 6,000 with trolley wheels, had had very much better results with the wheel than with the shoe, and he said that this experience on the Youngstown Municipal Railway covered practically all possible conditions of motors, voltage, trolley stands, overhead, etc. He pointed out that much better results are obtained with the shoes where they are not mixed in with wheels, as the latter leave a certain amount of pitting and roughness on the wire, which tends to wear out the shoe, whereas the use of all shoes on a line tends to make the wire slick and smooth and reduces wear.

The discussion as to the possibility of standardizing on the length of trolley pole developed the fact that poles of 12-ft., 13-ft. and 14-ft. lengths are used on city and interurban cars and that there appears to be no very definite reason for the use of one length as against another. The committee appointed to study this matter will endeavor to tabulate the maximum heights of trolley, car heights and overhang and then determine through what ranges of these values a certain length of pole can be used, looking to the adoption of a single standard if possible.

R. D. Miller, master mechanic, Stark Electric Company, in responding to a

question about the results obtained with energy saving devices, stated that a very substantial saving had been made on his property with the use of Economy watt-hour meters. In addition to the energy saving, they had been responsible for a brakeshoe saving of 5 per cent and a reduction in armature trouble of 30 per cent. A good spirit of competition among the motormen has continued after two years use of the meters.

The discussion then turned to some troubles that had been experienced with safety car equipment. Mr. Creelman related how on two or three occasions a motorman had complained that he could get no air on one stop, but that it worked all right before and after that particular stop. At first he thought it was due to the motorman throwing his valve into the wrong position, but it was later found that it is possible for the double-check valve to get gummed up or corroded and stick, so that the operator would get no air momentarily. He pointed out that it pays to take this valve off and clean it periodically; in fact, he was inclined to think that the double-check valve might be done away with altogether. Another trouble mentioned was that of receiving an emergency application of the air when only the ordinary application was wanted, one of the delegates stating that this had happened on several different cars. Mr. Goodenough had had the same trouble and had found it to be the result of scale in the pipe, or lead from the fittings, etc., a thing which is very likely to happen when cars are new, resulting in clogging up the triple valve.

It had been suggested that it would be very valuable to compile some comparative cost data on car maintenance. Mr. See presented a tentative suggestion as to the items to be covered in this tabulation and it was decided to utilize a portion of this suggested form and apply it for the present only to safety cars. This work will be done between now and the next meeting, at which time members were requested to bring in additional suggestions as to what information it is desirable to have tabulated. The data that will be compiled on this first study will be the cost as divided between repair and inspection, for the following: Total cost per car-mile; total cost per car operated; man-hours per 1,000 car-miles; man-hours per car operated; men per 1,000 car-miles; men per car operated; cost of car cleaning per 1,000 car-miles; man-hours per car cleaned; lubrication per car cleaned; lubrication cost per 1,000 car-miles; brakeshoe cost per 1,000 car-miles; pull-ins per 1,000 car-miles; pull-ins per cent of cars operated.

Mr. Shepard Will Lecture on Trunk Line Electrification

F. H. SHEPARD, director of heavy traction, Westinghouse Electric & Manufacturing Company, will give an illustrated lecture on "Electrification of Trunk Line Railways," at the Brooklyn Academy of Music under the auspices of the Brooklyn Institute of Arts and Sciences on Wednesday evening, Nov. 30, 1921. It will be Mr. Shepard's purpose to present a comprehensive but general picture of the present status of heavy electric traction in a popular and interesting way, and also to outline its possibilities and limitations.

Committee on Pipe Flanges and Fittings Starts Work

THE sectional committee of the American Engineering Standards Committee appointed to standardize pipe flanges and fittings held its first meeting Friday, Nov. 18, in the rooms of the American Society of Mechanical Engineers, New York City. Prof. Collins P. Bliss of New York University was elected chairman and A. A. Ainsworth of the committee of manufacturers on standardization of fittings and valves was chosen secretary.

The sponsors of the work being undertaken by this committee are the American Society of Mechanical Engineers, the Committee of Manufacturers on Standardization of Fittings and Valves and the Heating and Piping Contractors' National Association. In addition to these three societies twelve other associations, among which is the American Electric Railway Engineering Association, have representatives on the committee.

It was decided to divide the work to

be undertaken into three divisions. The first includes the revision and extension of the present so-called "American" or "U. S." standards for pipe flanges and flanged fittings for working pressures of 50, 125 and 250 lb. The second includes the revision and extension of standards for pipe flanges and flanged fittings for working pressures greater than 250 lb. to the square inch, and the third comprises the work of standardization of the dimensions of malleable, cast iron, steel and non-ferrous screwed fittings. Sub-committees were appointed on these three subjects. Due to work already accomplished by committees of the three sponsor bodies the work of the third division on standardization of screwed fittings is well advanced and it is thought that this subject can be cleaned up shortly. A large amount of work is necessary in connection with subjects 1 and 2, and in order to avoid duplicating work in the collecting and assembling of various information these two committees will work together as a joint committee for the present.

American Association News

American Association Committees Appointed

PRESIDENT TODD has announced the following committees of the American Association for the association year 1921-1922. The committees as named below are practically complete but are not necessarily final. All those named have been invited to serve, and most of them have accepted, and there will possibly be some additions to some of the committees.

The committee work is getting started with an impetus this year, and augurs well for the year's work. The committees are being appointed early, as noted, there is a good geographical representation and everything points to a successful year's work for the various committees.

This list of committees constitutes all those regular committees provided by the constitution and those special committees authorized by the executive committee, except the one on arrangements for the mid-year dinner, names of which were given in last week's issue.

COMMITTEE ON FINANCE

- J. H. Pardee, chairman, J. G. White Management Corporation, New York.
- J. G. Barry, General Electric Company, Schenectady, N. Y.
- R. P. Stevens, Pennsylvania-Ohio Electric Company, New York, N. Y.

COMMITTEE ON POLICY

- Britton I. Budd, chairman, Metropolitan West Side Elevated Railway, Chicago, Ill.
- Henry G. Bradlee, Stone & Webster, Inc., Boston, Mass.
- H. E. Chubbuck, Illinois Traction Company, Peoria, Ill.
- Thomas N. McCarter, Public Service Railway, Newark, N. J.
- Paul Shoup, Pacific Electric Railway, San Francisco, Cal.

Guy E. Tripp, Westinghouse Electric & Manufacturing Company, New York, N. Y.

J. R. Lovejoy, General Electric Company, Schenectady, N. Y.

COMMITTEE ON SUBJECTS AND MEETINGS

C. D. Emmons, chairman, United Railways & Electric Company, Baltimore, Md.

C. S. Kimball, Washington Railway & Electric Company, Washington, D. C.

J. D. Mortimer, New York, N. Y.

L. H. Palmer, United Railways & Electric Company, Baltimore, Md.

C. G. Rice, Pittsburgh Railways, Pittsburgh, Pa.

F. E. Webster, Massachusetts North-eastern Street Railway, Haverhill, Mass.

H. V. Bozell, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

Harlow C. Clark, Public Service Corporation of New Jersey, Newark, N. J.

H. F. Dicke, Utah Light & Traction Company, Salt Lake City, Utah.

Charles R. Ellicott, Westinghouse Air Brake Company, New York, N. Y.

Harry Reid, Interstate Public Service Company, Inc., Indianapolis, Ind.

COMMITTEE ON PUBLICITY

J. N. Shannahan, chairman, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

P. S. Arkwright, Georgia Railway & Power Company Atlanta, Ga.

Barron G. Collier, Barron G. Collier, Inc., New York, N. Y.

Walter A. Draper, Cincinnati Traction Company, Cincinnati, Ohio.

P. H. Gadsden, United Gas Improvement Company, Philadelphia, Pa.

L. E. Gould, Economy Electric Devices Company, Chicago, Ill.

W. F. Ham, Washington Railway & Electric Company, Washington, D. C.

W. S. Huff, Third Avenue Railway, New York, N. Y.

H. D. Shute, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

L. S. Storrs, The Connecticut Company, New Haven, Conn.

COMMITTEE ON NATIONAL RELATIONS

Charles L. Henry, chairman, Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.

W. R. Alberger, San Francisco-Oakland Terminal Railways, San Francisco, Cal.

Henry G. Bradlee, Stone & Webster, Inc., Boston, Mass.

Arthur W. Brady, Union Traction Company of Indiana, Anderson, Ind.

C. D. Cass, Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.

B. C. Cobb, Hodenpyl, Hardy & Company, Inc., New York, N. Y.

Samuel M. Curwen, The J. G. Brill Company, Philadelphia, Pa.

John J. Stanley, Cleveland Railway, Cleveland, Ohio.

L. S. Storrs, The Connecticut Company, New Haven, Conn.

COMMITTEE ON PUBLICATIONS

L. S. Storrs, chairman, The Connecticut Company, New Haven, Conn.

Harlow C. Clark, Public Service Corporation of New Jersey, Newark, N. J.

E. C. Faber, The Aurora, Elgin & Chicago Railroad, Aurora, Ill.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

C. E. Morgan, Brooklyn City Railroad, Brooklyn, N. Y.

Charles C. Pierce, General Electric Company, Boston, Mass.

A. M. Robinson, The J. G. Brill Company, Philadelphia, Pa.

Martin Schreiber, Public Service Railway, Camden, N. J.

COMMITTEE ON COMPANY AND ASSOCIATE MEMBERS

F. R. Coates, chairman, Community Traction Company, Toledo, Ohio.

W. R. Alberger, San Francisco-Oakland Terminal Railways, Oakland, Cal.

F. G. Buffe, Kansas City Railways, Kansas City, Mo.

L. E. Gould, Economy Electric Devices Company, Chicago, Ill.

J. H. Hanna, Capital Traction Company, Washington, D. C.

P. N. Jones, Pittsburgh Railways, Pittsburgh, Pa.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Henry H. Norris, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

W. S. Rodger, Detroit United Railway, Detroit, Mich.

E. M. Walker, Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.

E. P. Waller, General Electric Company, Schenectady, N. Y.

Rolla Wells, United Railways of St. Louis, St. Louis, Mo.

E. F. Wickwire, Ohio Brass Company, Mansfield, Ohio.

COMMITTEE ON COMPANY SECTION AND INDIVIDUAL MEMBERSHIP

Martin Schreiber, chairman, Public Service Railway, Camden, N. J.

P. S. Arkwright, Georgia Railway & Power Company, Atlanta, Ga.

J. P. Barnes, Louisville Railway, Louisville, Ky.

F. G. Buffe, Kansas City Railways, Kansas City, Mo.

Walter A. Draper, Cincinnati Traction Company, Cincinnati, Ohio.

J. H. Mallon, Metropolitan West Side Elevated Railway, Chicago, Ill.

Charles C. Pierce, General Electric Company, Boston, Mass.

J. N. Shannahan, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

COMMITTEE ON CO-OPERATION WITH MANUFACTURERS

E. F. Wickwire, chairman, Ohio Brass Company, Mansfield, Ohio.

E. C. Faber, Aurora, Elgin & Chicago Railway, Aurora, Ill.

Frank Gale, General Electric Company, Schenectady, N. Y.

P. N. Jones, Pittsburgh Railways, Pittsburgh, Pa.

J. C. McQuiston, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

COMMITTEE ON CO-OPERATION WITH STATE AND SECTIONAL ASSOCIATIONS

W. H. Sawyer, chairman, East St. Louis & Suburban Railway, East St. Louis, Ill.

C. P. Billings, Wheeling Traction Company, Wheeling, W. Va.

Luke C. Bradley, Stone & Webster, Inc., Houston, Tex.

F. D. Burpee, Ottawa Electric Railway, Ottawa, Canada.

T. B. Donnelly, West Penn Railways, Connellsville, Pa.

W. V. Hill, California Electric Railway Association, San Francisco, Cal.

Louis D. Pellissier, Holyoke Street Railway, Holyoke, Mass.

R. V. Prather, Illinois Committee on Public Utilities Information, Chicago, Ill.

J. P. Pulliam, Wisconsin Public Service Company, Milwaukee, Wis.

Harry Reid, Interstate Public Service Company, Indianapolis, Ind.

John Shartel, Oklahoma Railway, Oklahoma City, Okla.

B. E. Tilton, New York State Railways, Syracuse, N. Y.

H. E. Weeks, Tri-City Railway & Light Company, Davenport, Ia.

COMMITTEE ON EDUCATION

Edward Dana, chairman, Boston Elevated Railway, Boston, Mass.

Edward J. Blair, Metropolitan West Side Elevated Railway, Chicago, Ill.

H. C. Donecker, Public Service Railway, Newark, N. J.

Thomas Finigan, American Brake Shoe & Foundry Company, Chicago, Ill.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

F. R. Phillips, Pittsburgh Railways, Pittsburgh, Pa.

A. E. Potter, United Electric Railways, Providence, R. I.

Thomas H. Schoepf, Cincinnati Traction Company, Cincinnati, Ohio.

William Von Phul, Market Street Railway, San Francisco, Cal.

Edward A. West, Denver Tramway Company, Denver, Col.

Thomas S. Wheelwright, Virginia Railway & Power Company, Richmond, Va.

COMMITTEE ON ELECTROLYSIS

W. J. Harvie, chairman, Auburn & Syracuse Electric Railroad, Auburn, N. Y.

L. P. Crecelius, Crecelius & Phillips, engineers, Cleveland, Ohio.

M. B. Rosevear, Public Service Railway, Newark, N. J.

W. H. Sawyer, East St. Louis & Suburban Railway, East St. Louis, Ill.

G. W. Van Derzee, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

COMMITTEE ON MAIL PAY

L. H. Palmer, chairman, United Railways & Electric Company, Baltimore, Md.

Gordon Campbell, York Railways, York, Pa.

G. K. Jeffries, Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

R. A. Leussler, Omaha & Council Bluffs Street Railway, Omaha, Neb.

Samuel Riddle, Louisville Railway, Louisville, Ky.

W. S. Rodger, Detroit United Railway, Detroit, Mich.

C. L. S. Tingley, American Railway, Philadelphia, Pa.

H. B. Weatherwax, United Traction Company, Albany, N. Y.

COMMITTEE ON SPECIAL TAXES

C. D. Emmons, chairman, United Railways & Electric Company, Baltimore, Md.

Edwin Gruhl, North American Company, New York, N. Y.

W. F. Ham, Washington Railway & Electric Company, Washington, D. C.

A. M. Robertson, Twin City Rapid Transit Company, Minneapolis, Minn.

Henry B. Sawyer, Stone & Webster, Inc., Boston, Mass.

COMMITTEE ON TRACKLESS TRANSPORTATION

H. B. Flowers, chairman, United Railways & Electric Company of Baltimore, Baltimore, Md.

R. E. Danforth, Public Service Railway, Newark, N. J.

W. J. Flickinger, The Connecticut Company, New Haven, Conn.

Samuel W. Greenland, Indiana Service Corporation, Fort Wayne, Ind.

C. W. Kellogg, Stone & Webster, Inc., Boston, Mass.

R. V. Miller, Sapulpa Electric Interurban Railway, Sapulpa, Okla.

H. A. Mullett, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

- D. W. Pontius, Pacific Electric Railway, Los Angeles, Cal.
 H. B. Potter, Boston Elevated Railway, Boston, Mass.
 J. N. Shannahan, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

COMMITTEE ON VALUATION

- J. P. Barnes, chairman, Louisville Railway, Louisville, Ky.
 Arthur W. Brady, Union Traction Company of Indiana, Anderson, Ind.
 Robert M. Feustel, Indiana Service Corporation, Fort Wayne, Ind.
 Williston Fish, Chicago Surface Lines, Chicago, Ill.
 W. H. Maltbie, attorney-at-law, Baltimore, Md.
 Albert S. Richey, Worcester, Mass.
 William H. Sawyer, East St. Louis & Suburban Railway, East St. Louis, Ill.
 Paul Shoup, Pacific Electric Railway, San Francisco, Cal.

Engineering Association Committees Appointed

PRESIDENT KIMBALL of the Engineering Association announces the following committee personnel for the association year 1921-1922, which represents the committees in so far as they have been named, to date.

The committee on buildings and structures will be completed shortly and its personnel announced.

COMMITTEE ON EQUIPMENT

- R. H. Dalgleish, chairman, Capitol Traction Company, Washington, D. C.
 Daniel Durie, sponsor, West Penn Railways, Pittsburgh, Pa.
 W. S. Adams, The J. G. Brill Company, Philadelphia, Pa.
 H. A. Benedict, Public Service Railway, Newark, N. J.
 A. H. Daus, Metropolitan West Side Elevated Railway, Chicago, Ill.
 L. J. Davis, Brooklyn City Railroad, Brooklyn, N. Y.
 J. L. Gould, Wilmington & Philadelphia Traction Company, Wilmington, Del.
 J. M. Hipple, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
 J. C. C. Holding, Midvale Steel & Ordnance Company, Philadelphia, Pa.
 Robert Long, Altoona & Logan Valley Railway, Altoona, Pa.
 A. J. Miller, representative Association of Manufacturers of Chilled Car Wheels, Chicago, Ill.
 M. O'Brien, United Railways of St. Louis, St. Louis, Mo.
 C. M. Pittenger, Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.
 E. D. Priest, General Electric Company, Schenectady, N. Y.
 C. F. Rys, Carnegie Steel Company, Pittsburgh, Pa.
 C. W. Squier, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

COMMITTEE ON POWER DISTRIBUTION

- M. B. Rosevear, chairman, Public Service Railway, Newark, N. J.

- Charles R. Harte, sponsor, The Connecticut Company, New Haven, Conn.
 J. R. B. Armstrong, Brooklyn City Railroad, Brooklyn, N. Y.
 C. C. Beck, Ohio Brass Company, Mansfield, Ohio.
 H. S. Burd, National Conduit & Cable Company, New York, N. Y.
 R. W. Eaton, Public Service Engineer, Providence, R. I.
 Prof. D. D. Ewing, Purdue University, Lafayette, Ind.
 L. F. Griffith, Little Rock Railway & Light Company, Little Rock, Ark.
 H. D. Hawks, Anaconda Copper Mining Company, Chicago, Ill.
 G. C. Hecker, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
 Adrian Hughes, Jr., United Railways & Electric Company, Baltimore, Md.
 Charles H. Jones, Metropolitan West Side Elevated Railway, Chicago, Ill.
 F. McVittie, New York State Railways, Rochester, N. Y.
 G. Hall Roosevelt, General Electric Company, Schenectady, N. Y.
 F. J. White, Okonite Company, Passaic, N. J.

COMMITTEE ON POWER GENERATION

- E. H. Scofield, chairman, Minneapolis Street Railway, Minneapolis, Minn.
 A. B. Stitzer, sponsor, Republic Engineers, Inc., New York, N. Y.
 L. D. Bale, Cleveland Railway, Cleveland, Ohio.
 Walter E. Bryan, United Railways, St. Louis, Mo.
 H. E. Davis, New York State Railways, Utica, N. Y.
 W. S. Finlay, American Waterworks & Electric Company, New York, N. Y.
 Frank G. Frost, New Orleans Railway & Light Company, New Orleans, La.
 C. A. Greenidge, J. G. White Management Corporation, New York, N. Y.
 F. C. Hanker, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
 H. A. Kidder, Interborough Rapid Transit Company, New York, N. Y.
 G. Hall Roosevelt, General Electric Company, Schenectady, N. Y.
 George W. Saatonoff, Henry L. Doherty & Company, New York, N. Y.
 A. E. Stierly, Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.
 G. W. Welsh, East St. Louis Railway, East St. Louis, Ill.

COMMITTEE ON PURCHASES
AND STORES

- W. H. Staub, chairman, United Railways & Electric Company, Baltimore, Md.
 L. C. Datz, sponsor, American Cities Company, Birmingham, Ala.
 William C. Bell, Virginia Railway & Power Company, Richmond, Va.
 C. A. Harris, Pittsburgh Railways, Pittsburgh, Pa.
 J. R. McGivney, New Orleans Railway & Light Company, New Orleans, La.
 W. D. Pierie, Philadelphia Rapid Transit Company, Philadelphia, Pa.
 W. S. Simonds, Denver Tramways Company, Denver, Col.

COMMITTEE ON STANDARDS

- Martin Schreiber, chairman, Public Service Railway, Camden, N. J.
 H. L. Andrews, General Electric Company, Schenectady, N. Y.
 Edward J. Blair, Metropolitan West Side Elevated Railroad, Chicago, Ill.
 C. H. Clark, Cleveland Railway, Cleveland, Ohio.
 L. P. Crecelius, Crecelius & Phillips, Cleveland, Ohio.
 E. R. Hill, Gibbs & Hill, New York, N. Y.
 C. G. Keen, American Railways, Philadelphia, Pa.
 John Lindall, Boston Elevated Railway, Boston, Mass.
 George P. Lyman, William Wharton, Jr., & Company, New York, N. Y.
 H. H. Norris, ELECTRIC RAILWAY JOURNAL, New York, N. Y.
 N. W. Storer, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
 N. B. Trist, Carnegie Steel Company, Pittsburgh, Pa.

COMMITTEE ON UNIFICATION OF
CAR DESIGN

- H. H. Adams, chairman, Chicago Surface Lines, Chicago, Ill.
 H. A. Johnson, sponsor, Metropolitan West Side Elevated Railway, Chicago, Ill.
 H. A. Benedict, Public Service Railway, Newark, N. J.
 J. A. Brooks, J. G. Brill Company, Philadelphia, Pa.
 J. W. Hulme, International Railway, Buffalo, N. Y.
 G. L. Kippenberger, St. Louis Car Company, St. Louis, Mo.
 John Lindall, Boston Elevated Railway, Boston, Mass.
 Victor R. Willoughby, American Car & Foundry Company, New York, N. Y.

COMMITTEE ON WAY MATTERS

- W. F. Graves, chairman, Montreal Tramways Company, Montreal, Quebec, Canada.
 R. C. Cram, sponsor, Brooklyn Rapid Transit Company, Brooklyn, N. Y.
 C. A. Alden, Bethlehem Steel Company, Steelton, Pa.
 V. Angerer, William Wharton, Jr., & Company, Inc., Easton, Pa.
 S. Clay Baker, East St. Louis Railway, East St. Louis, Ill.
 W. R. Dunham, Jr., Engel and Hevenor, Engineers, New York, N. Y.
 E. B. Entwisle, Lorain Steel Company, Chicago, Ill.
 H. Fort Flowers, Differential Steel Company, Findlay, Ohio.
 C. F. Gailor, consulting engineer, New York, N. Y.
 Howard H. George, Public Service Railway, Newark, N. J.
 J. H. Haylow, Memphis Street Railways, Memphis, Tenn.
 Eugene P. Roundey, New York State Railways, Utica, N. Y.
 E. M. T. Ryder, Third Avenue Railway, New York, N. Y.
 Francis Tingley, Washington Railway & Electric Company, Washington, D. C.
 W. W. Wysor, United Railways & Electric Company, Baltimore, Md.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City Operation Ends Argument!

Meridian Light & Railway Retains Ownership Under Municipal Board For Three Year Experiment

City operation of the Meridian Light & Railway Company, Meridian, Miss., is the basis of the agreement reached between the municipal authorities and the company after months of negotiations. The contract will be subject to ratification at the polls.

Under the agreement, the City Council is granted the right to operate the entire plant of the company, which furnishes the city with gas, power and railway service, through a board of directors. This board is to be composed of three members appointed by the Council, three appointed by the company, and the Mayor, who shall be the chairman. The board has the power to fix rates. The balance of power in the board rests with the city.

The city under the proposed contract does not guarantee to the company either earnings or interest returns, and no fixed capitalization is agreed upon as a basis for rate making. On the other hand, the company agrees to pay the city in full the total amount already expended by the city in establishing a municipal light and power plant. The city agrees not to build any gas, light or street railway plant during the term of the contract.

The contract is to run for three years, and is subject to renewal thereafter. It is an experiment only, so that the city may, by actual operation, determine the cost and expense of service furnished. Thereafter a permanent agreement is to be made.

This understanding, which must be approved by the Cities Service Company, holding organization for the Meridian Light & Railway Company, concludes the long disagreement between the city and company. For several years the city has been preparing to construct a plant of its own, and recently the citizens voted \$600,000 for the purpose. Another election will now be necessary to approve the new contract.

The company has left to the city the responsibility to operate the plant for the best interests of the citizens. It is generally agreed that both company and city displayed good faith in the intentions of the other in coming to an understanding, and making possible the amicable settlement. Two representatives of the company on the board are to be chosen by the committee of bondholders and the other is to be selected by the City Service Company.

Wages Cut 10 Per Cent at Dallas

The Texas Electric Railway, Dallas, Tex., announces that wage cuts of approximately 10 per cent will be put into effect over its entire system on Dec. 1. Shrinkage of a \$500,000 in passenger receipts since Jan. 1, 1921 is assigned as the reason for the reduction.

The reduction will affect all officials of the road, the personnel of the general offices, motormen, conductors, passenger and freight agents, freight handlers, employees of the main shops at Monroe and the branch shops at Sherman and Waco. The employees on the local lines in Sherman, Denison, Waco, Corsicana, Waxahachie and McKinney will also be affected.

The Texas Electric Railway employs approximately 954 men, of which number 242 are motormen and conductors. Approximately 300 work in the shops, and the others in the various offices of the company, or as its traveling agents. The payroll for the entire system last month was \$77,690.

Officials of the company declared that they faced the alternative of reducing the force or cutting the pay, and the wage cut was decided on because laying off any number of men would aggravate the unemployment situation in Texas.

Albany Strike Declared Off

The strike of the 714 trainmen employed on the lines of the United Traction Company, Albany, N. Y., which has been in progress since Jan. 29, was called off on Nov. 22 by a vote by ballot at a meeting of the union following the calling off of the strike in Troy by the trolleyman's union there on Nov. 21.

The vote to call off the strike on the Albany division came after a two-hour debate at which many members of the union voiced opposition. The vote stood at the close of the balloting ninety-four in favor of calling off the strike and sixty-five for continuing it. When the result was announced a resolution was passed at the suggestion of Joseph S. Droogan, president of the Albany union, making the vote unanimous.

The immediate effect of calling off the strike is the sanctioning of the riding on the cars of the general public, many of whom have remained off the cars since the starting of the strike. Members of the union declared that there was an understanding that a large percentage of the present conductors and motormen would be dismissed and that old men would be placed on jobs as fast as possible.

Political and business leaders in Albany and Troy are said to have been behind the movement to bring about peace. Over half of the old men are engaged in other occupations and the union, except in name, is virtually broken. The United Traction Company under its system of one-man cars will not be in need of as many men as before, and this coupled with the fact that some of the present employees will be kept on their jobs, is expected to result in some of the former employees being prevented for several months from being returned to their old positions. The men will return to work at the rate against which they struck, 45 cents an hour. The majority of the men seemed elated over the fact that the strike had been called off.

Des Moines Campaign Closing

Restraining Order Sought from Court on Eve of Putting Franchise to Public Vote.

Opponents of the new franchise proposed for the Des Moines (Iowa) City Railway have sought to prevent by injunction proceedings the franchise election which had been set for Nov. 28. Grant Van Horn, a member of the North Des Moines Improvement League, on Nov. 18 filed a petition in the District Court asking a temporary order restraining the election.

Mr. Van Horn had his petition prepared by a group of attorneys inimical to the franchise, among whom was H. W. Byers, former corporation counsel, who has been waging an emphatic fight against the Des Moines City Railway.

Claim is made by Mr. Van Horn as the principal reason for enjoining the election that the City Council did not comply with the statutes by having the franchise published four consecutive weeks before it was passed by the Council. Mr. Van Horn also contends that the Des Moines City Railway is insolvent and that for this reason the city does not have proper guarantee that the company will bear the expense of the special election. Attention is also called to the fact that no bond has been filed by the company. Another claim is that in view of the company's insolvency the city has no guarantee that the franchise terms will be carried out by the company.

The business and civic interests of the city have, however, been roused and it seems that there is a determination to put the franchise across. A committee of fifty representative citizens and women has now been named and the conduct of the campaign will be guided by an executive committee of which Alex. Fitzhugh, former president of the Chamber of Commerce, is chairman. One of his two associates is Miss Luella Clark, head of the Department of Women's Affairs of the Chamber.

Women will play an important part in the campaign. Miss Clark, who is heading up the women's campaign, is authority for the statement that they have pledged from 5,000 business women and 6,000 club women to vote for the franchise.

Straw votes taken by one of the daily newspapers indicate that the franchise will carry.

Bus operation has gradually been curtailed since the railway service was restored until there are now only twenty-five or thirty buses running as against a maximum of 125. Many lines have been abandoned entirely by the bus operators.

The hearing on the injunction case was not completed on Nov. 23. Mr. Byers took up most of Nov. 23 with his argument and Mr. Gamble, the railway attorney, had barely started his argument when the court adjourned until Nov. 26.

Mr. Shearn Stresses Interborough Dividend Policy

Examination by New York Commission Is Devoted Principally to the Affairs of Interborough Company—Auditor Gaynor and President Hedley Chief Witnesses

The hearing into the affairs of the New York transportation companies, begun Nov. 15, has been continued during this past week. The plan followed has been first to establish certain data, then examine the officials of the different companies on these data. During the early part of the week the chief point discussed was the inclusion in the Interborough balance sheet at cost of the stock of unprofitable trolley lines in Queens Borough, as well as the inclusion of advances to those and other unprofitable controlled lines. Stress was also laid on the large dividends paid up to 1919 by the Interborough Company and its failure to amortize certain organization expenses.

ATTORNEY SHEARN of the commission declared at one point in the examination that this purpose in asking certain questions relating to past financial acts was not to place obloquy upon any person living or dead, but to get facts so as to bring about a remedy. In addition to the summary printed below of the hearings, some of the charts and tables presented at the hearing will be found on page 941 of this issue.

At a hearing on Thursday morning, Nov. 17, the first testimony presented was in regard to the abandonment of routes. It was shown that the total amount abandoned was 189 miles, of which 108 miles were on the Brooklyn surface lines, 9 miles on the Queens surface lines, 11 miles on the Bronx surface lines, and 60 miles on the Manhattan surface lines. This figure is larger than the miles of track abandoned to the extent of the length of track formerly used jointly by two or more companies and abandoned by one but still used by another or others.

INTERBOROUGH BALANCE SHEET CONSIDERED

Frederick W. Lindars then testified as to the outstanding capital stocks and bonds of the different companies in New York, which aggregated \$1,165,849,431. Of this amount \$850,228,126 is in the hands of the public. He also testified as to what portion of the capitalization of each company is in the hands of the public and what owned by another company, the dividend records, the interest payment dates, and the approximate market value of the securities as shown by recent quotations, when they were available. He said among other things that the Interborough Rapid Transit Company showed a deficit for 1917 after dividends of \$139,607; for 1918, of \$1,462,241, and in 1919 of \$5,560,340. The differences between the deficits thus shown and the amount paid out in dividends, Mr. Shearn, counsel for the commission then intimated, must have been paid out of surplus, if there was a surplus, or out of capital if there was not any surplus. Mr. Quackenbush declared that the surplus from previous years supplied these dividend payments.

E. F. J. Gaynor, auditor Interborough Rapid Transit Company, who then went on the stand, was asked about the balance sheet of the Interborough Rapid Transit Company, particularly the account of miscellaneous investments, consisting of the stock of associated companies which totaled \$19,378,244. This account includes stock of the New York & Queens County Railway with a par value of \$3,204,800, which cost the company

\$2,895,160, and was carried on the books as that amount. Mr. Shearn pointed out that the last annual report of the New York & Queens County Company to the commission showed a corporate deficit of \$4,677,949, and a net loss in operation for the year of \$635,855, and he asked Mr. Gaynor whether there was justification for carrying in the Interborough balance sheet that stock as an asset when the company had been showing year after year a net loss in operation. Mr. Shearn also called attention to the inclusion in the assets of the advances made to this company by the Interborough amounting to over three million dollars, and also accounts receivable from other railway companies, including the New York Railways.

The question then arose as to the amount at which these securities should be carried in the Interborough balance sheet, Mr. Gaynor declaring that the rules of the commission require that they should be carried at cost. After some discussion Mr. Shearn asked the witness whether the stock of a company is carried in a balance sheet as an asset and the stock is worthless that report gives a true statement of the condition of the company. Mr. Gaynor claimed that this situation did not apply in this case as he did not know the value of the stocks in question, but Mr. Shearn said the question was a hypothetical one, and the commission said it would ask the witness to reply to it at the next session, or at that on Nov. 21. Before the close of the session Mr. Quackenbush, attorney for the Interborough, explained that the witness and the company had no desire to evade any questions. He said that he himself was ready to answer "yes" to the question, on behalf of the company, but that he believed the investigation by the commission's experts would show that the value of the Queens County Company was not far from the book value.

SUBWAY EARNED \$67,000,000

It was also brought out in Mr. Gaynor's testimony that unpaid taxes of the Interborough Company at the end of the fiscal year, June 30, 1921, amounted to \$2,165,162. The reason they had not been paid was that the company last year lost four and a half million dollars on top of a loss of about the same amount the year before, and it was extremely short of cash.

At the hearing on Monday, Nov. 21, Mr. Lindars, accountant for the commission, was again the first witness and testified that the accounts of the Interborough Rapid Transit Company showed that its total dividends during the eighteen years of its life amounted to \$65,625,000, and that its entire net

income during this time, after surplus adjustments, was \$67,867,878.48, leaving as a surplus \$2,242,878.48. He said that this amount did not include any deductions for worthless stock, many uncollectible debts, and open accounts and bills receivable. The dividends paid amounted to 187½ per cent on the capital stock of the company, and to 306 per cent of the actual cash capital of the company. The witness also said that during these eighteen years the company had paid under its lease of the Manhattan Railway Company as dividends to the stockholders of that company \$75,336,000, which, Mr. Shearn declared, was within \$4,000,000 of the entire cost of the original elevated railway, according to the reports which he had from the valuation department of the commission.

Mr. Latey, engineer of equipment and operation of the commission, then testified as to changes in the Interborough train schedule between 1916 and 1921, showing on some routes fewer trains run and on other routes more trains. Testimony was also presented as to the cars run by other companies in New York during the rush hour and mid-day.

AMORTIZATION DEPRECIATED ASSETS RECOMMENDED

Mr. Gaynor was then recalled and in reply to the question, "If your account on its asset side includes among the assets stocks to the extent of millions of dollars which are in fact worthless, then so far as that item is concerned, the account does not truly set forth the condition of the company," answered "Yes." Mr. Shearn then asked whether, if the investments were put down at cost there ought not to be set up on the opposite side of the account in a reserve an amount to represent what was written off, as well as to cover advances which had been found uncollectible. At the same time he declared that the rules for uniform accounting provide for optional reserves as well as for required reserves and that in an amount of \$29,000,000 set up as coming from accruals on contract No. 3, the company did not let that stand on the assets without some reserve against it on the liability side. The witness replied that in that case the change was ordered by the commission. Mr. Shearn then quoted the practice of the Third Avenue Railway, which had established a reserve account to carry losses sustained on stocks of controlled companies and other items some of which had been proved worthless. Mr. Gaynor thought that had been done because of the reorganization of the company. Mr. Shearn then asked the witness in regard to whether reserves had been established for amortizing the cost to the company of acquiring the Rapid Transit Construction Company. He then brought out the fact that John G. McDonald, who held the original subway contract, had transferred three-quarters interest in this contract to the construction company. Then when the Interborough took over this contract it had issued for the stock of the construction company its own stock for \$9,600,000 and had paid \$2,400,000 in cash, or \$12,000,000 in all for the construction company. In addition, it paid Mr. McDonald \$2,500,000 for his quarter interest, and Mr. Belmont \$1,500,000 for his services in procuring the contract and for certain property,

making a total of \$16,000,000. Mr. Gaynor, however, pointed out that in acquiring the construction company the Interborough had also acquired a company with \$6,000,000 of cash paid in by the shareholders of the company, so that the cost of the subway lease was about \$10,000,000. No part of this has been written off by the company.

A discussion then followed as to the extent to which these reserves, had they been established by the company, would have affected the surplus shown by the company during some of the years when dividends were paid, and Chairman McAneny suggested that it might be well to invite the directors of the company to testify on these points. Mr. McAneny said in part, in this connection:

Mr. Gaynor can tell us about matters of record. He cannot tell us about matters of judgment where the company in its action has been represented by its own directors.

The commission has no desire to rake over what is merely old, but until these matters have been rightly adjusted none of them are old. Moreover, a great deal has been produced that is distinctly new and important and tending to indicate that the inquiry should proceed further into the direction of responsibility.

There are questions here already on the record that will intimately affect the matter of ultimate valuation; there are questions with relation to the strength or propriety of the position taken by the company in the immediate past in relation to its ability to furnish proper service; there are points that have developed here this afternoon that raise in my mind, and I am sure in the minds of my associates as well, serious questions as to the practical result of inter-company relationships of the sort that the plan of the commission seeks to eliminate.

For all of these reasons it seems to be important that the attendance of the directors should be invited.

It is expected that some of the directors will be called next week.

The greater part of the hearing on Tuesday, Nov. 22, was given up to the examination of the operating expenses of the Interborough Rapid Transit Company for June, 1921. Mr. Gaynor, the auditor, explained how these accounts are audited and how the payroll is made up and checked, and he followed through a number of items to illustrate the manner followed. In the discussion on the power accounts it developed that the cost of a. c. generation at the switchboard at the Fifty-ninth Street power station for the month of June 30, 1921, was 0.8239 cents per kilowatt-hour. The cost of coal was 0.6247 cents. The question of the disposition of the bonuses voted to different people several years ago for their services in negotiating for the subway contracts was inquired into, and Mr. Gaynor said that these were now being carried in a suspense account. In answer to another question he said the cost of the recent publicity work is considered operating expense.

The morning of Wednesday, Nov. 23, was devoted to the examination of Mr. Hedley, who said that he had been elected president in October, 1919. Prior to that time, while vice-president and general manager, he had given special attention to operation, construction and maintenance. He has been in charge of operation with the Interborough Company since the subway was opened, under different titles.

When asked in regard to the last balance sheet of the company and more particularly the inclusion in it at cost of the New York & Queens County stock as well as debts of some of the controlled companies said to be uncollectible, Mr. Hedley said he would not admit the stocks were worthless or all debts un-

collectible. All reports of the company to the commission had been made up, he understood, in the manner required by law. He did not believe that any investor had been misled by these reports. He believed that in balance sheets, assets which were known to be worthless should be written off. He welcomed the fact that a tribunal was planning to take up and straighten out the transportation situation in New York, and he said that the commission would have his full co-operation.

When asked why the Interborough company continued to supply power to the Queensborough lines when it was not being paid for such service, he said that if this supply was not continued the cars would stop. This would be a serious matter for both the company and residents of Queens Borough. The board of directors hoped that the situation with regard to the Queens lines would be improved as a result of the present hearing. He justified the charges to operating expenses for publicity because he thought the customers of a railway company were entitled to know about its condition. The information put out to a large extent was not propaganda for an 8-cent fare, that not having been mentioned for a long time.

Mr. Hedley said he had about come to the conclusion that if he was going to operate cars in New York, 5 cents was all he would get for some years. When asked if his personal judgment favored the payment by the company in dividends of a large proportion of its profits, he declared that, as events had turned out, it would have been better to have provided a substantial reserve in cash and in liquid investments. Nevertheless, if it had not been for the war, the Interborough could probably have kept up dividends. No dividend had been declared since he became president. If any dividends had been paid with borrowed money, as intimated, he disapproved of that course.

The Manhattan lease for a long time was profitable, but recently the Manhattan elevated lines had not earned their guaranteed dividends. In Mr. Hedley's opinion, this was due in a large part to the increase in prices of labor and material brought about by the war. The recent reduction in wages on the subway and elevated would mean a saving to the company of about \$2,600,000 a year. This reduction was made voluntarily by the men in spite of the fact that they had a contract with the company to run until Dec. 31, 1921. Mr. Hedley said he had told the men that if there was no reduction in wages the company would probably have to go into the hands of a receiver. The men did not want a receiver, so they accepted the reduction.

The commission solicited Mr. Hedley's personal opinion on its proposed plan for readjustment of the traction situation in this city, with a 5-cent fare and three operating companies. He criticized the proposed board as dangerous because it might be controlled by politicians. He said:

The owners of the new securities which the commission proposes to issue have the privilege of electing three directors; the Mayor names three. The six name the seventh, providing they agree. If they don't agree they come back to the commission and the commission names the seventh.

Now, you have the opportunity of having on that board to control the transportation system four politicians. I think that should be positively avoided. If you introduce politics into the actual operation

of these rapid transit lines in New York, it is my opinion that you will immediately step down the factor of safety and efficiency; and everything should be done to positively prevent politics from representing the majority on that board.

WANTS ALL REPRESENTED

My remarks apply to all the boards that will be created if this plan of the commission is carried out. There should be no board in my judgment where the majority of that board could possibly be made up of politicians or people that were in politics, people appointed by a political party.

I tell you in all candor that if you ever bring about any condition in this city where any man appointed to public office who more or less is a politician, has anything to say about the character of the men that go in the subway and the things to do in order to make it safe and efficient, you are going to do a very serious thing to the public of New York. The manager has got to be absolutely, in my judgment, unrestricted.

I believe that the board of directors in the management and development of these Rapid Transit properties should have representatives of the city representing the public, representatives of the owners, and also representatives of the employees. Then you have no chance of having any secrets. You have got to lay all your cards on the table, the right side up, and that is my way of doing business.

At the end of the hearing the commission thanked Mr. Hedley for his testimony and promises of co-operation, and he said that he would be ready to come again at any time "during the life of the commission."

When the hearings are resumed next Monday morning, the commission will take up the case of the New York Railways, now in receiver's hands.

Court Asked to Modify Master's Finding

Exceptions and motions to modify and confirm have been made regarding the report of Master Commissioner Okey to the Court of Common Pleas in the action which the Columbus Railway, Power & Light Company, Columbus, Ohio, brought against the Clark interests, formerly affiliated with the utility as its managers. A number of instances are cited in the 250 page plea filed with the court, in which it is urged that the master's decree was not in accord with the evidence presented.

The attorney for the company has made as his first exception the omission by the master to print or refer in any way to the resolution of the present company or its predecessor that grants authority to proper officials to draw funds of the company "to meet the ordinary business transactions of the company." This is regarded as the basic feature of the court proceeding—the thing on which the complaint mostly rests.

In his report the master said that it was not possible to find from the evidence the amount of railway funds contributed by Mr. Stewart, the treasurer of the company, to the Ohio Sun. Further the master said that as it was not possible to make even a remote guess or estimate of the amount so spent, it was idle to indulge in censure.

The company contends that Mr. Stewart in the course of his examination expressed the unqualified opinion that the amount he thought was contributed toward defraying the indebtedness of the Sun was more than \$100,000. As stated previously, this is only one of many instances in which the company feels the master's finding was not in accord with the evidence.

The finding of the master was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 15, page 714.

Respite Granted in Detroit Conference Planned Between City and D. U. R Looking Toward Agreement for Mutual Rights

The City Council of Detroit, Mich., has agreed to suspend the ouster ordinance temporarily to permit negotiations between the Detroit United Railway and the city. This action was taken upon receipt of word from Elliott G. Stevenson, attorney for the Detroit United Railway, that a decision had been reached at a meeting of the board of directors of the company to submit a plan for the approval of the city officials proposing mutual running rights over certain municipal railway and company lines.

The enforcement of the ordinance, which was passed at the Nov. 8 election, would oust the company from Fort Street and Woodward Avenue where franchises have expired.

In a statement by Mayor Couzens the fact was brought out that the Detroit United Railway had asked for permission to submit to the city a proposal concerning mutual running rights in place of its being required to remove the tracks from Fort Street and Woodward Avenue. The city consented to entertain a proposition if the same were approved by the company's directors. The negotiations, according to the Mayor, may take two or three weeks.

A mutual exchange of running rights would help to bring the day-to-day lines and the Woodward and Fort lines into service in connection with the existing municipal lines. Operation of the municipal cars will be over certain sections of the Detroit United Railway system only and vice versa. An exchange of transfers will probably result from the contemplated arrangements.

The problem of the company's interurban service will also be solved by the exchange of running rights. The Detroit United Railway interurban system is one of the most complete in the country, as it is strategically located in southern Michigan connecting up other cities with Detroit.

The city will probably not decide upon the monorail elevated line, for which a proposal was submitted by the Michigan Elevated Railway, until after the present controversy with the Detroit United Railway is settled.

Elgin Officials Disagree on City Policy

Elgin will not join Aurora, Yorkville and Carpentersville to force the third-rail lines of the Aurora, Elgin & Chicago Railroad to continue service, if Mayor Price is successful in his present plans.

Other city officials of Elgin do not agree with the Mayor, however, and a statement issued by the commissioners made it clear that the city will be represented at the hearing on Nov. 21, to investigate financial conditions of the railroad company.

The attitude of the commissioners that Elgin should be interested in the future of the company is more harmonious with that of the other cities which would be affected by a discontinuance of railway service in Elgin and Aurora and the interurban service between Yorkville and Aurora, Aurora and Elgin, and Elgin and Carpentersville. The corporation counsel of Aurora issued the statement that "it is not in

my judgment the law that a public utility can separate its paying properties from its unpaying properties and operate the former and stop the latter."

Mayor Price's demand for a 5-cent fare is considered useless by the commissioners until the hearing called by Federal Judge Evan A. Evans has determined whether the traction company is making money under the present rates. If not, then a reduction to a 5-cent rate could not be expected, the commissioners said.

Wage Decision Awaited in East St. Louis

The board of arbitration hearing the wage scale controversy between the East St. Louis & Suburban Railway, East St. Louis, Ill., and its employees, members of the Amalgamated, has completed the taking of testimony, listened to final arguments, and is expected to hand down a decision in a few days.

President W. H. Sawyer, in summing up the company's side of the case, argued that the wages should be reduced from the 60 cents an hour scale to a graduated pay ranging from 40 to 49 cents an hour. He contended that the present cost of living, as compared with war-time conditions, justified this decrease and would permit the employees to live in about the same manner as formerly. William McMorrow, an international vice-president of the union, argued against a reduction.

Popular Vote in Pomeroy Upholds Railway Against Council

As the election returns are reported from different sections of the country, other instances are shown of electric railway issues supported by popular vote. Several of these were reported in recent issues of this paper. Another example was the case of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio.

In October, 1919, this company secured from the municipal Council a franchise that was considered workable, which it was proposed should be accepted. A referendum petition, however, was filed, within the thirty-day limit against this franchise which made it ineffective. This was voted on at the election in November, 1920, and the franchise was sustained by a majority vote of four to one. Under the law the company had thirty days in which to make its acceptance, but before this was completed, the municipal Council passed an ordinance purporting to repeal the franchise upon which such an overwhelming vote had been cast.

Another referendum petition was circulated and filed. This was brought to the vote of the people at the election Nov. 8, 1921. This repealing ordinance was not sustained, the vote being two to one in favor of its rejection. It has thus taken two years to make effective the franchise of 1919, but the public indorsement for street railway service in this case is decisive.

To Beautify Grounds.—The officials of the Dallas (Tex.) Railway Company have reached an agreement with the city for the beautification of the land before the promenade of the State Fair Grounds. It is planned to level the grounds, put down sod and keep the grass trimmed and the plot beautified.

News Notes

Electric Encourages Church-Going.—The Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., has begun a campaign to have attendants at church use its cars as a means of traveling to and from the services.

Protests Made Against Track Removal.—The Oklahoma Corporation Commission will hold a hearing on the complaint of the residents living in the southeast part of the city of Tulsa against the tearing up of the Oklahoma Union Railway's tracks from Eleventh to Eighteenth Street.

Revenue from Chewers Spurned.—The city utilities committee of the City Council of Seattle, Wash., has rejected a proposal to enter into a contract with a private company to install gum-vending machines on all Seattle Municipal Street Railway cars. The company estimated the machines would add about \$30,000 to the yearly revenues of the railway.

Plans for Citizens to Vote on Franchise.—Alderman Kinard at Ottawa, Ontario, has filed a motion for presentation to the City Council, asking that the city counselor be instructed to prepare the necessary by-law to permit of the vote being taken at the January election on the question of a definite franchise of the Ottawa Electric Railway for thirty years.

People Will Decide Issue.—Muskegon and Muskegon Heights, Mich., will hold special elections within the next month to decide whether electric railway or bus transportation is desired. If the people vote against eliminating two competing bus lines, the commission will allow the Muskegon Traction & Light Company to discontinue service Dec. 20. The buses making short hauls charge 5 cents, while the street cars charged 10 cents cash fare or four tickets for 30 cents.

Will Discuss Railway's Problems.—Conferences between William L. Harrison, newly elected City Commissioner, who has been assigned to the department of public utilities; J. S. Pevar, president of the Birmingham Railway, Light & Power Company, and Lee C. Bradley, receiver for the company, will be arranged in a short time. Litigation now pending between the city and the company and the policy to be adopted by the new city administration in regard to the electric railway will be discussed at these conferences.

Ashtabula Refused Ownership.—By a vote of nearly two to one, the proposal was defeated that the city of Ashtabula, Ohio, take over the property of the Ashtabula Rapid Transit Company at \$197,000. Two years ago the electors voted to buy the property at \$296,000. The defeat of the plan to acquire the present transit system was somewhat of a surprise, inasmuch as it had been accepted at a previous election and at a much higher price, and in the face of the approval of the special committee of the Chamber of Commerce, which investigated the plan.

Financial and Corporate

Promising Conditions in Youngstown

Condition of Physical Property Much Improved Partly Through Aid of City Financing

There is an optimistic feeling about the outlook for the Youngstown (Ohio) Municipal Railway and the neighboring railway lines of the Pennsylvania-Ohio Electric Company. Patronage is picking up a little, though the present year has not been a good one. The companies at Youngstown, which as a steel center ranks next to Pittsburgh, were hit exceptionally hard by the general business depression. The number of passengers carried as compared with last year, declined 30 per cent to 35 per cent on the different divisions. By diligent study of all details of operation, however, the operating expenses have been reduced in even greater proportion than the revenues have fallen.

All the surplus earned this year, and such outside capital as could be secured, have been put back into the property, including \$207,000 for pavement financed by the city of Youngstown, so that the physical property has been improved materially in condition over the status that attained a year ago. The maintenance expense during the coming year will therefore be much lighter than it was this year because the accumulated deferred maintenance has been very largely taken care of. In fact, it is estimated that only a little more than half the sum expended this year on maintenance and renewal will need to be spent next year.

Despite the heavy reduction in riding, the economies that have been worked have been brought about by refinements in management rather than by cuts in service, which has been reduced only 10 per cent, so that with practically no increase in car mileage, 50 per cent more passengers can be carried. The road would thus appear to be over-serviced at present, but this is not the fact when due consideration is given to the need for liberal service on account of jitney competition. Fourteen new safety cars have just been received, and these, together with an application of one-man operation to some of the present double-truck cars, will aid further in reducing operating expenses. A very successful work in accident elimination is also having its effect on operating costs.

Hence, as business gradually comes back, the company's financial position should steadily improve as the result of lower maintenance costs, safer operation, more passengers with little or no increase in platform expenses, a service-at-cost franchise, and a cash rate of fare of 9 cents or six tickets for 50 cents, which is felt to be as high as is needed.

In referring further to the paving work financed by the city, this is the first time the city of Youngstown has thus assisted in relieving the burden upon the street railway. The city acted on this theory: The company in

contracting to pave a portion of the street, merely took over a part of the obligation of the city to the people. Since the company was unable to finance the repaving on a street where it was badly needed, the obligation simply reverted back to the city. The city therefore financed the work, comprising approximately 6 miles of single track, and will look to the future for the refunding of this outlay for the company, the same as for any other taxpayer. The plan worked out gives the company nineteen years to reimburse the city. The city secured the money by the sale of its general bonds and accepted a contract from the Youngstown Municipal Railway to pay off the loan in annual installments.

Two Ohio Companies Sold

The Plymouth & Shelby Traction Company and the Sandusky, Norwalk & Mansfield Electric Railway of Ohio have been sold, according to an announcement of A. G. Taylor, receiver for both companies. The Plymouth line sold for \$20,000, bid by S. S. Burtsfield, principal bondholder. The Wilcoff Company, Pittsburgh, bid \$60,000 for the Sandusky, Norwalk & Mansfield line. Neither line attracted bids at regular sales and will be junked. The road ceased operation more than a year ago.

It had previously been reported that the defunct South line between Norwalk and Plymouth, part of the Sandusky, Norwalk and Mansfield Railway, would be kept in operation by the use of gasoline cars.

Petition for Merger Rehearing

The Indiana Electric Corporation has filed a petition with the Public Service Commission asking for a rehearing of the proposal to merge the properties of seven electric utilities of the State. The Joseph H. Brewer interests, which are back of the corporation, proposed in the original petition to issue approximately \$21,000,000 of securities to be used in effecting the merger. This proposal was denied by the commission, after an extended investigation and hearing, on the ground that the value of the properties, estimated at approximately \$19,000,000 by the corporation, is not sufficient to warrant the issue of securities asked.

The corporation indicates that the amended petition would ask for authority to issue securities of smaller amount, but the total of securities to be proposed has not been determined.

As stated in previous issues of the ELECTRIC RAILWAY JOURNAL, the corporation proposes to purchase seven companies: Merchants' Heat & Light Company, Indianapolis; Indiana Railways & Light Company, Kokomo; Elkhart Gas & Fuel Company; Valparaiso Lighting Company; Wabash Valley Electric Company; Putnam Electric Company, and the Cayuga Electric Company.

The original petition indicated that the proposal includes plans to erect a central power station near the Indiana coal fields as an economy measure in the production of electricity.

Maloney Plan Modified

Valuation Having Been Fixed, Company Insists Upon Issue of Cumulative Common Stock

The local papers at New Orleans, La., published on Nov. 17 what purported to be the principal points reached by the conferees to the modified Maloney plan of settlement of the public utilities matter up to the time that the prohibition order of the Supreme Court abruptly terminated the negotiations.

While unwilling to disclose the full text of the agreement, Commissioner Maloney outlined some of the outstanding points of the financial "set up," report of which has already been published briefly in the ELECTRIC RAILWAY JOURNAL.

Briefly, the valuation of the property of the New Orleans Railway & Light Company for rate-making purposes is placed at \$44,700,000, divided as follows: gas plant, \$8,652,000; electric light and power plant, \$10,048,000; street railway property, \$26,000,000. The valuation is to start from Dec. 31, 1920. The fares, rates and charges are to net 7½ per cent, after deducting operating expenses, taxes, renewals, replacement and reserves.

The reorganization of the company is to start at once, the city to have the naming of four members of the board of directors.

The outstanding underlying bonds are not to be disturbed and the outstanding 4½ per cent general mortgage bonds due July, 1935, are to be exchanged, 25 per cent in cash and 75 per cent in new general lien bonds, due July, 1935. The new 4½ per cent bonds are to have preferred position, in that they will rank after the new first and refunding open mortgage bonds.

Income bonds, bearing 6 per cent interest, and maturing November, 1949, to the amount of \$5,129,000 are to be used in refunding the outstanding refunding and general lien 5 per cent bonds, due November, 1949, upon which interest is still due.

Preferred 7 per cent cumulative stock to the amount of \$3,955,000 is to be used in refunding the outstanding 7 per cent gold reserve bonds, upon which both interest and principal are now in default.

The balance up to the amount allowable as a rate base, at the date of reorganization, is to be in common stock issued to represent the equity in the present property now represented by the \$10,000,000 of preferred stock and \$20,000,000 of common stock.

Two reserve funds are provided to preserve the financial integrity of the company.

Provision is made for the creation of a fund of \$200,000, 50 per cent of which is to be used for betterments and improvements, and the remainder for the purchase and retirement of the new 4½ per cent bonds, at their lowest bid value.

This fund is to be created before disbursements of any kind are made in the fiscal year out of earnings or surplus to securities junior in rank to the new 4½ per cent bonds.

Provision is made for the creation of an additional fund of \$100,000 to be expended on the same basis as the \$200,000 fund, before disbursements are made on the preferred stock.

To effect the sale of common stock, at par, for financial purposes, a divi-

dend of not exceeding 9 per cent per annum in the aggregate is allowable. No cash distribution, or stock dividends are permissible to the common stock in excess of the foregoing limitations. The points yet to be adjusted include the creation of the two reserve funds and whether or not the dividends on the common stock shall be cumulative.

The company takes the position that the reserve funds should come out of the earnings, or from the sale of securities junior in lien to the 4½ per cent bonds. It also claims the dividend on the common stock should be cumulative because the city allows a return of 7½ per cent on the value for rate making but limits disbursements to the existing securities to approximately 6 per cent.

No new securities are to be issued by the company without the consent of the Council, the city to have a perpetual option on the property of the company at the valuation stipulated as of Dec. 31, 1920, plus such additions as may have been made.

Car fare is to be fixed at 7 cents and the gas rate at \$1.30 per 1,000 cu.ft. upon termination of receivership. Electric light and power rates are to remain unchanged. No change in rates is to be made for the test period of twelve months.

The litigation instituted in the Federal District Court against the city by the receiver is to be dismissed when the agreement is closed and sufficient funds are to be provided the receiver by the security holders' committees for the purchase and installation of equipment for the electric light and power plants upon acceptance of the modified Maloney plan of settlement by the Commission Council.

The further announcement was made at New Orleans on Nov. 17 that the State will be urged to drop the suit against the city in the Civil District Court, which has resulted in cessation of the negotiations looking to a solution of the utilities problem.

Attorney General Coco of Louisiana on his return to New Orleans contradicted the published statement that the State had any intention of lifting the restraining order of the Civil District Court placed upon the city in the matter of the 8-cent fare.

In discrediting the published statement, Attorney General Coco went on record as denying the authority of the Commission Council to assume rate-making powers over the railways of New Orleans. He reiterated the opinion of the late Assistant Attorney General Luther E. Hall, that such powers were vested solely in the Public Service Commission. He also questions the valuation placed upon the property of the New Orleans Railway & Light Company, declaring it to be *ex parte*, in his opinion, having been made by persons with a direct interest in the outcome of the controversy. He states the valuation should be subjected to "judicial ascertainment."

Attorney General Coco expresses himself, however, as anxious to have the railway matter settled properly.

Value Placed on Canadian Property.—The Hydro-Electric Power Commission of Ontario recently placed a valuation upon the Ottawa Electric Railway line and equipment within the Province of Ontario. The figure including an amount necessary for the operation of the system is \$4,110,922.

Coal Properties Sold

4,675 Acres of Coal Land Disposed of by Electric Railway to the Consolidation Coal Company

The Monongahela Power & Railway Company, Fairmont, W. Va., has sold its entire coal holdings to the Consolidation Coal Company. The property that passes in this deal consists of 3,500 acres of Pittsburgh coal, 1,000 acres of Sewickley coal, 175 acres of surface land, and 300 standard gage coal cars for the marketing of the product. The purchase price was approximately \$2,600,000.

One of these mining operations is known as the Stafford mine. This plant is located on Paw Paw Creek 6 miles north of Fairmont. This is a shaft mine 250 ft. deep. It is thoroughly equipped with compressed air mine haulage machinery. Electrically driven compressors furnish the air for the mechanical power used within the mine. The coal is brought to the surface by a steam hoist and is loaded into the railroad cars over a steel tippie which is equipped with self-dumping cages. The mine has a capacity of 1,000 tons a day.

The Stafford mining town is known as Baxter. It is one of the most attractive mining centers in the State. There are 150 dwelling houses for the employees of the mine.

MANY ACRES OF UNDEVELOPED LAND INCLUDED

The second plant is known as the Rivesville mine. This plant was installed about two years ago. It consists of a shaft mine which is located immediately adjacent to the Rivesville power plant. It was developed by the Monongahela Power & Railway Company for the purpose of supplying fuel for the operation of the power plant. The mine consists of two concrete lined shafts 100 ft. deep. One of these shafts is equipped with an electrically driven hoist for lifting coal from the mine. The other shaft is utilized for supplying air for the ventilation of the mine. The mine is equipped with electric cutting machines for cutting the coal. The development of this mine is only partially complete. It has a capacity of 500 tons a day. Thirty-five modern houses make up the mining town.

The 1,960 acres of undeveloped coal included in the deal are situated on Little Paw Paw Creek immediately to the north of and adjoining the Stafford mine property. This tract of coal was acquired by a subsidiary concern of the Monongahela Power & Railway Company about three years ago. This is one of the best tracts of undeveloped coal in Marion County.

The 300 steel hoppers included with the sale of the coal property are standard railroad equipment hoppers built in 1917 of 105,000 lb. capacity each.

The sale of this property will enable the Monongahela Power & Railway Company to give all of its attention to its power and railway business and to devote its revenue to the improvement and extension of its system.

A long-term contract for coal with the Consolidation Coal Company insures the railway of always having an ample supply of fuel for its operations.

The proceeds from the sale of the property will be applied to the reduction of the company's bonded indebted-

ness which will make a material decrease in the interest charges and thus operate directly to the benefit of the stockholders whose equity in the company's property will be proportionately increased.

The Monongahela Power & Railway Company is the new name adopted last May for the old Monongahela Valley Traction Company. The company serves an extensive territory in and around Fairmont with railway facilities and gas. Besides owning traction lines in Fairmont, Clarksburg and other towns, it owns nearly 200 miles of trackage in interurban lines.

The operation of the mines purchased in this sale will be taken over by the Consolidation Coal Company as soon as the details of the sale can be worked out.

Valuation Hearing Will Be Resumed

Notice has been forwarded to the receiver of the United Railways, St. Louis, Mo., and the City Counselor that the valuation hearing will be resumed before the Missouri Public Service Commission on Dec. 19. In the meantime the commission has extended the 7-cent fare, which was to have expired Jan. 1, to June 30, 1922.

The present fare is based on a tentative valuation of \$50,000,000 for rate-making purposes, but the receiver expects to show that the property is worth not less than \$80,000,000, no matter what method of valuation the commission may follow.

Touching upon the valuation question and the entire railway situation, the management has issued in pamphlet form to its patrons a statement of more than 2,000 words, in which these paragraphs are featured:

It is to be hoped that the press will not continue to pander to the uninformed or the misinformed, and that politicians will refrain from attempting to ride into office on a false street railway issue. There is about as much logic in attempting to legislate the rate of car fare by popular vote as there would be in fixing the price of paving by ordinance or charging for water service without considering cost, unless the city is prepared to take care of deficits out of general tax funds. It must be paid for as a business proposition, on a cost basis.

In the approaching valuation hearings before the Public Service Commission we hope unreasoning prejudice, born of the past but not justified in the present situation, will not enter the councils. A square deal is necessary if the service is not to be further crippled but restored, improved and extended. A fair policy is needed to pave the way toward further developments and rapid transit.

In former years transportation forged ahead of the city's growth—population and industry followed the trolleys. Franchises were sought. Now it is the other way. Populous and growing sections of the city are waiting, suffering for car service which we should like to give them. The management knows what and where these needs are, and has earnestly studied the best means of meeting them. Franchises have been rejected because there is no money to finance them.

Millions of dollars are needed today to give St. Louis adequate transportation and build the sorely needed extensions. More millions will be needed in the future to provide rapid transit if the city is to grow properly. Where and how are these millions to be raised?

The money cannot be raised unless our citizens make up their minds that the use of the money must be paid for at fair interest rates, and to do this the car fare must be adequate. Whether the city should undertake the financing of the lines or private capital should be further enlisted, makes no difference in one respect. The service must be paid for. And if private investors are expected to furnish the money another thing is sure: Reasonable security will be demanded—public good will, freedom from unjust attacks, the assurance of a square deal from an informed public.

Pittsburgh Receivership Apparently Nears End

Ordinance Now Before Council Assures Reorganization of Pittsburgh Railways With Municipal Participation in Control—Valuation Set at \$62,500,000

The City Council of Pittsburgh has approved on first reading an ordinance for reorganization of the Pittsburgh Railways. This is in effect the proposed plan evolved by the city and the company some months ago. It has lately been under discussion by all the public, civic, engineering, and other organizations in Pittsburgh and suburban towns. The plan, with slight revisions, has met with general approval. As both of the parties to the contract are understood to be in favor of the ordinance it is presumed that the plan for reorganization will become effective without delay as soon as the ordinance has been enacted into law.

BY THE adoption of the plan the Pittsburgh traction situation, for many years in an unsettled condition, will be completely altered and the affairs of the company, now in the hands of receivers, will be reorganized under a new company whose assets are set at \$62,500,000, the valuation fixed by the Public Service Commission. Into this new company will be merged 114 companies constituting the present railway system, intended eventually to be operated under one franchise and financed as a unit.

The new company is entitled to an annual net return of 6 per cent, or \$3,750,000, out of its earnings from all sources for a period of ten years, in addition to all operating expenses, a yearly depreciation allowance and taxes. The Philadelphia Company, as the principal stockholder of the railways company, will provide for finally bringing all subsidiary companies into one company and the conversion of the present mortgages into a single mortgage. The new company will authorize securities not exceeding \$62,500,000 which it will endeavor to issue from time to time to refund all outstanding stocks, bonds or other evidences of indebtedness. An endeavor also will be made to borrow in the Pittsburgh district \$5,000,000 to be spent in rehabilitation of the railways system.

CITY TO HAVE VOICE

An important element in the reorganization is the participation of the city in the conduct of the company under a board of control. This board of control will be composed of four members, two of which are to be appointed by the Mayor with the approval of two-thirds of Councils. Members may be removed by the Mayor only by the same approval. The various cities, boroughs and townships combined will appoint a third member and the new company will name the fourth member. The salaries of the members of the board, with expenses, are not to exceed \$20,000 annually.

Thirty days before the end of each fiscal year the new company will submit to the city and the board of control a budget of gross receipts and proposed expenditures, this budget to be subject to revision by the board of control. If either the city or the company is dissatisfied with the board's action the matter will be submitted to arbitration, the board of arbitration to be composed of three members, one appointed by each side and these two to appoint the third, or, failing in agreement, the third member to be appointed by the Public Service Commission.

In lieu of present municipal franchise taxes of various kinds, bridge tolls, pole, car, wire, gross receipt and street

cleaning taxes the new company will pay the city an annual lump sum of \$100,000 in quarterly installments. In lieu of street repaving charges the new company will pay the city \$200,000 annually in quarterly installments.

If it appears that for three consecutive months revenue is insufficient to meet approved expenditures and ap-

What Reorganization of Railways in Pittsburgh Means

The reorganization of the Pittsburgh Railways in accordance with the ordinance just passed means:

Organization of a new company with a capitalization of \$62,500,000.

Annual return fixed at 6 per cent or \$3,750,000.

Board of control to have voice in affairs of company, two members to be appointed by city, one by other municipalities and one by company.

Termination of receivership.

New company to raise \$5,000,000 to rehabilitate traction system.

Present traction system, comprising 114 companies, to be merged into one company under one franchise, with all obligations to be assumed by the new company.

New company assumes damage claims payable within ten years.

Fixed payment in place of tolls, taxes and other charges.

City claims settled for \$526,091.

Fares to be reduced if there is a surplus from operation and increased if there is a deficit.

Agreement between city and company for ten years.

parently will continue, on report of the board of control, the city agrees to cancel repaving charges during that period or will not object to an increase in fares.

REGULATION OF FARES

Any annual surplus is to be paid to the board of control within thirty days, the board to prorate the money among the different municipalities in proportion to the trackage, one-third of the surplus due to economies to be returned to the company.

If the annual surplus is such as, in the opinion of the board of control, would justify a reduction in carfare, application for a reduction may be made to the Public Service Commission by either the city or the board without objection by the company. On the other hand, if there is a deficit, such as to justify it, the company has the right to apply for an increase in fare without objection by either the city or the board.

The city agrees to accept for its claim against the company \$526,091, in full payment up to Jan. 1, 1921, which amount with accruing charges against the receivers will be paid or

secured by the new company. The new company will also agree to pay all judgments and adjust all claims against the railways company prior to appointment of receivers, arising from personal injury or death, paying within ten years without interest, the first payment to be made within two years.

RECEIVERS TO BE DISCHARGED

Upon approval by Mayor Babcock, the plan will be presented to the Public Service Commission. Thirty days after approval by the commission steps will be taken to terminate the receivership and discharge the receivers.

The only dissenters to the plan have been a few suburban boards of trade that wished to substitute a settlement based on the Cleveland plan. George N. Monroe, Jr., assistant city solicitor, who prepared the ordinance, explained in an open meeting last week that the Cleveland plan could not be used in Pittsburgh as it delegated to the city powers which are expressly reserved to the Public Service Commission by law. Ohio has a "home rule" law through which a city can make any contract it desires with public utility companies, while Pittsburgh's power is restricted.

The Cleveland plan was considered in the preparation of the Pittsburgh plan and certain elements of it embodied, as were also parts of plans used in other cities. Those who have drafted the Pittsburgh proposal therefore believe that they have a plan which includes, as far as Pittsburgh is concerned, the most meritorious ideas embodied in the settlements in other cities.

An indication of the action the Mayor will take on the ordinance may be had from a statement he made at a meeting last week as follows:

I want to commend every member of Council. I am proud of your action. You have given earnest and careful consideration to this situation for several years and now you have accomplished something. The traction situation has been a live issue during this entire administration. It has been before the public for fifteen years. Its settlement is the biggest thing that could be accomplished in this administration.

The action which the railways will take was made clear by a statement at the same meeting by A. W. Thompson, president of the Philadelphia Company. He said;

Some of the members of our board of directors feel that this plan is very unfair to the company and it has been so criticised. However, although we do not agree with it, I stand ready and am properly authorized to sign it.

It will be recalled as already mentioned in these columns that foreclosure proceedings by the bondholders of one of the subsidiary companies of the Pittsburgh Railways are now pending in the courts. This has had a tendency to speed up consideration and passage of the present plan and ordinance as there was imminent danger of a complete dissolution and disintegration of the system into its integral companies. It was realized that this would be an immeasurable calamity.

William A. Magee was elected on Nov. 8 to be the next Mayor of Pittsburgh. He is of the same political party as the present Mayor. In deference to wishes expressed by Mr. Magee, the Council on Nov. 21 returned the franchise ordinance to the committee until Mr. Magee has an opportunity to study it. A meeting of the members of the Council was held on Nov. 22 with the Mayor-elect and minor changes were suggested by him in the grant as passed on first reading.

Foreclosure Decree Entered

Legal Counsel for Security Holders Give Notice of Appeal from Master's Finding

A final decree has been prepared by the Court of Appeals and sent to the Butler County Court, fixing the amount which must be paid to the Citizens' Savings Bank & Trust Company, Cincinnati, Ohio, under the mortgage covering the bonds issued by the Cincinnati & Hamilton Electric Street Railway and ordering the sale of all property under the mortgage to satisfy the judgment, as well as appointing a master commissioner to place a minimum valuation upon all assets, and take testimony as to further disposition of the funds to be received. Last summer a decree was prepared but objections to it caused the court to take the matter into its hands and prepare its decree.

Under the decree it is held that the Citizens' Savings Bank & Trust Company, trustee under the mortgage from the Cincinnati & Hamilton Electric Railway, to the American Trust Company, now consolidated with the Citizens' Trust Company, due from the Cincinnati, Dayton & Toledo Traction Company, on bonds payment of which was assumed, is entitled to recover \$482,344 with interest from April 11, 1921.

It further is decreed that the mortgages delivered by the Cincinnati & Hamilton Electric Street Railway is a valid first lien upon all property real and personal, franchises, ordinances, privileges and rights formerly owned by that company, including its real estate in College Hill, Ohio, and in Fairfield Township, Butler County, Ohio, upon which power houses and depots are erected, and upon the line now operated by the Cincinnati, Dayton & Toledo Traction Company, between College Hill and Hamilton, Ohio.

By the terms of the decree the judgment must be paid within five days from the date the decree or the foreclosure will operate and a sale of the property by George Sohngen, receiver, will be made. Order for this sale, contingent upon the judgment not being paid, is contained in the decree and names Receiver Sohngen as master commissioner to make the sale.

Attorney Froome Morris of Cincinnati is named to be Master Commissioner to take testimony and report the lowest price for which the sale may be made, and as soon as this price has been fixed and approved by the court, Receiver Sohngen is instructed to advertise for bids; and if none is received which equals or exceeds the minimum valuations to re-advertise the sale. Upon a sale of the property the proceeds are ordered to be applied as follows:

1. To the payment of all costs.
2. To the satisfaction of the amount due the Citizen's Savings Bank & Trust Company.
3. To the payment of unpaid balance due trustee under the mortgage from the Southern Ohio Traction Company.
4. To the Cincinnati & Dayton Traction Company.

The decree also fixes the status of all mortgages and the ownership in all rolling stock, power plants and rights-of-way. It also instructs the receiver to continue the lines in operation.

That no one on either side of the

controversy was satisfied with the decree as finally ordered was manifested by the fact that all counsel gave notice of exception to the order.

Net for P. R. T. for Ten Months \$1,267,738

The Philadelphia (Pa.) Rapid Transit Company for the ten months of operation ended Oct. 31 shows an operating revenue of \$35,131,600 against \$31,191,066 for the same period a year ago. The expenses including taxes increased \$2,170,233 over 1920 operation and taxes.

After subtracting a fixed charge sum of \$8,185,640 from the gross income of \$9,453,378 the net income for the ten months of 1921 stands at \$1,267,738 against a deficit in 1920 of \$418,356. The accumulated deficit for the twenty-two months period to Oct. 31, 1921, is \$1,100,197.

Third Avenue Railway Reports Deficit of \$876,611

The report of the Third Avenue Railway, New York, N. Y., for the fiscal year ended June 30, 1921, shows a deficit of \$876,611, which includes full interest on adjustment mortgage 5 per cent income bonds. For the previous year the deficit was \$845,396. The total operating revenue for the year is \$13,499,226, against \$11,752,069. There was an increase of \$1,752,885 in the operating expenses, which amounted to \$11,037,607 for the present year.

In his remarks to the stockholders S. W. Huff, president of the railway, said that a decrease in operating costs has been felt since the summer and as a result of the 10 per cent reduction in wages which went into effect in August of this year net earnings have been steadily improving. He said further that greater economy had been effected through the extension of one-man operation and the abandonment of useless lines.

Toledo Company Shows Surplus

The net surplus from the operation of the Community Traction Company, at Toledo, Ohio, for the month of October was \$21,308, which was enough to take care of deficits in all funds and enable the payment of \$2,010 into the fare stabilization fund. This is the first payment made into that fund and from now on it is predicted the fund will be built up considerably each month.

The sinking fund trustees of the city who have control of the municipal ownership fund of the railway have purchased \$75,000 of the 6 per cent bonds from Henry L. Doherty and his associates, and they now have \$84,374 in cash which can be used for the same purpose. As soon as bonds are purchased they may be cancelled and common stock issued to the city in exchange for them. The earnings from the bonds go into the stabilization fund as long as they are held as such.

The interest on bonds held by the sinking fund trustees, amounting to \$764, was paid into the stabilizing fund. The further purchase of bonds will enable \$420 of earnings to be applied to that fund each month. The stabilizing fund is now at a level of \$55,344, but it will have to climb to \$500,000 before fare reductions may be made.

The ratio of operating expense to income for the month of October was

76.508 per cent, a reduction from the previous month of approximately a little more than 9 per cent.

During the month of October there was an increase in passenger revenue of \$13,111. Operating expense was decreased, on the other hand, by \$2,065. The operating expenses per car-mile of 36.72 cents for September was decreased to 35.25 cents a car-mile.

In October 4,746,700 revenue passengers were carried—an increase of 233,832 over the previous month. It is estimated that 150,000 may be assumed as the increase due to an additional day of operation. The operation was increased by 19,388 car-miles in October, for a total of 625,758 car-miles.

Financial News Notes

First and Refunding Bonds Offered.—Bonbright & Company, New York, N. Y., recently offered at 82½ and interest, to yield about 7.45 per cent, a block of first and refunding mortgage 5 per cent gold bonds, 1912 series, of the United Light & Railway Company, Grand Rapids, Mich.

Refunding Operation Planned.—The West End Street Railway, operated under lease by the Boston (Mass.) Street Railway, has petitioned the Massachusetts Department of Public Utilities for authority to issue \$2,700,000 of thirty-year 7 per cent bonds to refund a similar amount maturing on Feb. 1, 1922.

No Common Dividends Paid This Year.—No dividend has been paid on the common stock of the Fort Dodge, Des Moines & Southern Railroad, Fort Dodge, Iowa, this year. Dividends paid this year on the preferred stock were: 7 per cent on Feb. 1 and 1½ per cent May 1. No dividend was paid on the preferred stock on Aug. 1.

Indiana Company Nets \$69,735.—Report of Receiver J. H. McClure for the Indiana, Columbus & Eastern Traction Company, Cincinnati, Ohio, in federal court here showed that operation for September had netted a balance of \$69,735. The receipts were \$223,763 and the disbursements amounted to \$154,027.

Permanent Financing Planned.—During the past three months the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., has reduced its total indebtedness by \$539,708 through the payment of \$182,708 on account of purchase money contracts on coal properties and car trust certificates, and \$357,000 on account of one-year 7 per cent notes due Nov. 1, 1921, leaving the amount of the latter obligation \$3,123,000. The company is now said to be looking forward to maturing a plan to take care of a material part of the indebtedness of the company so as to put its financing on a permanent basis. For the twelve months ended Sept. 30, 1921, the company reports gross earnings of \$31,558,895 as compared with \$30,157,334 for the previous year, and a balance or surplus of \$1,515,252 for the twelve months ended Sept. 30, 1921, as compared with \$933,510 for the previous year.

Traffic and Transportation

Wants to Maintain Existing Rate

Suggestion Made that City Council of Cincinnati Eliminate Franchise Tax as Rate-Making Factor

In a statement accompanying the budget of the Cincinnati (Ohio) Traction Company for 1922, received by W. Jerome Kuertz, Street Railway Commissioner, W. Kesley Schoepf, president of the traction company, announces that "it is reasonable to anticipate that at least the 7½-cent rate of fare could be maintained throughout the entire year," if the franchise tax to be paid to the city of Cincinnati, when earned is not to be charged as a deficit for rate-making purposes.

The estimated gross receipts of the railway from all sources for next year are \$8,708,000. The operating costs are estimated at \$5,277,500, of which transportation costs are \$2,500,000; power, \$997,055; way and structures, \$610,455; equipment, \$617,500; traffic, \$2,500; general and miscellaneous, \$550,000.

Other expenses include taxes other than city of Cincinnati and Norwood, \$798,300; rentals, \$1,234,937; interest and sinking fund on new capital, \$547,572; sinking fund and interest on reducible debt, \$199,450; return on investment, \$747,280; Cincinnati franchise tax, \$350,000; Norwood franchise tax, \$6,000. The total expenditures for the year are approximately \$9,161,000, making a deficit of approximately \$453,000 for the year. To overcome that deficit the suggestion is made that the City Council again pass an ordinance making it possible to eliminate the franchise tax as a rate-making factor in order that the existing rate be maintained.

Mr. Schoepf says in his statement:

Your attention is directed to the fact that the city franchise tax for 1920 and 1921 does not appear in the statement because not having been earned and having been deferred it does not become due unless a surplus over all current ordinance requirements is earned. On the other hand the current franchise tax for 1922 becomes a direct charge on and after Jan. 1, 1922, and if not earned fares must be raised until it is earned.

The only way in which fare increases can be avoided will be that the city place the 1922 franchise tax in the same position as the tax for 1920 and 1921; that is, that it shall be paid if it also can be earned without increasing fares.

Railway Officials Opposed to Additional Bus Permits

At a recent hearing before the Public Utilities Commission of Washington, D. C., on the applications for the establishment of four additional bus lines the electric railways through their officials openly voiced their opposition.

W. F. Ham, president of the Washington Railway & Electric Company, told the commission that he did not see the necessity for bus lines unless it were shown that the electric railways were not providing adequate facilities. In expressing this view he reflected the views of G. E. Hamilton, president of the Capital Traction Company, and

J. E. Zimmerman, president of the Washington-Virginia Railway.

It is said that the real opposition on the part of the railway officials was to the application of the Washington Rapid Transit Company for a Union station-Georgetown line.

An official of the bus company stated that the petition for the new route had been the result of the demand from patrons on the Sixteenth Street bus line for a route to Union Station.

Houston Company Directed to Sell Tickets at Five Cents

The Houston (Texas) Electric Company has until Nov. 27 to reply to the proposed city ordinance directing the company to sell twenty tickets for \$1. The fare in Houston is now 7 cents, this rate having been put into effect following a decision in the Federal Court holding that the old fare was confiscatory and failed to provide adequate return on invested capital guaranteed under the federal statutes.

A new franchise was framed as a compromise between the city and officials of the company, and this proposed franchise was referred to the voters of Houston at an election held on Nov. 4, and rejected by an overwhelming vote.

Since the election conferences have been held and agreement sought on a reduced fare scale, but without result. The city has now taken the initiative and had City Attorney Myer draft an ordinance directing the company to sell twenty tickets for \$1. The company asked time in which to prepare data to show that such an ordinance would be unfair, and an extension was granted.

Freight-Carrying Trucks Under Jurisdiction of Commission

The State Railroad Commission of California in asserting recently that truckmen operating under contracts of employment were answerable to the commission, said: "If one engaged in the business of automotive transportation could avoid the provisions of the law by operating at irregular times, a handsome premium would be placed upon poor service to the public."

At a previous hearing before the commission this point was warmly debated by truck owners, whereby they maintained that the commission had no jurisdiction over them. On Oct. 18 the commission definitely settled the point in granting an application for freight truck service between Stockton and Oakdale to an applicant. This applicant had previously operated under a theory that as he was working under private contract he was not forced to seek the approbation of the commission. He also pointed out that he ran at irregular times. On this point the commission's opinion continued:

"The shipping public is entitled to know when and under what conditions transportation is available. As to operating under contract, every shipment involves the establishment of a contractual relation between the shipper or passenger and the carrier.

Jitneys Quit Railway Field

Eastern Massachusetts Lines Freed from Pest—Fares Coming Down in Consequence

The Eastern Massachusetts Street Railway has now cleared itself of all jitney competition in all cities and towns in which it operates, except in Hyde Park. Jitneys operate in Gloucester and on a line out of Woburn, but the railway has withdrawn service from both of those places. The line it gave up to the jitney in Woburn is between Woburn and Billerica, Mass.

The districts in which the railway had to fight the jitney, and the order in which these districts officially dismissed the jitneys so as to save the trolley are Lawrence, Salem, Brockton, Quincy and Lynn. The jitney men in Lynn were the last to give up the fight.

TEN-CENT FARE AT START

Thus controlling its territory again, the Eastern Massachusetts is making a number of operating changes. It announced on Nov. 21 a reduction of fares in Fall River to 5 cents per ride when tickets are used; it now sells twenty-ride tickets at the rate of \$1, which is the cheapest rate on the system.

When the property was taken over by the public trustees, now operating it, the fare on all the lines was fixed at 10 cents. Since then there has been a reduction in every district, made available through the purchase of tickets, so that the rates to-day in the several operating districts on the system are as follows: Fall River, twenty tickets for \$1; Lowell, fifteen tickets per \$1; Lawrence fifteen, Haverhill thirteen, Salem sixteen, Lynn eighteen, Chelsea fourteen, Melrose fourteen in the interurban zone and eighteen in the city zone; Taunton fourteen.

FALL RIVER THE BANNER CITY

Single cash fares are still 10 cents, but the tendency is downward on the tickets, varying from time to time in the several districts according to variations in earnings. Fall River, which now has the lowest fare, is the only district that has earned cost every month since the trustees took control of the line.

Greenville Changes Its Mind—Will Operate Buses

The city of Greenville, Tex., which recently acquired at receiver's sale the railway lines and other property connected therewith announcing that the municipal government would operate the street cars, has changed its plans. Announcement is now made that the city will soon establish motor bus lines, municipally operated, instead of street cars.

It is asserted that motor buses operated along fixed routes and on regular schedule will solve the transportation problem for small cities not large enough to warrant operation of an up-to-date railway system, and the officials of Greenville believe that they will prove that this is true. After a try-out of the motor buses, Greenville will vote on the selection of a transportation system, and if the voters express preference for the motor bus lines they will be maintained.

Five-Cent Fares Result in Increased Patronage

J. P. Potter, manager of the Bridgeport division of the Connecticut Company, said early during the week ended Nov. 26 that the first day's trial (Sunday) of the 5-cent fare in that city was an unqualified success, both from the public point of view and that of the company. It was declared that patronage on Bridgeport lines during the first few days of the new schedule since Sunday was considerably more than under the old rate of 10 cents.

Disapproval of the decision of the Connecticut Public Utilities Commission in ordering a 5-cent fare test in Bridgeport was expressed by a majority of the federal trustees of the Connecticut Company at their meeting Nov. 19. The trustees are of the opinion that all lines of the company should be treated as one unit and that there should be no discrimination in fare rates on separate divisions of the company's system. The company has recently reached a position where it is earning a return on its investment, and the Bridgeport order disturbs the situation, in the opinion of the trustees.

The report of the Connecticut Company, New Haven, Conn., furnished the Connecticut Public Utilities Commission on the results of a week's operation on a 5-cent fare basis in Norwalk, over a distance of about a mile and a half, states that the fares increased over 3,000 during the first week of the reduction from 10 cents. Monday, Nov. 21, was the beginning of the ninety-day experimental test for the 5-cent fare as ordered by the Public Utilities Commission, and the report received by the Commission is for one week.

Though there was an increase in fares, the Connecticut Company operated the line at a loss as shown at the end of the week. Only on one day of the first week did the receipts for the day exceed the operating expenses and the excess receipts amounted to \$9.27.

Lucius S. Storrs, president of the company, is quoted as having nothing to say.

Fare Suit Dismissed by United States Supreme Court

The United States Supreme Court on Nov. 21 decided that fares in Chicago are subject to regulation by the Illinois Public Utilities Commission, the court dismissing the case brought by the city, for want of jurisdiction.

The case was heard on Nov. 7. Chester E. Cleveland, special traction attorney for Chicago, presented the city's side. For the Chicago Surface Lines, attorneys James M. Sheehan and Harry Webber appeared. This case came before the United States Supreme Court as a result of an appeal made by the city of Chicago from the decision of the Illinois Supreme Court rendered on Feb. 18, 1920.

The city contested the right of the Illinois Public Utilities Commission to increase the rate of fare above 5 cents in view of the contract the city had with the companies which specified this rate of fare during the life of the grant. The court held in this case that the State Legislature had never delegated to the city the authority to fix rate of fare or regulate service.

The Interborough Rapid Transit

Company, New York City, sought to intervene in the Chicago case before the United States Supreme Court in order that it might be a party to the decision, but the court refused to permit this.

Injunction Against Fare Order

Chicago Surface Lines Appeals from Commission Ruling Ordering Return to Five-Cent Fare

An order for a 5-cent fare on the Chicago Surface Lines was issued on Thanksgiving Eve to become effective at midnight Thanksgiving by the Illinois Commerce Commission. The ruling was not unexpected. Seemingly incontrovertible evidence had, however, been presented by the company showing that no reduction from the present 8-cent fare was justified until operating expenses could be reduced.

The commission, however, ordered a 3-cent reduction and wrote a lengthy order to show that the condition imposed could be met by the installation of numerous economies, the elimination of inefficiencies of management, cessations of payments to the renewal fund as provided by ordinance, release from paving and sprinkling obligations upon concurrence of the city and reduction of allowable rate of return from 7½ per cent to 6 per cent, though 6 per cent is all that has been earned with an 8-cent fare.

The order makes no mention of a wage reduction in relating possible economies. It declares that the service given is exceedingly deficient; that the service orders of the commission and its predecessor have not been lived up to, and that the service being given is not worth more than 5 cents. The order is replete with statements that are most unusual in view of the evidence submitted at the hearings.

The company petitioned Federal Judge George A. Carpenter on Thanksgiving Day for an injunction to restrain the commission order and a temporary restraining order was issued the same day so that the 5-cent fare did not become effective. The petition is to be considered on Dec. 2 and a decision reached then whether the injunction shall be made permanent. Judge Carpenter has called Judges Baker of Indiana and Geiger of Wisconsin to assist him in this connection.

On Nov. 25 Judge Baker ordered immediate issuance of rebate slips for fares in excess of 5 cents. Inasmuch as considerable time would be required to print such slips the court has ordered that the last transfer issued each passenger shall serve as a rebate slip.

Indianapolis Mayor Favors Six-Cent Fare

That he had agreed at one time with Dr. Henry Jameson, chairman of the board of directors of the Indianapolis (Ind.) Street Railway, that the city would not oppose a 6-cent fare was disclosed by Mayor Charles W. Jewett recently. The fact came out in a discussion of the railway situation with the traction head and other officials of the utility before the Board of Public Works.

The Mayor later suggested that the railway temporarily operate some crosstown bus lines to determine what kind of demand there really is for crosstown

service at various points. Although the traction men did not flatly refuse to act upon the suggestion, they gave city officials no encouragement.

Dr. Jameson and Robert I. Todd, president and general manager of the company, repeatedly stated that the traction men do not believe the company can successfully operate upon a 5-cent fare. The city officials pointed out that the company officials led them to believe that if jitney competition were eliminated the city might expect better service on the basis of a 5-cent fare.

Bus Permits Refused

Mayor Peters, Boston, Mass., recently vetoed the licenses of three jitney companies which were seeking permits for operating in the Hyde Park district. He explained his non-indorsement of the bus operation on the ground that he had recently approved a license granted to the Norfolk & Bristol Bus Company.

He said further that the residents of the district had voiced a unanimous approval of this company, and that he himself believed the people were better served by one company than by many.

Suburban Line Must Carry Local Passengers

Suburban cars of the Minneapolis, Anoka & Cuyuna Range Railway coming into the city over the lines of the Twin City Rapid Transit Company must stop at intersections to pick up passengers and must give transfers to passengers paying full fare in the city limits. This fare must be only 5 cents. The Anoka line carries passengers to the city limits over the Minneapolis Street Railway tracks and thence on its own rails to Anoka. Going out these cars will not be required to take local passengers and need stop only for suburban passengers. This is the ruling of the city attorney. For years this line has utilized these tracks but has not carried local passengers and has not given transfers to city lines. Operating under the old franchise this line cannot charge the 6-cent fare granted the local railway under an ordinance passed in 1920. The Anoka company runs into the city over the Second Street Northwest lines to a terminal in the heart of the city.

Conditional Five-Cent Fare Established

The Corpus Christi Railway & Light Company, Corpus Christi, Tex., effective on Nov. 1, announced a reduction in fares from 10 cents to 5 cents, conditioned on the purchase of coupon books of twenty tickets for \$1. Unless coupon books are purchased, the individual fare will remain at 10 cents. E. H. Eldridge, general manager, at the same time announced changes in the operation which included the cutting off of some of the urban and suburban lines which have proved unprofitable, and establishment of twelve-minute service on the remaining lines. This will be an improved service.

The new plan is an experiment, and its retention will depend entirely on the acceptance of the public, as manifested in increased traffic. The Corpus Christi Railway & Lighting Company is now in process of being taken over by Morrison & McCall, San Antonio, Tex.

Six Motor Buses Lose \$15,000 in Nine Months

On the first nine months working of the six motor buses used by the Cardiff (Wales) Corporation to supplement the tramways service, the loss was nearly £3,000. The city treasurer has reported to the tramways committee that the loss on the buses to Sept. 30 averaged 5.63d. per car-mile, totaling £2,746.00.0. The revenue account showed a loss of £1,285.16.4, to which had to be added loan charges amounting to £1,507.14.8. The traffic expenses consumed 8.81d. per car-mile, general expenses 1.6d. and general repairs and maintenance 8.51d., making an average running expense of 18.89d. per car-mile. The traffic receipts amounted to £8,013.5.6, giving an average per car-mile of 16.44d., a deficit of 2.54d. per car-mile carried to net revenue account.

R. L. Horsfield, general manager of the tramways, in commenting on these figures, said the omnibus services in the city were purely experimental and had been tried when costs were at their very highest. The future success of the buses depended upon working outside the city boundaries.

Councillor Sydney Jenkins, the chairman, said Mr. Horsfield hit the nail on the head when he said that in Cardiff they were not likely to make much with the buses, seeing that the tramways service was an efficient and comprehensive one. Personally he believed the chief cause of the loss was trade depression. The sub-committee, however, had the matter under consideration and would report later. He was prepared to support the withdrawal of some of the buses after proper notice to the public.

He explained that a tentative arrangement had been made with the Newport Corporation whereby it would have been able to take its buses right into the town of Newport, but that the corporation had been prevented by the Monmouthshire County Council forbidding the buses to cross the roads, an attitude which the Ministry of Transport considered altogether unreasonable.

Various suggestions were made by members of the committee as to the manner in which the bus service might be made to pay. These included a reduction of fares to the level of those of the tramways, running the buses in direct competition with the tramcars on the most congested routes and the introduction of short stoppages.

The chairman and the general manager were finally empowered to experiment in any direction they considered desirable.

"Safety First" Propaganda Succeeds in Portland

According to figures recently compiled by the Portland Railway, Light & Power Company, Portland, Ore., organized and persistent efforts in combating the constant menace of traffic accidents in the streets of Portland have been producing substantial results. For the months of August and September, the report shows a considerable improvement as compared with the same months of last year.

The total number of accidents in the two months of this year were 1038 as compared with 1268 last year,

or a decrease of 18.1 per cent. Complete checks were made to include mishaps involving the company's cars with automobiles, trucks, vehicles of all kinds, pedestrians and also boarding and alighting accidents involving passengers.

Success in the reduction of accidents of these various classes is attributed by officers of the company to the fact that regular "Safety First" instruction work is carried on among employees. The railway's record is in marked contrast to the showing of traffic mishaps in which the company's cars are not involved, this class of accidents showing a steady increase.

New Jersey Fare Hearings in December

It is probable that on Dec. 15 former U. S. Judge Thomas G. Haight, acting as special master, will begin the taking of testimony on the question of the permanency of the 8-cent fare on the lines of the Public Service Railway, Newark, N. J., recently allowed by Judges Rellstab and Wooley. The railway is to put in as much of its case as it is possible beginning Dec. 15 and continuing Dec. 16, 19, 20, 21, 22 and 23.

555,179 Passenger Vehicles in New York State

According to "Greater New York," the bulletin of the Merchants' Association of New York, 721,488 motor vehicles have been registered in New York State for the first half of 1921 up to July 10.

Of these 555,179 are passenger vehicles, 131,578 commercial, 28,495 omnibuses, 2,661 trailers and 3,575 cars exempt from tax registration. Of this number New York City has 223,435 cars, 156,116 being passenger cars, 52,658 commercial and 12,664 omnibuses. Manhattan has 58,191 passenger vehicles and 25,782 commercial, Brooklyn being next with 54,692 passenger and 15,475 commercial.

Railway and Jitney Men Agree

Both the Public Service Railway, Newark, N. J., and the jitney men recently appeared before the Board of Public Utility Commissioners to oppose the granting of a permit for an additional bus on the Park Avenue line operating in Woodcliff, Guttenberg, West New York and Weehawken with a terminus at the West Shore Ferry.

The railway, whose Palisade line covers the same territory as the Park Avenue buses, declared that though the number of passengers was greater than the seating capacity between rush hours, still during other hours of the day the traffic was very light.

The board will check the traffic in this area before a decision is made in the matter.

"Trolley Topics" Once a Month.—Baltimore *Trolley Topics*, published for the employees of the United Railways & Electric Company, will hereafter come out once a month instead of semi-monthly. It has been announced that the magazine will in this way have a greater opportunity to improve its standard. A promise is made "to develop its features and add new ones."

Jitney Service Again Discontinued — Mayor Approves Operation

Jitney service to the Cowen Park District of Seattle, Wash., started by the Sound Transit Company, operating under a certificate of necessity issued by the State Department of Public Works, was again summarily discontinued recently when W. R. Crawford, attorney for the auto company, and twenty-nine bus drivers were arrested, charged with contempt of court, by reason of an order issued by Presiding Judge Everett Smith. The arrests were made, when the company continued operating jitneys after a restraining order had been issued by Judge Smith, enjoining jitneys from operating within city limits without city permits.

In the meantime, Corporation Counsel Walter F. Meier obtained an affidavit, sworn to by Director E. V. Kuykendall of the State Department of Public Works, declaring that the Sound Transit Company's certificate of necessity for the Roosevelt Heights jitney line does not authorize operation of motor vehicles within the corporate limits of Seattle, without due sanction of the City Council. This affidavit is being used as an exhibit in resisting for the city the injunction proceedings brought by the jitney interests to prevent the city from arresting bus drivers for operating without city permits.

In the hearing before Judge Frater, Mr. Crawford asserted the city's jitney regulatory ordinance would conflict with the terms of the state certificate of necessity in matters of route and fares, and contended that the Sound Transit Company is seeking to operate a stage line, and not a jitney line. He said that the operation of stages does not come under the jurisdiction of the city's regulatory ordinance.

Birmingham Equal to Occasion—Shows What It Used to Be

During Semi-Centenary Week at Birmingham Ala., when the city entertained President Harding and wife and thousands of visitors the Birmingham Railway, Light & Power Company through the efforts of Lee C. Bradley, receiver, provided additional service on the important Avondale, Avenue C, and Tidewater lines, also on the East Lake line. Some of these lines have the pay-ent feature, on schedules four, five and six minutes. Information where to catch cars was advertised.

During this important week attention was called in the local press by pictured illustrations to the progress of transportation facilities in Birmingham and vicinity. Light and power company lines between Birmingham, Bessemer, Ensley, Fairfield and Gate City were pictured with views of the present day cars.

Seeks Higher Fare in Portsmouth

The State Corporation Commission recently heard the petition of the Virginia Railway & Power Company, Richmond, Va., for an increase in fare in Portsmouth. The fare at present is 6 cents and the petition asked for a 7-cent fare, the rate in effect in Richmond.

Thomas S. Wheelwright, president of the railway, in answering the criticisms of the residents of Portsmouth on the service rendered, said that the company had endeavored to get together with the City Council to effect some settlement but had been unsuccessful.

Transportation News Notes

Lower Fares in Honor of Foch.—The various traction lines operating out of Indianapolis, Ind., offered a round trip rate of one fare on these lines on account of the nationwide interest and historical importance of the visit of Marshal Ferdinand Foch of France to Indianapolis, Nov. 4.

Second Bus Line Started.—Another motor bus line, the second to be put in operation in Hartford, Conn., by the Connecticut Company, was started on Nov. 10. The bus will make regular trips, with transfer privileges, from the South Green to Cedar Hill, a locality which the Common Council declared was not served adequately by the electric railway.

Wants Lower Fare.—At the next meeting of the Public Utilities Board of Wilmington, Del., a resolution will be presented petitioning for a reduction in fares on the lines of the Wilmington & Philadelphia Traction Company. The present rate is 8 cents or four tickets for 30 cents. It is contended that four tickets for 25 cents would result in increased riding.

Eight-Cent Rate Extended.—The Missouri Public Service Commission recently issued an order authorizing the Kansas City Railways to extend its 8-cent fare rate for six months beginning with Nov. 18. The railway had asked for a year's extension. The commission accountants reported that the company could not earn a reasonable return if rates were reduced at this time.

Buses Supplant Cars.—A motor bus line is superseding the horse-drawn street cars in Iquique, Chile. The buses are American chassis, equipped with locally made bodies. They seat fourteen persons and are arranged with a front entrance, on the pay-enter plan, so that no collector is needed. The fare is 20 centavos (about 2 cents at present exchange), while the fare on the street cars is 40 centavos.

Council Increases Fare.—The City Council of Cape Girardeau, Mo., recently passed an ordinance authorizing an increase in fare from 5 cents to 7 cents on the lines of the Cape Girardeau-Jackson Interurban Railway. A petition with 1,500 names had been presented to the Council asking for an increased rate in order that the system might make the improvements necessary to provide an adequate service.

Jitney Passengers Increase.—According to the report made by J. J. Kroehl, clerk in Newark, N. J., treasurer's office, and submitted to Director Breidenbach of the Department of Revenue and Finance, jitneys carried 889,642 more passengers in October, 1921, than in September. The total number of passengers carried during the month amounted to 5,244,775. The receipts amounted to \$262,239, which represented an increase of \$44,482 over the previous month.

Writ of Review Denied.—Seattle jitney owners having failed to obtain from Associate Justice McKenna at Washington, D. C., a writ of review

directed to the Supreme Court of the State of Washington, in the matter of the Seattle jitney ordinance case, recently submitted, through Congressman Merrill Moores, a new application to Chief Justice Taft at his residence. This writ has been denied by Justice Taft.

Fare Cut; Service Increased.—A 5-cent fare without free transfer for local service was established in South Boston by the Boston Elevated Railway on Nov. 14. In announcing this reduction General Manager Dana declared that there would be a substantial increase in service by the use of additional cars and that a new line would be operated between Winthrop Square, West Medford, and Malden Square via Pleasant Street.

Asks for Ten-Cent Rate.—According to figures recently submitted by the United Railways, Baltimore, Md., a 10-cent fare will very likely be the charge on the new auto bus line which the railway proposes to establish on St. Paul Street and Mount Royal Avenue. It is shown, further, that the service which is being planned cannot bring any profit on a 7-cent fare. The matter has been referred to the Public Service Commissioner for definite action.

Auxiliary Bus Line Planned for Minneapolis.—As an auxiliary to the present railway service in Minneapolis, a crosstown bus line is being planned by the Minneapolis Street Railway for Lowry Avenue, which will be the first such line in the city. The trackless trolley will probably be installed as an experiment. The grade crossing is to be eliminated on Lowry Avenue, and a bridge built across the Soo Line railroad tracks in preparation for bus service.

Bus Routes Restricted.—An ordinance which has been passed by the South Bend, Ind., City Council restricts motor bus transportation to streets not occupied by interurban lines entering the city and also places an annual license fee of \$500 against the firms now running buses between South Bend and surrounding towns. The Chicago, South Bend & Northern Indiana Railway showed that since the buses were operating in streets through which its cars ran a decrease of 30 per cent in fares had resulted.

Skip-Stop Must Stop.—The Niagara Falls, N. Y., City Council has instructed City Manager Edwin J. Fort to order the International Railway, Buffalo, N. Y., to discontinue the skip-stop system in effect on the Niagara Falls local lines. Complaint against the skip-stop system was first made by the Niagara Falls Trades and Labor Council. The City Manager also was instructed to ask the railway to operate cars on a more frequent schedule and provide heat. Failure to comply with the suggestions, the City Council decided, would result in complaint being filed with the Public Service Commission.

Bus Certificate Granted.—The Frontier Automobile Transportation Company, Inc., has been granted a certificate of convenience and necessity by the Public Service Commission for the operation of a regular motor bus service between Niagara Falls and Lockport, N. Y., a distance of 22 miles, in competition with the Buffalo-Niagara Falls and Buffalo-Lockport divisions of the International Railway, Buffalo, N. Y. Service will be started between the

two Niagara county cities within the next thirty days. Gustave Krueger, Jr., of Niagara Falls will be manager of the line, which will have offices in Niagara Falls. At least ten buses will be put in operation.

Bus Privilege Extended.—W. M. Collins, operating an automobile passenger, baggage and package service between Tulare and Porterville via Lindsay, was authorized by the California Railroad Commission recently to give local service between Lindsay and Porterville, serving Strathmore as an intermediate point. The application was opposed by the Valley Transit Company and by the Santa Fe & Southern Pacific Railways. The commission found that the Valley Transit Company had not provided accommodations for passengers in several instances, and that while there was ample rail transportation the communities do not patronize the railroads but demand better stage service.

Commission Must Act in Fare Case.—The New York, Westchester & Boston Railway, New York, N. Y., has obtained an order to compel the Transit Commission to show cause why the commission should not be compelled to grant permission to the railway to charge a 7-cent fare. The proceedings for the increase were started in 1919 before the old Public Service Commission, and in January, 1920, the commission reported that the company should be allowed the increase on the merits of the case, but that the city ordinances prevented. An appeal has been upheld by the Appellate Division and by the Court of Appeals, but the Transit Commission has refused to grant the higher fare.

Service Will Be Improved.—The Supervisor of Public Utilities of Dallas, Tex., has just completed a check of traffic on the various lines of the Dallas Railway. It is announced that orders will be issued shortly for the placing of more cars on a number of lines and the speeding up of traffic generally. Graphs showing the exact status of passenger travel on the various lines are being prepared by J. W. Monk, inspector of service in the Supervisor's department, and these graphs will be used as a basis for orders that will be issued directing improvement in service. The Dallas Railway has expressed a willingness to co-operate in every way possible and marked improvement of street car service in Dallas is expected to result from the checks and orders issued.

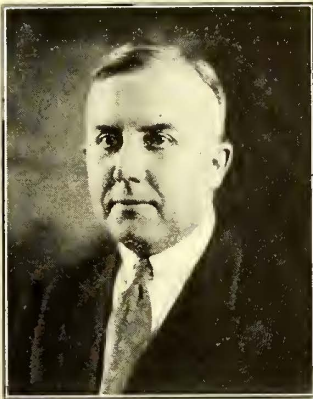
Jitneys in Beaumont Authorized.—Jitney buses can resume operation in competition with the street car lines of Beaumont, Tex., under an opinion rendered by City Attorney Charles Smith, who issued a ruling that the bus and hack ordinance recently enacted by the City Council repeals all other ordinances relating to the regulation of buses, hacks and all manner of service cars. The fact that jitneys can come back is evidenced by the conclusion that jitneys fall under the act's definition of service cars, and that if jitneys will comply with the provisions of the new ordinance relating to service cars, they may resume operation. So far no jitneys have started operation, but there is much talk of several lines being established at an early date. Officials of the traction company so far have had nothing to say about the prospective operation of jitneys.

Personal Mention

Railway Man Elected

E. M. Walker, Who Sold Terre Haute on Safety Cars, Heads Electric Light Body

It is not often that the central station fellows reach out to put an electric railway man at the top of their society tree. But a recent vote of the members of the Indiana Electric Light Association could be interpreted in no other way than that there was a unanimous desire to have Edwin M. Walker, general manager of the Terre Haute, Indianapolis & Eastern Traction Company, as president of their organization. These chaps, who are always hypnotiz-



E. M. WALKER

ing people into buying percolators, curling irons and other things that consume watts, evidently recognized in Mr. Walker a friend and brother, for he, too, understands supremely well the salesman's art of inducing people to purchase just a little bit more than they had intended to. Concluding that any one who can perform such a stunt with the prosaic street car is a past-master, the electric light men have capitalized on the fact that Mr. Walker was one of them—hence the presidency.

Walker certainly would not be the popular choice for the name of a man who makes them ride in his 100 per cent safety car city, but such is fate.

Although a native of England, Mr. Walker escaped before the homeland fog could chill his natural enthusiasm. He was born in Worksop, Nottinghamshire, in 1875. With his family he settled in Lockport, N. Y., shortly after their arrival in the United States. In the high school of that town the necessary preliminary training was received which enabled him in 1893 to attend Williams College at Williamstown, Mass., from which he was graduated in 1897. Between the terms of his college career he worked for the Lockport Gas & Electric Company, Lockport, N. Y., and became a full-timer there at the termination of his college course. Hardly a year's time had elapsed before the Hyde Park Gas & Electric Company, Hyde Park, Mass., recognized the ability of this young utility operator by making him its manager. His selling

teeth sharpened on the hardened New Englanders, he now felt equal to almost any task. The year 1903 found him one of those protean public utility managers, located in the Tennessee-Virginia town of Bristol in charge of a gas, electric and street railway property. From 1907 to 1912 a similar task was his in Muscatine, Iowa, and then he moved over to Dubuque for another five years. His eyes then turned toward Terre Haute, a city that threatened to lose its place as a shrine of pilgrims when Gene Debs made his headquarters at Atlanta, but a city which Safety-Car Walker has made the Mecca and Medina of so many managers, mayors and others who have been seeking their salvation. Yes, it is the same Walker who was later elected president of the Illinois Electric Railway Association.

H. E. Ross Western Manager of "Electric Railway Journal"

Harry E. Ross, until recently business manager of *Electric Traction*, will hereafter represent the ELECTRIC RAILWAY JOURNAL in the Western territory, with headquarters at 1570 Old Colony Building, Chicago. Mr. Ross, in his connections with the former publication, has acquired an experience in the field and an acquaintance with manufacturers which will enable him to broaden the scope of ELECTRIC RAILWAY JOURNAL service. As Western manager he will succeed David Cameron, who has been made manager of the mid-Western territory, with headquarters in the Leader-News Building, Cleveland, Ohio. Both Mr. Ross and Mr. Cameron will represent also the new McGraw-Hill publication, *Bus Transportation*, the first number of which will be issued in January, 1922.

Mr. Ross became connected with *Electric Traction* ten years ago, and three years later was made advertising manager of the Kenfield-Davis Publishing Company, publishers of *Electric Traction*. For the past three years he has served as secretary of the company and business manager of *Electric Traction*.

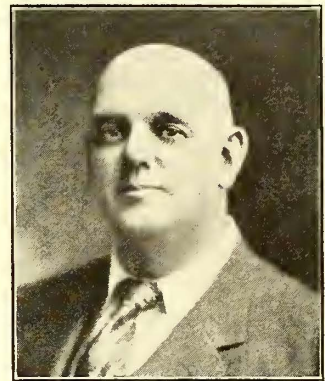
Ten Years Service and Still Smiling

A speaking acquaintance with more than 25,000 people, in Dallas, Tex., more than one-sixth the entire population, is an asset possessed by few persons, yet G. C. Swearingen, a conductor on the Junius-Tyler line of the Dallas (Tex.) Railway, claims to be on personal speaking terms with this number of Dallas residents, and has acquired this acquaintance which in most instances is personal friendship while serving as conductor. He has been in the employ of the Dallas Railway for about ten years and has had runs on various lines. He is jovial and always has a kind word for every patron who boards his car. "Of course, I find many grouches," he says, "but the majority of the people who ride street cars in Dallas are kind and courteous, even to a street car conductor."

Successful Salesmanship

B. R. Bigelow Sells Service and Safety to the Inhabitants of Detroit with Prose and Poetry

About this time last year, as people were hurrying through Cadillac Square in Detroit, Mich., their attention was drawn to a spectacle for which the more curious side of their nature demanded an explanation. The cynosure of their wide-opened eyes was an enthusiastic and gesticulating man of Herculean proportions. Beside him stood what, in comparison to its fervent exponent, appeared to be a toy street railway car. Whether it was the intention of the huge gentleman on whom attention was focused to have somebody "take one home for the baby" or to entice a gullible public to share in the profits of a wonderful new invention, many were at a loss to decide. The conjectures and supposi-



B. R. BIGELOW

tions of those who gathered around were not entirely allayed when words to this effect reached their ears:

This car is known as the Birney safety car. I presume some of you are wondering why it is called a safety car. Is that name one to sell it by or one to swear by? Well, I hope to prove to you while I am here in Detroit that this car is without question the safest and best from the viewpoints of the operator, the general public and the manager and directors of the company. This car is one-man operated, a feature that is not only feasible but practicable.

Such talk as this could surely be nothing but the forerunner to the surreptitious appearance among those engrossed listeners of a genteel person inquiring solicitously, "Wouldn't you be interested in sharing in the profits to come from this invention which will revolutionize the street railway industry? One man will be able to do the work of two, etc." However, as the demonstration progressed, the pecunious aspirations of some were damped while others felt more at ease. The demonstrator's explanation followed in some such words as these:

I invite those present to take a trip in fancy with me on this car. You will notice that the car cannot be started when the door is open because the brake is set. When it is released the door automatically closes and the step folds up. After the operator has started the car with this controller he must hold this handle down while he is running. The mere removal of the operator's hand from the controller handle automatically cuts off the power, sands the rails and sets the brake with no other effort on his part. It also causes the doors, both front and rear, to be easily pushed open by any one.

This car has been brought here by the

Railway Commission of the city of Detroit. I am pleased to inform you that there are over 150 cities throughout the United States in which this type of car is in successful operation and this city is one of the largest places where they are soon to be run.

This successful and magnetic demonstrator was B. R. Bigelow, who has been appointed sales manager of transportation for the Detroit (Mich.) Municipal Railway. His working model was a sample of the 100 safety cars that were, several months later when the track construction was completed, to assist materially in augmenting street transportation facilities. Following up his first successful campaign of selling the public on the Birney car, he later demonstrated the Peter Witt type car with equal success. This scheme of feeling the public pulse was begun before any orders had been placed by the commission and it was almost entirely due to this staunch safety-car advocate that the idea was sold to the commission and city officials as well as to the riding public.

Mr. Bigelow is the first man to hold a position where his entire time is devoted to the selling of electric railway transportation. He was raised on a farm in the hills near Lewiston, Maine. His first electric railway work was "bucking the line" on the extra list. He soon became convinced that a cheerful greeting cost nothing and brought priceless rewards. For past-time he wrote verse. Such experiences as throwing switches at a lonely spot on a rainy night or sleeping inclined against a favorite post in the carmen's room while waiting on the extra list were the incidents to which he tuned his lyre. One poem which he wrote on the safety car was reprinted far and wide.

Mr. Bigelow's practical experience was gained as motorman and inspector in Maine and later in Bridgeport, Conn. His connection with the Bridgeport division of the Connecticut Company was severed when he became associated with the Detroit Municipal Railway in August, 1920.

During the World War Mr. Bigelow acted as "Four-minute man," delivering addresses at the theaters and at other public gatherings. He often recited his original verses composed to suit the particular occasion.

In January last, when he was made sales manager of transportation, Mr. Bigelow established an office on the site of the municipal railway carhouse and offices where permanent buildings are now under construction. He lives on St. Jean Avenue in a newly settled section of the city where the first municipal cars were started in operation in February, and good-naturedly refers to the outlook from his window as the "Belgian frontier."

The loyalty of the operators to whom the sales manager has taught transportation salesmanship was recently evidenced by their giving him a ring which is prized very highly by Mr. Bigelow and which besides bearing his initials and "M.O. 35" is inscribed "The Pioneers."

Besides his sales talks to the car operators, in which he drives home the fact that courtesy is the keystone in the arch of transportation salesmanship, Mr. Bigelow has delivered safety talks at the city schools with the full cooperation of the principals and teachers and has been requested to talk at various clubs and churches. In his

talks to the school children, which must be adapted to various groups from the kindergarten up, he frequently gains the attention of his audience by jokingly referring to his 310 pounds of avoirdupois and the conspicuous absence of his hair. His endeavors with the pupils are as earnest as any. His ideas in his own words are:

The joy of service ever clings
And to our hearts its comfort brings.

Secretary Appointed

E. N. Willis, of Long Utility Experience in Texas, Occupies Southwestern Association Post

E. N. Willis was recently appointed secretary of the Southwestern Electrical & Gas Association. Mr. Willis, who took over the work as secretary of the association on Nov. 1, is filling the vacancy caused several months ago by the resignation of H. S. Cooper.

This position affords Mr. Willis an opportunity to continue his previous efforts for the growth and development



E. N. WILLIS

of all the utilities in the Southwest. He is well acquainted with the public utility problems and personnel throughout Texas and that section covered by the membership of the association through his connection for many years with the Southwest General Electric Company at Dallas, Tex. More recently he was with Smith & Whitney, power plant engineers, as manager at Houston. Mr. Willis is anxious to work with the members for the increased usefulness of the association by enlarging its membership and by making it a clearing house for all information of value to utilities in that section.

Mr. Willis was born in St. Lawrence County, New York, in 1880. He was graduated in electrical engineering from the Lawrence Scientific School, Harvard University, in 1903. He was connected with the General Electric Company in Schenectady in the test department and as construction engineer from 1903 until 1911, when he went to Dallas, Tex., with the General Electric Company of Texas. Soon after he was assistant to the sales manager of the Southwest General Electric Company. In 1919 he became manager of the Houston office for Smith & Whitney. He has been in close touch with the public utilities throughout the Southwest during the past ten years and from both a commercial and operating standpoint is well qualified for the work of the Southwestern Association.

H. H. Arnold Joins Miami Property

H. H. Arnold, for the past fourteen years connected with the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has resigned and accepted a position with the Miami Beach Electric Company, Miami, Fla. The latter company, which is owned by Carl Fisher of Indianapolis, is a large concern which furnishes power for factories and beach lines in the neighborhood of Miami, and but several weeks ago agreed to lease and operate the lines of the Miami Traction Company, which were recently purchased by the city.

Mr. Arnold, who has had a very interesting career since joining the traction company, came into the employ of that corporation on July 1, 1917. For several years he worked in various capacities with the interurban system, and four years ago he was made superintendent of the Crawfordville division. His resignation, which he tendered to the Terre Haute, Indianapolis & Eastern Traction Company recently, took effect on Nov. 15. Upon leaving the company last week, Mr. Arnold took a brief vacation, after which he will leave for his new position in Florida on Dec. 1.

Although no definite announcement has been made, it is believed that Frank Adair, Lebanon, Ind., will succeed Mr. Arnold as superintendent. Mr. Adair has been with the Lebanon branch for several years.

Obituary

James C. Gardiner, employment manager Chicago Elevated Railways, died recently. He had been an employee of the Elevated Lines for over twelve years.

Fred R. Fahlsing, claim agent Indiana Service Corporation, Fort Wayne, Ind., died Oct. 29 as the result of an infection arising from a nasal operation. Mr. Fahlsing was forty-eight years old. He was a native of Fort Wayne and had been in the employ of the Indiana Service Corporation and its predecessor, the Ft. Wayne & Northern Indiana Traction Company, for twenty-seven years.

Charles C. Beckman, a veteran employee of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, died recently. At the time of his death Mr. Beckman was superintendent of track and roadway of the Youngstown Municipal Railway Company, a position he had held since the Youngstown city railways were segregated under the service-at-cost plan of operation. Prior to that he had been superintendent of ways and structures of the system, rising to that position through years of faithful service. Particularly in Sharon and vicinity was his death keenly felt for it was there as a citizen and as a railway man that he had spent the greater number of his years and it was there as a young man he helped build and then operate the street car line between Sharon and Sharpsville. Mr. Beckman was born on Sept. 13, 1870. He was continuously in the employ of the company from his first construction job in 1893 till his death.

Manufactures and the Markets

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

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

"Pittsburgh Plus"

Opinions of Two Railway Purchasing Agents Differ as to Justice of This Price Basis

There has recently been a lot of discussion in official circles and in the newspapers about the "Pittsburgh plus" system of fixing prices on rolled steel, except light and standard rails. This discussion has referred to the trade practice of selling steel for a price equal to the market price at Pittsburgh, plus the freight from Pittsburgh to destination, no matter where the shipping point may be.

Certain sections of the country feel that this practice serves as a discrimination where the purchasers happen to be located close to a plant which may be a long way from Pittsburgh. For example: a Chicago purchaser of steel must pay the Pittsburgh market price plus a freight rate of 38 cents per 100 lb. in carload lots for steel shipped to him from Gary, Ind., as this is the rate from Pittsburgh, whereas the actual rate from Gary to Chicago is only 5½ cents. Similarly, the l.c.l. rate that must be paid for steel bought in Gary for shipment to Chicago is 54 cents, while the Gary-Chicago rate is only 17 cents. This represents a premium to the manufacturer in this particular case of 32½ cents or 37 cents per 100 lb. of steel sold, besides eliminating a base price that might be lower if the Chicago market was independent of the Pittsburgh market.

The following views of Harry H. Lloyd, purchasing agent Indianapolis Street Railway and Terre Haute, Indianapolis & Eastern Traction Company, are particularly enlightening:

"I am frank to state that I have never been able to definitely make up my mind whether we would gain or lose if the Pittsburgh plus practice were abolished. If the mills were to sell steel at approximately the same price f.o.b. shipping point, it can readily be seen that the consumer living in the vicinity of any steel mill would reap the benefit. But on the other hand, if prices were about equal, this would eliminate any competition from steel mills at points farther away. If we in the Central West were all buying from the Gary mills the Pittsburgh mills would be eliminated from competition unless they cut prices to equalize the freight charge for the longer haul. Suppose that after establishing business with the Gary mills, they became overloaded with orders, or through some disturbance had to curtail production so that we could not get material which might be needed in a hurry, it might then be necessary to go into the Pittsburgh district at a higher price, because of the additional freight. The Pittsburgh mills might be working up practically to capacity on orders for the district where they control business on account of short-haul freight and they would not be interested in our transient business. The abandoning of the Pittsburgh plus

practice might thus give the steel mills a price monopoly on the business in their own district, but I do not believe it would work out even this way in actual practice.

"For example, if an Illinois steel company were selling steel in the Chicago district and its price was \$5 or \$6 per ton lower than the Pittsburgh market, because of the difference in freight rate, I am inclined to think this company would advance its price a sufficient amount practically to absorb the difference in freight. The Federal Trade Commission would have no authority to interfere and the purchasers in this district would have no power to complain, because they would be buying the steel at as low a price as it could be obtained elsewhere. My opinion is, therefore, that the practical result of abandoning the Pittsburgh plus practice would be to bring about a price which would vary at the different plants an amount sufficient to equalize the variation in freight rates and maintain a perfectly uniform delivery price to the consumer. The same thing applies today in certain bronze products used by all electric railways, on which if one asks quotations from four or five manufacturers located at greatly varying distances a uniform delivered price is bid.

"It has been suggested on occasions that the Pittsburgh base be changed to a Chicago base, and while this would be of advantage to us in this section, it would discriminate against the East, and particularly against the big independent plants. While I know it is thought that the steel corporation benefits by the Pittsburgh base, I think that the plan is really more equitable and of greater advantage to big independent plants such as Bethlehem, Midvale and Jones & Laughlin, as they are located in the Eastern district and therefore could compete there with any of the big plants of the steel corporation.

"I am inclined to think that an abandonment of the Pittsburgh plus plan would force the independents to cut prices to secure business in localities where the steel corporation could maintain a price level, having the effect of putting the big independents out of competition. To illustrate my point, the steel corporation could compete on even terms with Bethlehem, Midvale or Jones & Laughlin in the Pittsburgh district on account of the big Carnegie plant. In the Gary district the corporation could compete on even terms with any local plant through the Illinois Steel Company, or the corporation would have the advantage through the Tennessee Coal & Iron Company plant at Birmingham. On account of the difference in freight rates, the corporation would have the advantage over the independents located in the Pittsburgh district. Therefore, as one looks at the plan from different angles, it seems after all that in the final analysis the

Pittsburgh plus practice presents many advantages to offset any seeming discrimination."

George Kuhn, purchasing agent for the various properties controlled by the United Light & Railways Company, expresses his view of the practice in this way:

"We have felt since the Gary district was opened up that the purchasers of steel in the Central and Western sections of the country are not getting the benefit of the location of the steel mills in this territory. As I understand it, a large amount of the ore used in the Pittsburgh district comes from Michigan or Minnesota and the cost of shipping this should be less to Gary than to Pittsburgh. Presumably the cost of producing steel at Gary does not exceed that at Pittsburgh, and we do not see any reason why the Chicago district steel producers should arbitrarily add the Pittsburgh-Chicago rates on steel that we in the West have to buy.

"On the other hand, I presume that when the Gary mills sell steel east of Pittsburgh they have to meet the Pittsburgh competition, losing the freight that they pay on the finished steel from Gary to Pittsburgh. However, this is only an assumption. We feel that when we are arbitrarily charged the Pittsburgh market price and the Pittsburgh-Chicago rate on our steel we are paying for something we do not get."

Foreign Commercial Laws to Be Digested

The Commercial Laws Division of the Bureau of Foreign and Domestic Commerce, Department of Commerce, which was established some three months ago with A. J. Wolfe as its chief, has undertaken as its first task the preparation of digests of the commercial laws of the principal nations of the world. This undertaking was previously begun in a slightly different form, but never carried to completion. Needless to say, such digests will be invaluable to American firms having dealings abroad. Another project which the division will undertake is the collection of names of reliable attorneys in all parts of the world together with information as to the class of business in which each specializes, whether he undertakes the collection of accounts and his scale of fees, whether he can correspond in English and what American clients he has satisfactorily represented.

Japanese Railway Activity

An indication of the improvement in business conditions in Japan since the 1920 critical financial stress of that country is received from the recent placing of an order with the Westinghouse Electric & Manufacturing Company for substation material amounting to \$76,000. This order covers the complete equipment for two substations and includes eight rotary converters, twelve transformers, two complete switch gear equipment and station lighting transformers.

Other large orders for railway material recently have been placed in this country by the Seto Electric Railway, the Bisai Electric Railway, the Nagasaki Electric Railway, the Tokio Municipality and by other large Japanese railway operating companies and municipalities.

Rolling Stock

East St. Louis, Columbia & Waterloo Railway, East St. Louis, Ill., has just completed the construction of one all-steel express car.

Miami, Fla.—As a result of the action of the citizens of Miami in voting a bond issue of \$100,000 to take over the defunct traction system in Miami, eight new cars have been ordered.

Birmingham Railway, Light & Power Company, Columbia, S. C., recently purchased ten steel car bodies, which are being repainted and equipped with new motors in the shops of the company. The new cars, each of which seats fifty-two passengers, will go into operation about Jan. 1. The cars were originally purchased by the railway at Columbia, S. C., during the war for use on the line to Camp Jackson, where they were used less than ten months. When repainted their color will conform to the regulation of the cars on the Birmingham Railway, Light & Power Company's lines.

Track and Roadway

Jacksonville (Fla.) Traction Company is completing an extension on the Brentwood line, which loops around and into the Florida State Fair grounds.

Oklahoma Railway, Oklahoma City, Okla., has practically completed its Blackwelder Avenue and Linwood Boulevard extensions. The McNabb line to Lincoln Park will be completed about Jan. 1.

Los Angeles (Cal.) Railway has started work on the renewal of tracks, ties and flooring of the part of the East First Street bridge used by the railway. New tracks and ties have been installed on Spring Street.

Plaza Railway, Charlotte, N. C., will begin a program of improvement of its way which will include repairing and ballasting. It is expected the line will begin operating within a month. The company was recently incorporated.

Texas Electric Railway, Dallas, Tex., may extend its line either from Corsicana or Waco to the newly discovered Mexia oil field. This proposition or the possibility of a new line to serve this district has been under discussion for some time and has been referred to previously in the *ELECTRIC RAILWAY JOURNAL*.

Northwestern Elevated Railroad, Chicago, will install a very complete interlocking plant of the latest electro-pneumatic type next spring. This will be located at the branch-off from the main line to Evanston into the storage yard at Howard Avenue, which is the city limit of Chicago and terminus of a large number of the "L" trains.

Duluth (Minn.) Street Railway will complete work on the Twenty-first Street traction extension by Jan. 1, 1922. This was assured by Alfred Williams, superintendent of the Superior division of the company lines. The Wisconsin Railroad Commission set this date as the limit for the construction work.

New York & Harlem Railroad, New York, N. Y., has finished a connection on Eighty-sixth Street between its tracks and those of the Second Avenue Railroad, a portion of whose shop buildings the former road has remodeled to furnish facilities for repair and maintenance of its cars. This connecting link was necessary, as there existed no other way by which the cars of the New York & Harlem Railroad could reach the Second Avenue shops at Ninety-sixth Street and Second Avenue.

Mobile Light & Railroad Company, Mobile, Ala., according to a press report has suggested that the city permit it to operate its suburban cars across St. Joseph Street north to St. Francis Street as a relief for congested conditions. In the event that this permission is granted, J. Howard Wilson, president of the company, said that the railway would route the interurbans across the street instead of down Dauphin and around Water Street if the city would permit a track to be laid along St. Joseph Street.

Pacific Electric Railway, Los Angeles, Cal., according to engineer H. E. DeNyse, announced recently that the so-called "left-hand turn" at Seventh and Main Streets in Riverside would be eliminated at once. A new track lay-out has just been received for this intersection and work of

putting it in place has been begun. There was but a single track curve and both the inbound and outbound San Bernardino-Redlands cars used this curve. As there was not sufficient room between the curb and the track for an automobile to pass a car, there have been many narrow escapes at this point. Fifteen thousand dollars has been appropriated to provide the necessary facilities and the work will be pushed through as rapidly as possible, according to Mr. DeNyse.

Power Houses, Shops and Buildings

Phoenixville, Valley Forge & Stafford Electric Railway, Phoenixville, Pa., is reported to contemplate the construction of a power plant at Williams Corners to meet the need imposed by the operation hereafter by that company of the Montgomery & Chester Electric Railway.

Hydro-Electric Power Commission, Toronto, Can., and the municipality will construct facilities for transfer of passengers and freight between cars of the city railway system and those of the commission at the northern part of the city. The commission and the city will each bear one-half the cost of construction and maintenance.

Mobile Light & Railroad Company, Mobile, Ala., has expended the following sums on improvements since the authorization of the 7-cent fare: One tuscan steel carhouse on Springhill Avenue, \$24,688; special track-work at the central carhouse, \$25,213; one-story office building at the carhouse, \$12,473; Birney safety cars, \$58,250; one boiler, \$32,654.

Eureka (Cal.) Municipal Railway has announced that it intends to purchase soon a new converter of somewhat larger capacity than the one that now furnishes direct current to the trolley system. The reliability and capacity of the present substation with but one unit is not considered sufficient especially in view of higher standard of service that it is the intention of the municipality to give to the public since the system was taken over from its owners.

Trade Notes

L. H. Lund has been elected auditor of the Westinghouse Electric International Company, to succeed F. N. Kollock, resigned.

Tulsa (Okla.) Street Railway has purchased forty-three watt-hour meters from the Economy Electric Devices Company, Chicago, for measuring the energy consumption of the individual cars.

Holyoke (Mass.) Street Railway has purchased fifty-four Sangamo Economy watt-hour meters of the inspection dial type for a complete equipment of the action cars in Holyoke and Northampton.

Combustion Engineering Corporation, 43 Broad Street, New York, recently opened two branch offices, one at 216 Latta Arcade, Charlotte, N. C., in charge of T. E. Nott, and the other at Seattle, Wash., where the company is represented by Fryer-Barker Company, 1133 Henry Building.

American Steel & Wire Company, Worcester, Mass., contemplates an expenditure of \$100,000 on its Worcester works at once to give employment to its men who would be idle otherwise. This is the local share of the \$10,000,000 which the United States Steel Corporation has voted to expend in the extension of its manufacturing plants.

Cincinnati (Ohio) Traction Company is having electric heaters installed on some of its cars for experimental purposes. The heaters now are in operation on all cars on the Zoo Eden Park line, because it is impossible to heat with coal, as the smoke pipes interfere with the top of the Mount Adams incline shed through which the cars operate.

Wagner Electric Manufacturing Company, St. Louis, Mo., has announced the appointment of F. T. Coup as district manager in charge of its Cincinnati office, located at 20 East Ninth Street. Mr. Coup is well acquainted with the Wagner line of products, having been connected with the company for many years and until recently in charge of its Milwaukee office.

Edward M. Eliot has been appointed assistant to the vice-president of the Underfeed Stoker Company of America. He had previously been service manager for the

Diamond Power Specialty Company, Detroit. Mr. Eliot was engaged in power-plant design and construction for eight years with the Oregon Electric Railway, the Electric Bond & Share Company and other companies. He is a graduate of Massachusetts Institute of Technology.

Virginia Corporation, Alexandria, Va., has been granted a charter by the State Corporation Commission to engage in the business of building remodeling and repairing railroad cars, electric cars, etc. The maximum capital stock is \$100,000 and the minimum is \$25,000. The officers and directors of this concern are as follows: E. A. Morse, Washington, president; L. D. Christie, Alexandria, treasurer, S. A. Aplin, Washington, secretary.

Westinghouse Electric & Manufacturing Company has established an oil testing service wherein operators can mail samples of insulating oil to the Westinghouse works for test. It provides a thoroughly dry bottle, a safe mailing container, which when received at the works allows careful testing by experienced men and a prompt report of test results. This fills the needs of many power plant operators who have no good method of telling whether or not their transformer oil is in perfect condition.

Detroit Seamless Steel Tubes Company, Detroit, Mich., has again found it necessary, since occupying its new modern plant, to increase its sales staff. The position newly created is that of assistant general manager of sales. C. C. Rosser, head of the department, has announced the appointment of C. H. Hobbs for this position. For over fourteen years Mr. Hobbs was with the Lackawanna Steel Company and for the last five years was the district representative in charge of the Detroit office.

Los Angeles (Cal.) Railway is preparing twenty-five new steel cars seating 54 passengers for service. The cars have multiple-unit control and will be operated singly or in two-car trains. The first of the new cars will be in service about Dec. 1 and some trains will be running by Christmas. The car was designed by the engineering department of the Los Angeles Railway and built by the St. Louis Car Company. Westinghouse motors and air brake equipment is being installed at the Los Angeles Railway shops. Two 526 L Westinghouse motors are used. The car weighs 38,000 lb.

Ikutaro Inouye, an electrical engineer of the government railways of Japan, has recently come to the United States to study electric railway operation. He is at present in Los Angeles investigating the methods in use on the Pacific Electric lines. He will study as well the operating methods in the repair and construction shops of the company and in its power houses and will study in particular the problem of connecting communities on opposite sides of the city.

New Advertising Literature

Pawling & Harnischfeger Company, Milwaukee, Wis., now has available Bulletin No. 206, dated October, 1921, illustrating and describing radial rail drills.

American Steel & Wire Company, Chicago, is distributing a bulletin describing two resistors for welding rail bonds recently developed by the company.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., now has available for distribution bulletin No. 1108, which is a new publication describing the various types and sizes of power transformers built by the company.

Root Spring Scraper Company, Kalamazoo, Mich., has issued a new catalog of its spring scrapers, lifeguards and accessories which is well illustrated and presents in an instructive manner the details of design and operation of these devices.

Jordan Brothers, 74 Beekman Street, New York City, have issued a new publication covering their well-known commutator truing devices. This type of device is used to true commutators and slip rings without taking armatures and rotors out of machine.

Westinghouse Electric & Manufacturing Company is distributing Vol. 3, No. 1 of "Westinghouse Electrification Data." This issue treats of the economy of railroad electrification and includes a portion of the progress report made by the Superpower Survey to the Secretary of the Interior. Among the installations mentioned are the Norfolk & Western Railroad, New York, New Haven & Hartford Railroad, Erie Railroad, Grand Trunk Railroad and Chicago, Milwaukee & St. Paul.