

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Chicago Companies Win Against City in Commission Order

CITY officials of Chicago will find little consolation in the final order of the Illinois Public Utilities Commission in the Chicago Surface Lines fare case, an abstract of which appeared in our issue of Nov. 13. The ruling of the State body is a complete victory for the petitioning companies, granting a recognition of the full valuation contended for, a return of 7½ per cent and a continuance of the existing 8-cent rate of fare. Because of the immensity of the property involved—said to be worth at present-day reproduction prices more than \$247,000,000—the summary of proceedings and the conclusions of the commission are worthy of special comment.

Since the Surface Lines' first petition was filed in November, 1918, a hostile city administration has resisted every order and has overlooked no legal technicality for possible reversal in the courts. These very attacks, however, only served to strengthen the companies' position because each resulting decision confirmed the attitude of the commission. In fact, the highest court of the State held that "the commission would be justly chargeable with neglect of duty if it had not done what it did," namely, grant emergency relief at a time when the continuance of a strike threatened the very existence of the utility. Nevertheless, the municipality is said to be planning further appeals, but having been guided by rulings of the Supreme Court in the Quincy case and the Springfield Gas case, the Illinois commissioners are believed to have framed a "bombproof" order.

An oft-repeated contention of Mayor Thompson's representatives is that the contract ordinance with the Surface Lines made it impossible to interfere with the 5-cent rate of fare. This point, however, has already been disposed of by the Supreme Court in the statement that the general assembly has never conferred upon any municipality power to make inviolable contracts for public utility rates. While continuing its objection that the State commission was without jurisdiction, the city resisted almost every proffer of evidence in the valuation proceedings. Seven different bases of valuation, all of which exceeded the capital account, were offered by the companies, but a return was asked only on the total of the capital account or price at which the companies had agreed to sell to the city. The commission did not accept the agreed purchase price *per se* as a valuation for rate-making purposes, but by granting many of the deductions demanded by the city and adding other items, the resulting present valuation of property used and useful for public service was found to be at least equal to the existing capital account.

The commissioners followed the directions of the Supreme Court in the Springfield Gas case by setting forth all the elements of value declared to have been considered. They found, however, that nothing could

be gained from a study of amount and market value of outstanding securities, and they disposed promptly of the city's argument that the "value for taxation purposes" should also be considered. An allowance of \$20,000,000 was made for "going value," to represent the value of property destroyed as obsolete and 10 per cent which was added for cost of conducting construction.

The commission took a conservative attitude in stating that while the companies were entitled to a return of 7½ per cent on the allowed valuation and were not quite earning that amount, a higher rate of fare would not be granted because of the "possibility and probability of readjustment of operating expenses resulting from a return to normal conditions."

According to newspaper reports, the city's lawyers sought to intimidate members of the Illinois commission a few days before the final order was handed down by calling attention to the fact that a new state administration had been elected on a platform hostile to commission regulation. Chairman Wilkerson indicated by his response that he and his associates would not be swayed in their decision by this announcement. The final order was a complete answer to these attacks, and it contained the statement that "appeals to popular prejudice, involving baseless charges of so-called 'contract breaking,' are, in reality, assaults on the courts. They involve the startling doctrine that public officials shall disregard the duty which they are required to perform under their oaths of office."

Can Common Sense Control in Urban Expansion?

IF CITIES could only grow as they ought, that is according to some logical plan, vast sums of money could be saved and great inconvenience to people avoided. Unfortunately in the cases of many cities, particularly the older ones, the directions and rates of population spread have been determined by considerations other than the greatest ultimate good of the greatest number. For instance, one force, almost everywhere potent, has been the application of the skill and ambition of the real estate promoter. His desire to make money has furnished an incentive for the spread of population over larger areas. The result on the whole has been beneficial to the public, but many illogical distributions have thus occurred. Although, as Ben Franklin would have said, the promoter had an ax to grind, others besides himself benefited by the grinding of his ax, but not as much as they should have done.

The largest single factor in the spread of population has been transportation. Of course the motives of, first, the bus, and later the tramway and rapid transit line promoters was profit, just as in the other case. Transportation routes followed the lines of least resistance and of probable greatest ultimate and permanent traffic. Here again possible private gain and public

good were inseparably linked, but competition and misdirected foresight sometimes caused expansion in directions not the most consistent and economical.

Congestion itself, of course, furnishes an incentive to expansion, but it is too bad for a city to wait until its inhabitants are uncomfortable or in danger from unsanitary conditions before suitable provision for their adequate housing is made. Where population growth is exceedingly rapid, however, the city fathers have a real problem on their hands, as is illustrated in New York City, Chicago, Boston and elsewhere today.

So much for incentives to growth and their effect on that growth. There is another consideration almost as vital, namely, the natural and artificial barriers which hamper growth in the directions wherein the incentives would foster it. Take, for example, New York City. This example is particularly appropriate at the moment because this issue of the *ELECTRIC RAILWAY JOURNAL* contains a report of a meeting of the New York Section of the American Society of Civil Engineers, held on Nov. 17, at which the transportation difficulties and possibilities of the "metropolitan district" were considered.

New York is developing largely to the eastward because that is easiest, although, logic says, abnormal expansion in that direction will be very costly to the city in the long run. To the north there is unlimited territory, but the north-and-south rapid transit lines are badly congested and facilities can be augmented only at enormous expense. To the south New York Bay separates Staten Island (Borough of Richmond) from Manhattan and, until an expensive tunnel under the bay is constructed, the island is, relatively speaking, isolated, water transportation being the only resource.

To the west the State boundary divides the city from the promising residence territory in near-by New Jersey. This imaginary line is a very real barrier to the healthy growth of the community. Even if resistance east, north and south were equalized, which it will be in time by the exercise of good engineering and skillful financing, the population spread would be forced by the State line to be fanlike rather than circular. The possible gains through symmetrical development are so great, however, that even the legal and political obstacles imposed by them ought to be overcome.

In New York the lopsidedness of the spread is particularly unfortunate because much of the supply of fuel, food and other necessities comes from the West, hence must cross or go around Manhattan. The result is not only increased direct cost but greatly augmented secondary cost through the consequent congestion. This condition tends to grow worse.

Another point to which we wish to call attention is the emphasis which Mr. Brinckerhoff, in his comprehensive paper, places upon the co-ordination of all desirable means of transportation in a city. In such a general plan each type of transportation would function where it could do so to the best advantage and as part of a well-balanced whole. The opportunities for such a comprehensive plan increase, of course, with the size of the city, although they are present wherever there are two means of transport. In the smaller cities and in those of medium size the only opportunity for union is with the trolley and bus service, each assuming the work for which it is best fitted. Where there are rapid transit lines, they should be made part of the general scheme.

While this plan has been followed in most large American cities except New York as regards rapid

transit and surface lines, but few instances exist in any city in the country of the co-ordination of the services of buses and trolleys. It might be mentioned in this connection that in London the buses, trams and underground roads in the Ashfield system not only are operated under one management but pool their earnings, while a recent franchise in Paris puts both buses and trams under one management.

It is not too much to say that only in this way can the most satisfactory results be secured.

The New York situation has been treated at length, partly because it has been brought into the limelight by the A. S. C. E. meeting, partly because the transportation problem there is getting out of hand due to political and financial conditions. It illustrates what many cities are or will be up against, in lesser degree. It is hoped that concentration of attention upon the New York transportation problem at this time will point some helpful lessons of wide application, particularly as to the need for broad, future-looking city planning, which, in the case of New York and many other localities, should be large-scale regional planning.

Return to Level Rail Heads and Wheel Treads Proposed

AT THE annual congress of the Tramways & Light Railways Association, held in London on July 3, 1920, the subject of rail sections came up for extended discussion as the result of a paper presented by P. J. Pringle, M. I. E. E., wherein he raised the question of the advisability of returning to a level, flat tread for rail heads and wheels. In this paper the belief was expressed that "coned" treads on wheels and rails tended to create corrugation and that, as the life of the rail is decreased by wear, the coning of the rail tread is increased. The statement was also made that where flat, level wheel treads have been run on rails originally having flat, level treads, the rail heads became coned with a slope of about 1 in 20, but that this coning remained constant after reaching that contour. The wheel tread used had no connecting fillet between the flange and the tread.

This is a matter of particular interest because the views expressed are at variance with the recent and rather general adoption of the curved tread design for the heads of girder grooved rails in this country as well as in Great Britain and Australia, but the proposal to re-establish the flat tread is by no means new, since the tramway systems in France have but recently adopted a new standard grooved rail having a level, flat tread. The French action is a reversion from a design which had a curved tread contour. Unfortunately we are not advised as to the reasons assigned for the action of the French tramways.

British opinion on the subject is divided, but we believe that ultimately the British Standards Committee will settle upon the curved tread, just as the Australian and American engineers have done. Our reason for this belief is based upon the inability of any street railway system to re-lay all of its tracks overnight or to re-turn and re-shape all of its wheel treads at one fell swoop. With a curved rail-head contour of some form prevailing, the wheel treads are bound to take their shapes therefrom.

With regard to the statement that coned rail treads and coned wheel treads tend to create corrugation, it may be noted that this belief has been quite general in

this country, and the adoption of the curved tread on the American standard girder grooved rails was first proposed as a possible means of eliminating corrugation. While the curved rail tread has not wholly succeeded in accomplishing this result, it has certainly been the means of prolonging the time of appearance of the evil.

As far as increased rate of coning is concerned, we are inclined to the view that the increase is often due to widening of the track gage which so frequently occurs as the tracks grow old, due to the weakening of the fastenings which permit the rail heads to tilt outward. This in turn causes the head near the gage line to take more than its share of the wheel contact pressure, resulting in increased wear at or near the gage-line fillet. Such wear is often neutralized if the rails are re-gaged. We do not believe that there are sufficient data available to support a claim that either wheel-tread coning or rail-head coning is increased proportionately as the life of the rail or wheel is decreased by wear. There are a great many things besides coning which have an influence upon the wear of rail heads and wheel treads.

The thought in this country is more to the effect that there may be wisdom in re-shaping our wheel treads to a concave contour, thus abandoning the conical wheel tread. Some experiments have been made along this line and the indications are that the curved wheel treads retained their original contour to a marked degree and did not acquire an increased coning. Data are insufficient to lead to conclusions relative to the comparative rates of wear between flat inclined wheel treads and concave wheel treads, but the impression has been gained that the rate of wear per thousand miles run is somewhat less on the concave treads. We think it quite timely that the committees on equipment and way matters of the American Electric Railway Engineering Association are about to take up the study of this important phase of the subject of rail and wheel wears.

American Engineering Council Is a Going Concern

LAST Thursday, Friday and Saturday there was a meeting in Washington which was of more than ordinary importance to the engineering profession immediately, and to the entire country ultimately. This was the first meeting of American Engineering Council, the governing body of the Federated American Engineering Societies, organized last June. The steps leading to the formation of this organization, the history of the organizing conference in Washington last June when representatives of almost 200,000 engineers were gathered, and the developments since then have all been chronicled in these columns. The outstanding fact today is that this work has resulted in an organization which is a going concern with the most praiseworthy objects and the ability and talent to achieve results of great value.

That Herbert Hoover should agree to accept the presidency of the new council and to add to his already heavy burden the active leadership of this organization should and does in itself indicate the importance and character of the program of endeavor ahead of the council.

The organization, be it plainly understood, is one for service for the public good. It is not so much that the engineer himself will benefit from the activities of the organization, but rather that he will have an

opportunity, in a new and much larger way, to put his knowledge and training, his kind of thinking, to work on problems of general and national importance. The first task outlined by Mr. Hoover, in what proved to be his inaugural address, is to solve the largest problem of today, that involving or resting upon the relations of capital and labor. This is a social problem, but one which should be susceptible of solution by engineering methods. All other methods have so far failed to find the answer.

It is with this understanding that the country as a whole and the industries dependent upon engineering particularly should welcome and give unlimited encouragement to this newly formed or accomplished association of the engineers of the nation.

Labor Assumes a New and Constructive Attitude

TAKING the statements of Matthew Wold, vice-president of the American Federation of Labor, as representing the attitude of organized labor which has crystallized out of the past few years of unprecedented unrest, it appears that the efforts of the engineers on the particular problem mentioned above as a part of the program of American Engineering Council will be most welcome to the workers of the nation. Mr. Wold indicates that labor is now ready to co-operate in any and every way to increase production and he commends especially the work of efficiency engineers and others who have been trying through scientific analysis to make each man's efforts count for more. This appears to be a change in attitude which is wholesome and from which there should be untold benefit to the entire community. It is an attitude, of course, which is nothing more nor less than should be expected from a disinterested consideration of how each man may make the most of his opportunities in whatever capacity he finds himself, but, frankly, this has not been the apparent attitude of organized labor on this subject in the past. Mr. Wold has been accused of being an opportunist, but this stand, we hold, is so patently clear and logical that to uphold it can serve no temporary purpose, but must result, if maintained with any self-respect, in real advancement.

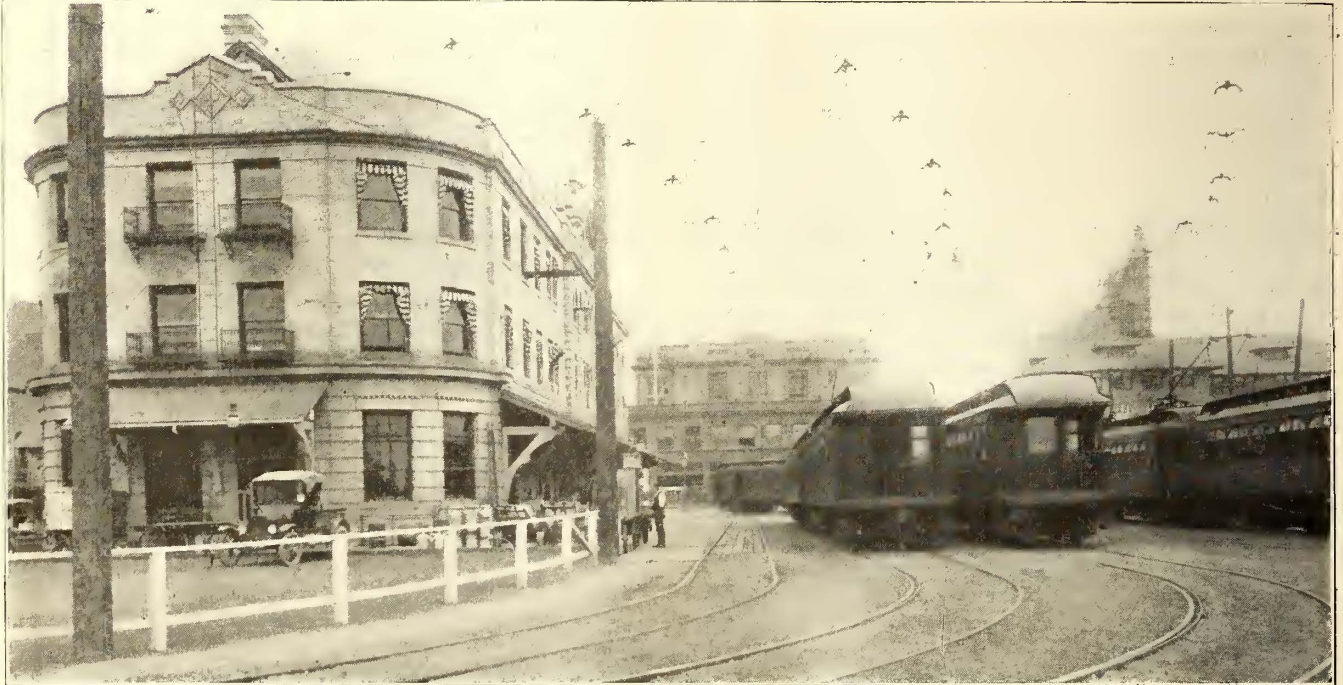
Engineers should be particularly pleased to find that their work of years is commencing to bring fruit in a most gratifying manner. Mr. Hoover, as the newly elected president of the American Engineering Council, mentioned this subject the day after Mr. Wold's declaration, and immediately recognized the added opportunity thus thrown open to the engineers in their efforts to work for better economic and social conditions in this country.

Electric railways have always had certain difficulties in this line and have faced labor problems more complex than in most other industries. If the engineer, the scientific analyst, can be accepted by both labor and capital as the proper person to undertake the task, he can be of service which will prove invaluable to railway properties in working toward more efficient operation, in providing better service to the community and in improving the general relations between capital and labor.

It may be, as the *New York Times* says editorially, that Mr. Hoover may "bring Mr. Gompers to accept engineers as a golden bridge between labor and capital."

Spokane's Traction Problems Are Being Solved

This Article Has Particular Reference to the Inland Empire System, Recently Reorganized After a Short Receivership—While It Was in Part Overbuilt, the Property Has Attractive Possibilities



INLAND EMPIRE INTERURBAN TERMINAL IN HEART OF SPOKANE

ALTHOUGH Spokane, Wash., is a young city, having been incorporated as the village of Spokane Falls, with 1,000 inhabitants, as late as 1881, it has had a vigorous electric railway history. In fact, the growth of the local transportation business was in some respects too vigorous for financial stability, particularly that of the interurbans built to connect the city with nearby points. The result has been the development of some difficult problems, particularly on the interurban lines, which were accentuated by the war. These are now in process of being solved, although drastic means have been necessary in the process.

So many conflicting reports have been current regarding recent and prospective developments on the local properties that a representative of the *ELECTRIC RAILWAY JOURNAL* recently made a visit to Spokane to examine the situation at close range. This article contains the results of some of his observations.

The city has had a development which is remarkable, both as to dimensions and quality. Its location is such that it has been thrown upon its own resources more than most cities. It is situated in a rich timber and agricultural district which is the source of substantial freight and passenger business. The last census shows the city to have a population of 105,000. Its area is 39.25 square miles. To serve this population and this area it has a total of 140.5 miles of electric railway, expressed in single-track equivalent, within the city limits. Of this trackage 53.5 miles is owned by the Spokane & Eastern Railway & Power Company and 87 miles by the Washington Water Power Company. Besides the service inside the city the Spokane & Eastern Railway

connects Spokane with Cœur d'Alene, Hayden Lake, Liberty Lake and Vera, and the Washington Water Power Company's interurban lines connect it with Hilliard, Medical Lake and Cheney. There is also a third road, the Inland Empire Railroad, which connects the city with Colfax and Moscow. This is a single-phase line. The Spokane & Eastern and the Inland Empire are constituents of the former Spokane & Inland Empire Railroad, which went through receivership, was duly sold and reorganized as two separate roads.

THE INLAND EMPIRE SYSTEM

Although the Washington Water Power Company is vitally concerned with the general transportation problem in Spokane, it is pursuing the even tenor of its way struggling to make ends meet on a 6-cent fare. The most pressing local problems are those now in process of solution on the Inland Empire System, which has been "through the mill" during the past few years.

When F. E. Connors was asked to go to Spokane as receiver for the Spokane & Inland Empire Railroad in January, 1919, he found it necessary to study the property minutely to discover the causes of its financial difficulties and the possibilities of improving its earning capacity. Mr. Connors is of an optimistic temperament and he approached his task in a cheerful frame of mind. And he needed it. He discovered that the property was hopelessly behind in its finances, although possessing a fairly adequate equipment. He first had a comprehensive summary made of the data regarding the property, showing that it had been formed by the consolidation of four original corporations, the Cœur

d'Alene & Spokane Railway Company, Ltd., the Spokane Traction Company, the Spokane Terminal Company and the Spokane & Inland Empire Railroad Company. As of Jan. 1, 1919, the total of bonds of these companies outstanding was \$4,414,500. The records showed also that in 1911 Henry L. Gray made a report on the actual cost, cost of reproduction and depreciated value of this property. The book cost as of Jan. 1, 1911, was \$24,820,000 approximately. He estimated the cost of reproduction as about \$13,922,000 and the depreciated value as about \$12,133,000. In November, 1918, A. J. Wittchell, chief engineer of the property, estimated its junk value as \$5,950,000, included with which was the book value of the Nine-Mile power plant, \$1,350,000.

A BIRDSEYE VIEW OF THE SYSTEM

Statistics are dry, but it is necessary to give a few facts regarding the property, as compiled for Mr. Connors by the department heads, in order that any discussion regarding it may be comprehensible.

First as to the system as a whole, Mr. Connors found on his hands a property consisting of two distinct divisions, one known as the "Interurban Division" and the other as the "Traction Lines." The former comprised 168 miles of main track, 18 miles of second tracks and 39 miles in yard tracks, sidings and spurs. On the traction line the respective figures were 44, 12 and 7 miles in round numbers. In the city of Spokane there was a total single-track equivalent of $53\frac{1}{2}$ miles. In the city 9.3 route-miles was double track in paved street and 2.8 miles was single track. The interurban equipment included thirteen electric locomotives, fourteen passenger coaches, five combination motor and baggage cars, fifteen combination motor and baggage passenger cars, seven combination motor and baggage cars, two parlor cars, 136 flats, 212 box cars, five cabooses, fifteen gondola cars, nine stock cars, six refrigerator cars, eleven work cars and two automobile cars. The "traction" equipment, including the Vera line, included seventy-six passenger cars, two trailers, seven work cars and one electric motor truck.

Mr. Connors found the property equipped with a fair shop, with an adjoining carhouse and yard. On the traction side of these provision was made for a total storage capacity of ninety-two cars; there being five tracks in the carhouse with a capacity of four cars each, a track in the carpenter shop with a capacity of four traction or two interurban cars, a track in the paint shop with a capacity of six traction or two interurban and two traction cars, and trackage in the yard for

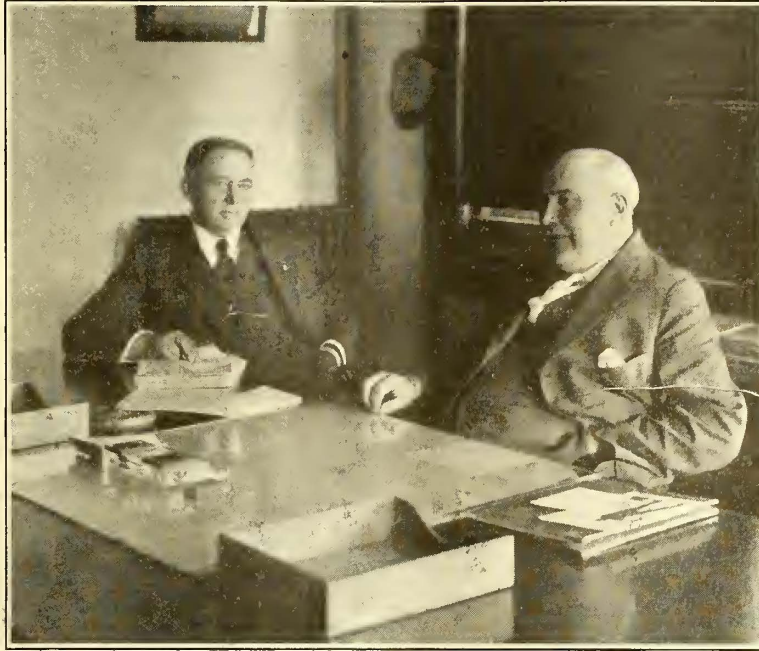
sixty-two cars. On the interurban side there were two tracks for three interurban cars each, one for two interurban and two for one, each equipped with a 15-ton electric crane for heavy repairs. The yard storage capacity was for thirty interurban equipments, so that a total of forty interurban cars could be stored.

With the shops working full capacity, eight equipments could be put through per month for general overhauling; that is, three interurban and five traction equipments. The track repair facilities at full capacity could handle 225 box cars for medium and light repairs

per month. As no changes have been made in the shops and yards as yet, that being a part of the property that Mr. Connors thought could wait until more pressing matters were cared for, these data are substantially correct for the present date.

COMPANY OWNS MODERN WATER POWER PLANT

Now, as when Mr. Connors arrived on the scene, power for the traction and interurban lines and for industrial customers is supplied partly from a plant located at what is known as the "Nine-



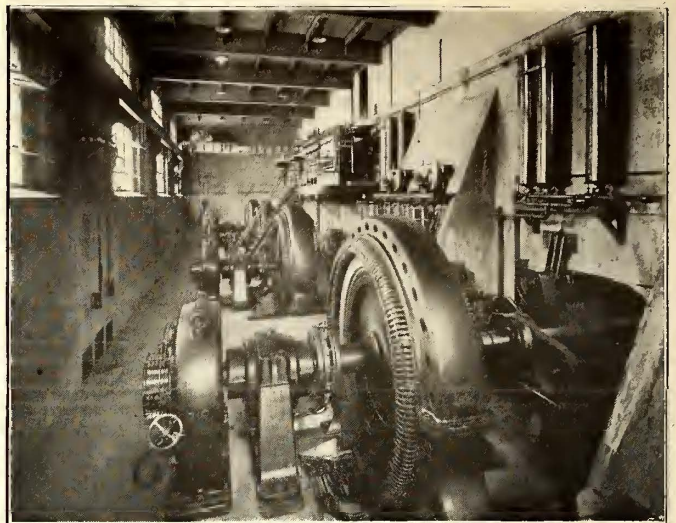
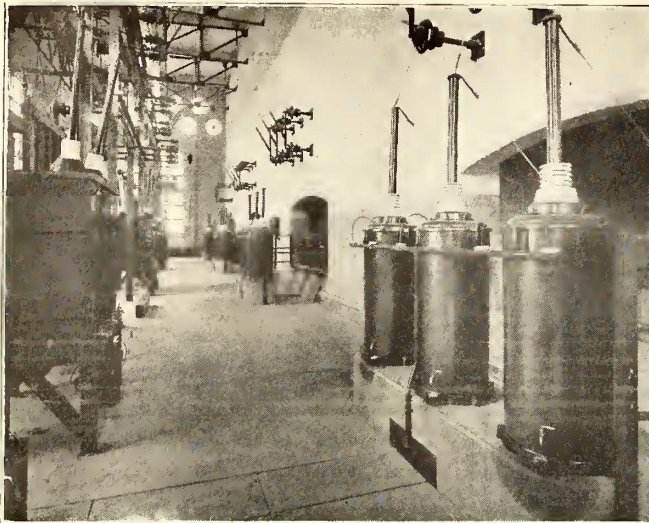
VICE-PRESIDENTS CONNORS AND PAINE
(Mr. Connors is at the right)

Mile Bridge" on the Spokane River, approximately 10 miles below Spokane. Construction on this plant was started in 1906 and the plant was put in commission in July, 1908. The dam is of the spillway type of construction, of concrete, 58 ft. high and 225 ft. wide. The power house, which is built as a part of the dam, is of brick and concrete construction approximately 82 ft. high x 65 ft. wide and 115 ft. long. It contains four 5,000-hp. Hercules turbines, of the open-flume type, built by the Holyoke Machine Company. These are controlled by oil pressure governors of the Lombard type. There are four double-leaf headgates to each wheel chamber, each 4 ft. x 20 ft. in dimension and electrically operated.

In the plant are four 3,000-kva. Westinghouse three-phase, 60-cycle, 2,200-volt generators, star-wound with neutral grounded, the power house being the only place where the neutral is grounded. In addition to the governor control of the turbines there is a water rheostat arranged to take the load in case of failure of the outside lines.

During the average low-water stage of the river the plant has a continuous twenty-four-hour output of 7,000 kw. Ability to handle peak loads lasting over natural periods is provided for by placing a temporary flash-board dam 4 ft. high on the dam's crest.

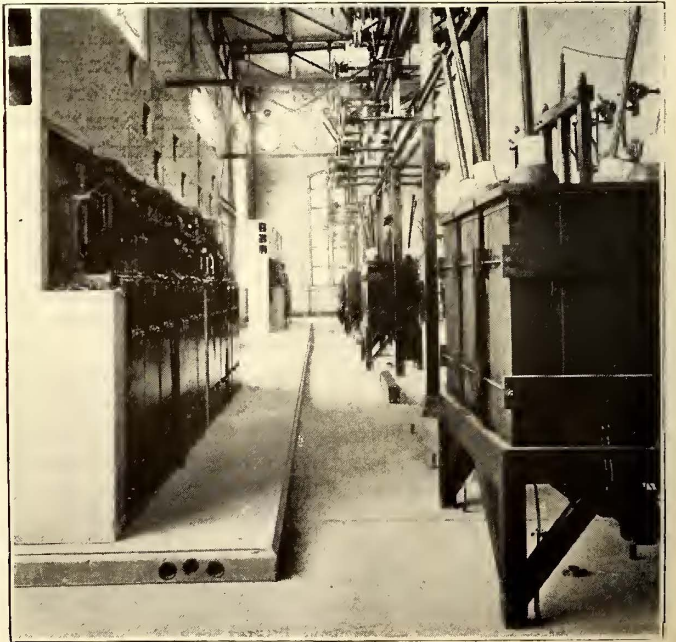
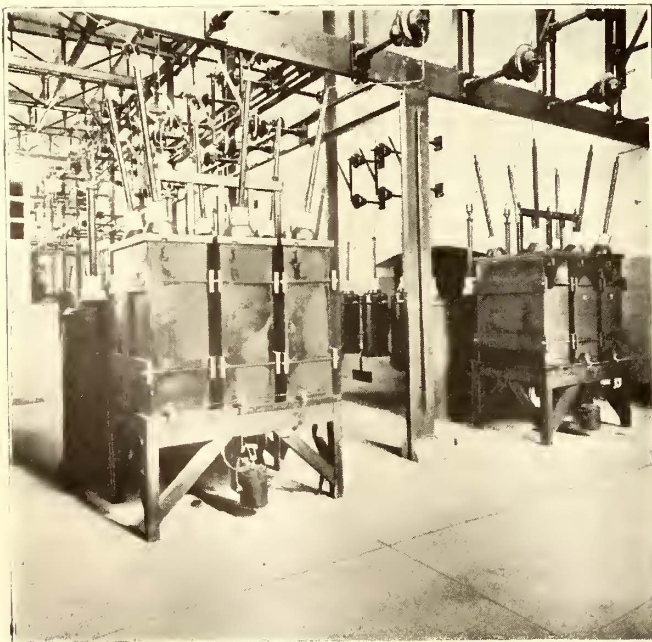
A crew of eleven men is required to handle the plant, including a foreman, a mechanic, release operators, etc. All mechanical and electrical repairs are made by the permanent force of men.



HIGH-TENSION AND GENERATOR ROOMS IN NINE-MILE BRIDGE PLANT. GENERATORS ARE DRIVEN BY 5,000-HP. TURBINES



NINE-MILE BRIDGE HYDRAULIC PLANT SUPPLIES PART OF SPOKANE'S RAILWAY POWER



SWITCHING, PROTECTIVE AND OTHER HIGH-TENSION APPARATUS IN THE NINE-MILE BRIDGE POWER PLANT

Power from the plant is sold to the Spokane Paper Company to the extent of nearly 20,000,000 kw.-hr., and more than 5,000,000 kw.-hr. to other customers annually.

SOME FACTS REGARDING THE POWER TRANSMISSION SYSTEM

From the Nine-Mile power plant duplicate transmission lines are carried over leased right-of-way 100 ft. wide, minimum, to a point inside the city limits of Spokane. These lines are 60,000-volt, three-phase, and they lead to what is known as the "City Substation." This supplements power purchased from the Washington Water Power Company. It contains two 1,500-kw. motor-generator sets, one 2,000-kw. set, four 2,000-kw. transformers and one 2,500-kw. booster set. The substation is used for regenerating power for use on the city lines and handling interurban cars into and out of town. It is also used as a high-tension switching station.

There is also a frequency-changing station for the supply of power to the single-phase division, containing four 1,000-kw. motor-generator sets, two 960-amp. booster sets and one 275-cell, 1,980-amp. battery with necessary auxiliary apparatus. This station is used to change the current from 60 to 25 cycles. The maximum demand upon it is about 2,500 kw. and the output 17,000 kw.-hr. daily. During the wheat-handling period the respective figures are 4,000 kw. and 25,000 kw.-hr.

On the Colfax-Moscow interurban lines there are ten substations located approximately 10 miles apart, of standard design. They are of brick and concrete, and contain 375-kva. oil-insulated, self-cooled, single-phase, 25-cycle transformers, which transform the voltage from 45,000 to 6,600 for the contact system. No regular attendants are kept in the substations, the attendants in the adjoining passenger stations looking after the apparatus. The single-phase line which feeds the substations is carried along the right-of-way on wooden pole construction.

The 6,600-volt overhead on this line is of single catenary construction, the $\frac{7}{8}$ -in. messenger supporting No. 000 grooved copper trolley wire. A small amount of commercial power is sold along this route.

The Cœur d'Alene line is a 600-volt direct-current line and power is supplied by a three-phase, 60-cycle, 60,000-volt circuit which also serves the paper company. There are four substations, which differ in capacity and construction, along this line.

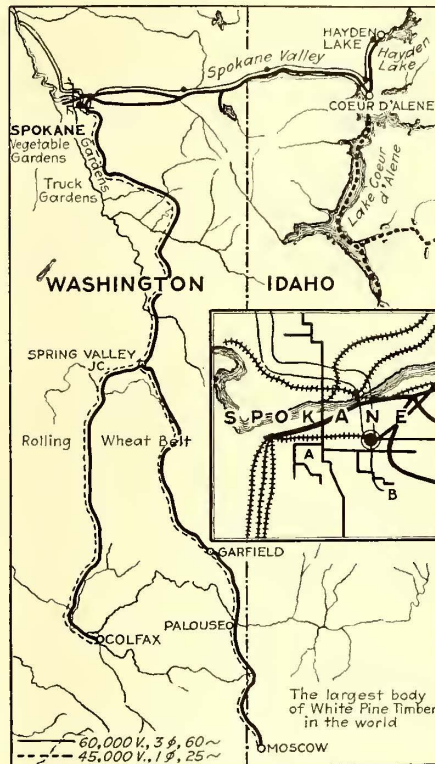
The above summary gives a tangible idea of the physical property that Mr. Connors had to work with on taking charge of this property. It does not cover the personnel, which formed an intangible but very real part of the assets. Vice-President Waldo G. Paine, Superintendent J. F. Gannaway and other heads of departments had the operating details well in hand and co-operated with the receiver in the program of giving better service at less cost. With the assistance of these colleagues Mr. Connors immediately instituted a régime of rigid economy, pending the inauguration of plans for increasing the income, and he laid his problem frankly before the public, the City Council and the Public Service Commission. He made clear to those interested that wage increases and desired improvements in service could only be made when an adequate income had been secured. As receiver, Mr. Connors made an excellent impression on the "powers that be," and when the road was sold under foreclosure he was elected

vice-president and general manager. He is building up a popular interest in the property, which is now about making operating expenses, including taxes and bond interest. His chief difficulty is with the Inland line, which is too expensive an operating proposition for the available business. Just how this will work out remains to be seen.

Of course the principal business of the Inland Empire system is interurban passenger and freight service. The city lines should be operated jointly with those of the Washington Water Power Company by one company or the other. For years plans to this end have been in preparation and still are so. One-half or more of the gross income of the property comes from freight traffic, from \$700,000 to \$800,000 per annum being derived from this source. The company has also a large regular and

seasonal passenger traffic between Spokane, Colfax, Moscow, Liberty Lake, Hayden Lake and other points.

Since Jan. 1, 1919, there has been a substantial growth in the company's business. This is partly attributable to the public appreciation of the fact that the road is not a steam railroad subsidiary although it interchanges freight with steam roads and owns considerable freight rolling stock. Further, new industries are locating along the railway

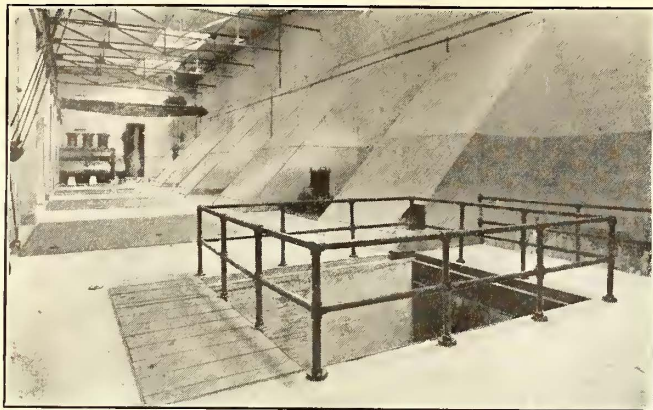


INLAND EMPIRE RAILWAY AND TRANSMISSION LINES

lines, bringing substantial and steady traffic increases. The use of good publicity methods is also a factor in this development.

In the way of improving passenger service, a new four-car daily train from Spokane to Moscow, Colfax, and intermediate points has been added, with excellent financial results. While this line has steam competition the business that is being built up is to a great extent new business.

Economies are also being introduced by a process of elimination. For example, at Hayden Lake, an important traffic point about 40 miles from Spokane, the company has leased the hotel, which it owns, thus relieving itself in an unprofitable enterprise by transferring it to an individual who can easily make it profitable. It was necessary originally to build and operate this hotel in order to make a delightful resort available to possible patrons. As many patrons of the hotel and golf course now reach the lake by automobile there is less incentive to the railway to operate the hotel than there was formerly.



GANTRY ROOM IN THE NINE-MILE BRIDGE POWER PLANT OF THE INLAND EMPIRE SYSTEM

The company has also sold its development at Liberty Lake, 16 miles from Spokane. This point is the source of a satisfactory traffic, the round-trip fare being 75 cents for adults before 3 p.m., 50 cents thereafter, with half fare for children. By concentrating on the transportation phase of this arm of the business the management is able to get the best returns. For several years the railway also owned a baseball team as a means of inducing traffic. This venture never paid and has been discontinued.

The Inland Empire System has long been famous for its excellent freight service, which is given in keen competition but also in close co-ordination with the steam roads. During the year as many as 12,000 cars of lumber, 4,000 of grain, 1,000 of apples and many of miscellaneous products originate on its lines. Its great appeal to patrons, particularly in l.c.l. business, is the promptness of the service, trains being made up about midnight with terminal delivery at 6 a.m. Of the company's nearly 500 freight cars a considerable number strayed during the war and have not since "turned up."

The freight department is operated strictly along steam road lines, similar freight terminals being employed. The company owns its right-of-way to these terminals. On the Moscow line each crew makes 178

local freight-train miles per day, six days per week, averaging twelve loads. All runs are made within the sixteen-hour limit and a crew consists of a conductor, a motorman and two brakemen. The Colfax line schedule calls for 154 local freight-miles per day. The railway furnishes no trucking service.

Spokane is a city with a small, compact business district. The car lines loop around this, connecting it with the several residence districts, and there is comparatively little cross-town and short-haul riding. The fare is 6 cents, and while tickets at the same rate are furnished for the convenience of patrons, few use them, say 5 to 6 per cent of the total. These tickets are sold by conductors and a number of storekeepers. The cars are largely one-man operated, having been rebuilt for this purpose. Ultimately all cars in the city (including those of the Washington Water Power Company) will be thus operated. Neither company has at present any cars of the safety type. No difficulty in fare collection is reported and there appears to be little delay in loading owing to the extra duty placed on the motorman. No fare boxes are used, the collections being recorded by means of overhead register.

Baseball Fans Speedily Transported

FOR the World's Series baseball games at Cleveland, the Northern Ohio Traction & Light Company operated a nine-car interurban train daily out of Akron. This train left the Terminal Building at 10:10 o'clock every morning and arrived in Cleveland at 11:40 a.m. Leaving the Terminal Building the train was cut in three sections and after leaving its Silver Lake Junction station the train was coupled at Fells and operated as a solid train to Newburg, the city limits of Cleveland, where it was again cut in three sections. The company operated special interurban trains every day from all points along its line and carried thousands of baseball fans to the series. It was the first time an attempt was made to operate a nine-car train over the lines of the Northern Ohio Traction & Light Company. The train made an attractive appearance, most of the cars being new.



SPECIAL NINE-CAR TRAIN, WHICH CARRIED WORLD'S SERIES ENTHUSIASTS TO CLEVELAND

Transportation for Greater New York

Civil Engineers Discuss Plans for Metropolitan District—H. M. Brinckerhoff Recommends Balanced Development by East and West Lines—Discussion Participated in by Representatives of Rapid Transit Commission, Transportation Companies and Others

THE transportation needs of Greater New York was the topic considered at a meeting of the New York Section of the American Society of Civil Engineers, held at the Engineering Societies Building, New York, on Nov. 17. An invitation to be present had been extended by this section to the Metropolitan Section of the American Society of Mechanical Engineers and to the New York Section of the American Institute of Electrical Engineers. The subject, whose official title was "Urban and Suburban Passenger Transportation," was introduced by a paper presented by Henry M. Brinckerhoff of Parsons, Klapp, Brinckerhoff & Douglas, consulting engineers. W. J. Wilgus, consulting engineer, and formerly vice-president New York Central Railroad, acted as chairman of the meeting. Abstracts are given of Mr. Brinckerhoff's paper and of the discussions which followed it.

Address of Mr. Brinckerhoff

LET us first free our minds of our habitual ideas of New York as Manhattan Island and think rather of the great surrounding district extending even outside of the five boroughs of Greater New York. The population of Manhattan New York, by the 1920 United States census is 2,284,103, or nearly 50,000 less than in 1910. Old Manhattan New York as an independent, self-contained city no longer exists. Part of its residential population has been forced out and beyond its borders by the crowding in of business, and others of its citizens have been tempted to move across the rivers by the improved transportation offered by its enlarged rapid transit lines.

For our purpose we may take the New York Metropolitan District substantially as defined by the United States Census Department, which includes in New York State the five boroughs of Greater New York and Westchester County north to include Yonkers and New Rochelle. On the New Jersey side it takes in all of Bergen and Hudson counties and parts of the counties of Passaic, Essex and Union. This district is shown in the first accompanying map and is outlined by a heavily shaded broken line. Taking the intersection of Thirty-fourth Street and Fifth Avenue of Manhattan as the urban center of activity and describing circles with 5, 10, 15 and 20 mile radii we find that this Metropolitan District lies mostly within the 15-mile circle and all within 20 miles of the center. It is true that there are in this territory many entirely independent, unrelated classes of people and interests, but we also find a constant growth in the commoner functions of city life. The trains, for instance, not only carry workers morning and evening from Newark to New York, but also simultaneously from homes in New York to employment in Newark. The average population density of this district is 21 per acre, which is the same as corporate Chicago in 1916.

The conception of this whole district as a Metropolitan unit, a single city, involves an urban and suburban traffic view in which Manhattan Island figures as the central delivery district for this larger area, with sub-

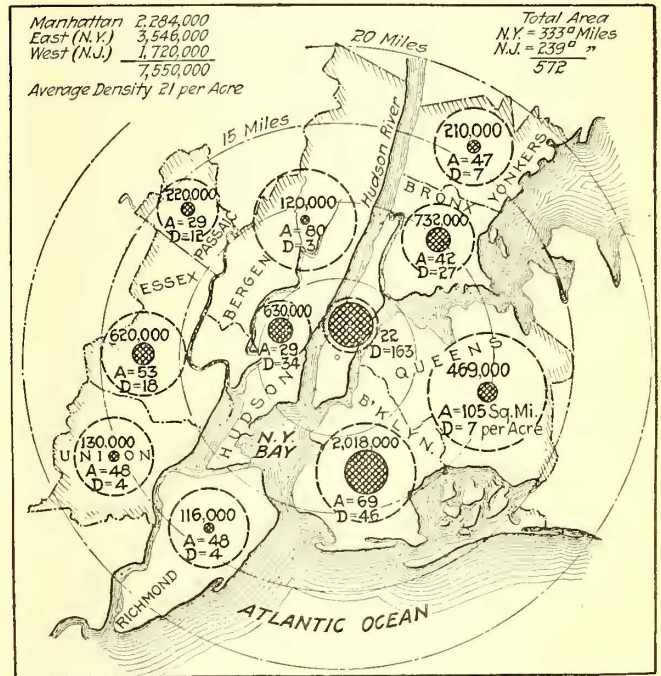


FIG. 1—METROPOLITAN NEW YORK AS DEFINED BY THE CENSUS BUREAU, SHOWING AREA (A) IN SQUARE MILES, POPULATION, AND POPULATION DENSITY (B) IN INHABITANTS PER ACRE

centers of activity in Brooklyn, Newark, Yonkers, etc., but all related to one another by the common necessity of easy, frequent passenger intercommunication. Outside our central Metropolitan limits we must visualize a further zone of strictly suburban character, contributing daily riders to and from the center, but less closely tied to the city district in other respects.

AREA AND DISTRIBUTION OF POPULATION OF METROPOLITAN DISTRICT

Looking at our map we see that the axis of Manhattan Island north and south almost exactly divides this Metropolitan District in two equal parts. In Table I are given the areas in square miles of the boroughs and counties and parts of counties included. In each case the areas not suitable for residence, such as the marshes along the Hackensack River and bordering Jamaica Bay, have been omitted. This division shows New York with 333 sq.miles and New Jersey with 239 sq.miles.

TABLE I—AREA OF BOROUGHS AND COUNTIES IN METROPOLITAN DISTRICT

Manhattan.....	22 square miles	14,000 acres
Brooklyn.....	69 square miles	44,000 acres
Bronx.....	42 square miles	27,000 acres
Queens.....	105 square miles	67,000 acres
Richmond.....	48 square miles	31,000 acres
Yonkers.....	47 square miles	30,000 acres
(Westchester)		
Total in New York.....	333 square miles	213,000 acres
Bergen County.....	80 square miles	51,000 acres
Hudson County.....	29 square miles	18,500 acres
Passaic County.....	29 square miles	18,500 acres
Essex County.....	53 square miles	34,000 acres
Union County.....	48 square miles	31,000 acres
Total in New Jersey.....	239 square miles	153,000 acres
Grand total area, Metropolitan District.....	572 square miles	366,000 acres

Table II shows the population for one hundred years by fifty-year periods of the Metropolitan District and the densities per acre at present.

Two points are important to be noted from this table, *i.e.*, the ratio between the population east and west of the river has been constantly decreasing during the past one hundred years. The denser and larger population groups were originally located close to the harbor shipping development, but this characteristic is passing with the increase in manufacture and distribution of population by the rapid transit lines. The eastern or New York territory shows particularly the wider distribution and the New Jersey side in points like Newark and Paterson has been affected by the manufacturing distribution.

This means that in the past New York harbor development as a port in a general way confined the location of dense population in districts close to the shipping activi-

TABLE II—POPULATION DISTRIBUTION IN METROPOLITAN DISTRICT

	1820	1870	1920	Population per Acre 1920
Manhattan.....	123,000	942,000	2,284,000	163
Brooklyn.....	11,000	420,000	2,018,000	46
Bronx.....	22,000	74,000	732,000	27
Queens.....	6,000	33,000	469,000	7
Richmond.....	1,600	18,000	117,000	4
Yonkers.....			210,000	7
Total in New York State.....	163,600	1,487,000	5,830,000	Ave. 27
Bergen County.....	9,000	30,000	120,000	3
Hudson County.....	9,000	129,000	630,000	34
Passaic County.....		39,000	220,000	12
Essex County.....	12,000	133,000	620,000	18
Union County.....		31,000	130,000	4
Total in New Jersey.....	30,000	362,000	1,720,000	Ave. 11
Total for Metropolitan Area.....	193,600	1,849,000	7,550,000	Ave. 21
Ratio of New York to New Jersey, 5½ to 1		4 to 1	3½ to 1	

ties. With the rapid transit development on the New York side came the ability to live at great distances from employment centers which then produced the rush to the Bronx, Queens and Brooklyn.

TRANSPORTATION GROWTH IN THE METROPOLITAN DISTRICT

When New York was limited to Manhattan Island the transportation lines naturally developed north and south the long way of the city. Generally speaking, business was downtown (south) and the residence sections up-town (north). So long as New York as a city was confined to this long narrow island this characteristic prevailed, but when the population began to overflow and inter-business relations among the neighbor cities grew closer a spreading-out process commenced. The great dual subway system financed by the city of New York followed the north and south idea on Manhattan Island but branched out north, east and southeast into the Bronx, Queens and Brooklyn. We have now the further plans of our public service commissioner, the result of a long study by the chief engineer, Mr. Turner. Hampered by the limitations of state boundaries, he has followed to a logical conclusion the result of distributing further large population increases by lines built exclusively in New York State and leaving the New Jersey side to take care of its own problem.

Mr. Turner predicts that corporate New York (the five boroughs) will grow to nine million population by 1945. He finds by a further development of the idea of north and south rapid transit lines on Manhattan Island that at least two eight-track subway lines will be required. Each of these will have two levels of four tracks in a single street. The total number of north



FIG. 2—EXISTING RAPID TRANSIT LINES AND LINES PROPOSED FOR CONSTRUCTION BY NEW YORK TRANSIT COMMISSION

and south subways and elevated tracks on Manhattan Island following this plan will ultimately be forty-eight. This is shown to be necessary in providing for continued distribution of population along rapid transit lines in Bronx, Queens, Brooklyn and Richmond Boroughs on these general lines.

Turning to our population charts we see that from the standpoint of Manhattan Island as a delivery district sparsely settled areas are available west of the river at shorter distances than to the east, which should warrant their consideration.

From a general economic standpoint the fact is apparent that the vital necessities for the maintenance of a great city population, food, fuel and water, come to this Metropolitan District from the west and that the cost of transporting the two former from the west side of the district to Brooklyn and Queens is almost as great as hauling from Pittsburgh to Newark.

PROVIDE MORE TRANSPORTATION WEST OF THE HUDSON

This line of thought naturally leads to the suggestion that from the Metropolitan standpoint at least a portion of future population increases should be provided for west of the Hudson. This can most readily be accomplished by east and west rapid transit lines running from Queens or Brooklyn to Bergen and Hudson counties in New Jersey and passing right across Manhattan Island. This is warranted and would bring about a better distribution of population relatively to Manhattan as the center of the whole Metropolitan area.

A rectangular system with transfers at the intersections would tend to distribute the business development more evenly across Manhattan Island instead of the great local congestion which must result along the avenues from four and eight-track subways built exclusively north and south. A shorter average haul to the delivery district would also be obtained and more balanced two-way traffic developed than by forcing the population growth entirely to the east.

On map Fig. 3 a general suggestion for such lines is shown to convey the idea of a gridiron system in rela-

tion to the whole Metropolitan area. These east and west rapid transit tracks could be fed by the transfer from the present or new surface lines.

The upper line crosses Manhattan at 125th Street, penetrating Bronx Borough in one direction and Bergen County, New Jersey, in the other.

The next line utilizes the Queensboro Bridge and reaches Flushing and vicinity, while in the west, after crossing the Hudson River, it crosses the southern part of Bergen County and extends to Paterson.

The third line from the north is located as an extension of the Steinway Tunnel across Forty-second Street, then under the Hudson and west to tap the territory of Bloomfield and Montclair.

A more southerly line connects with the B. R. T. Broadway Elevated and runs on the Williamsburg

TABLE III—CLASSES OF TRANSPORTATION AND THEIR DAILY TRAFFIC, NEW YORK METROPOLITAN DISTRICT

	Per Cent of Total for Whole Met. District
Buses:	
Fifth Avenue Company and City Buses.....	2
Steam railways entering New York.....	4
Ferries.....	5
Surface lines.....	35
Rapid transit:	
Elevated and subways.....	54

Bridge, thence across Manhattan to Jersey City, to Newark and the Oranges.

The lowest line is shown running from one of the Brooklyn lines across the tip of Manhattan Island and striking Jersey at the Central Railroad of New Jersey stations.

On the Jersey side is shown a north and south line intended as a connecting and distributing line to divert as far as possible north and south transfer from Manhattan and allow of operation into and across the city from many districts. This line reaches from some point on Staten Island under the Kill von Kull, then by elevated north probably west of Union Hill.

The general idea is short trunk lines east and west with feeders from a constantly widening area.

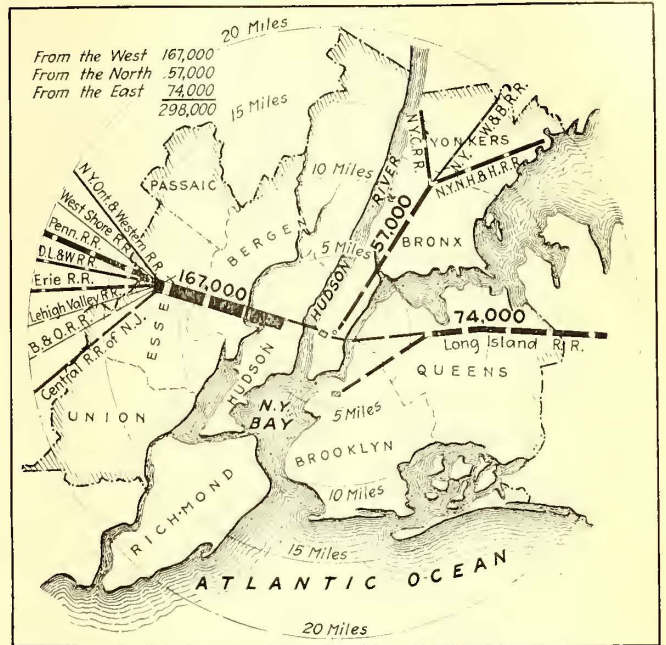


FIG. 4—AVERAGE DAILY ONE-WAY PASSENGERS INTO MANHATTAN OVER THE TRUNK LINE RAILWAYS

PRESENT TRANSPORTATION MEANS

More interesting to the average man than the future is the question of how he is to get to and from his work now. Having analyzed the general conditions and pointed out broad lines for thought upon the general scheme, we can turn to our own troubles of today. Upon what transit facilities are we now dependent in Metropolitan New York? In the reverse order of their importance by volume of passengers handled daily they are as shown in Table III.

This subdivision of traffic is peculiar to New York. In London the rates are as follows:

	Per Cent of Total
Bus.....	33
Surface cars.....	27
Rapid transit.....	40

In Chicago the situation is different again, the rapid transit lines being less developed:

	Per Cent of Total
Surface cars.....	73
Rapid transit.....	21
Steam suburban.....	6

Turning to the map Fig. 4 of our Metropolitan District we are shown the passengers delivered to the central (Manhattan) delivery district by the "steam" railway lines from the west, north and east. To make the chart effective and easily read all the lines entering from the west are shown by a single band, and similarly for those from the north and from the east. The width of the bands in each case indicates the number of passengers per average weekday.

PASSENGERS DELIVERED TO MANHATTAN BY STEAM RAILWAY LINES ON AVERAGE WEEKDAY

From the west.....	167,000
From the north.....	57,000
From the east.....	74,000
	298,000

*Including those delivered by the Long Island Railroad to Brooklyn and Queens.

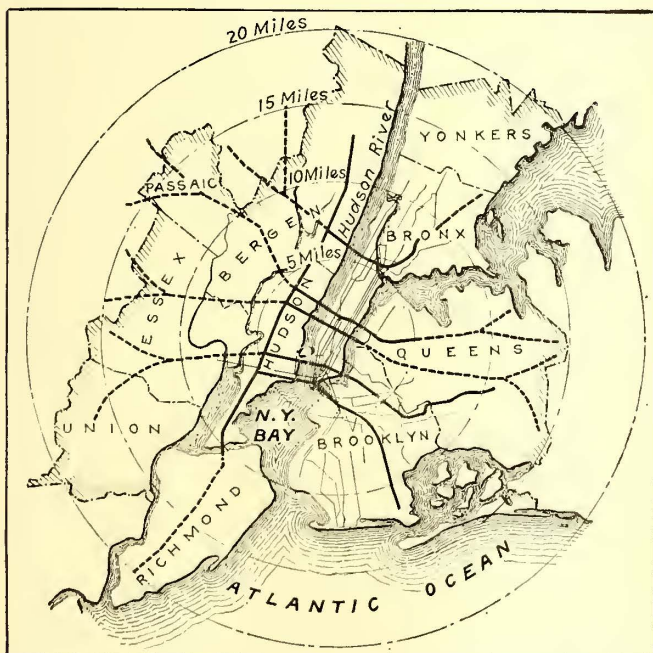


FIG. 3—PROPOSED RAPID TRANSIT SYSTEM TO DEVELOP METROPOLITAN NEW YORK REGARDLESS OF STATE BOUNDARIES

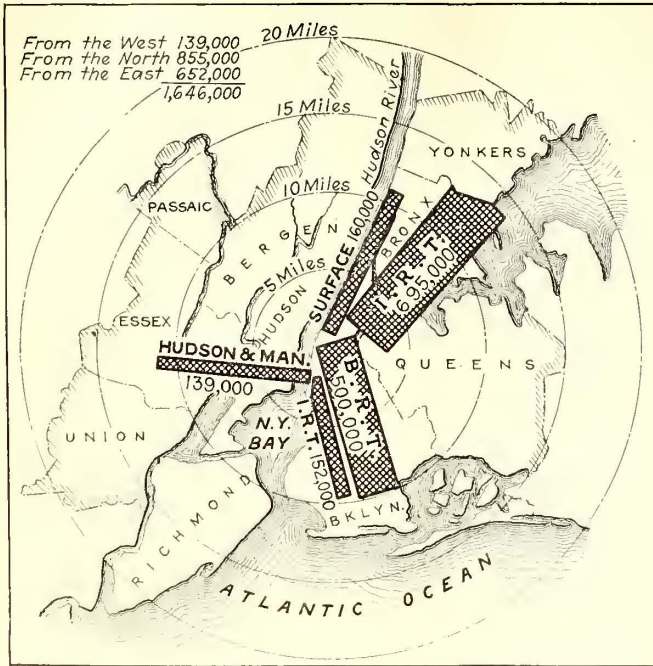


FIG. 5—AVERAGE DAILY ONE-WAY RAPID TRANSIT PASSENGERS IN METROPOLITAN NEW YORK

The total traffic carried to Manhattan by ferries from all sources is shown in the table below. The number of passengers carried by these ferries originating in the districts adjacent to the ferries or brought to them by trolley or bus lines is shown in the second column of the following table. The attempt has been made to separate this travel from that shown as of "steam railway" origin. The various railroad companies have separated their ferry traffic for us in that manner.

FERRY TRAFFIC TO MANHATTAN
(One Way)

	Total	Local
From the west.....	142,000	67,000
From the east.....	29,000	29,000
From the south.....	30,000	30,000
	201,000	126,000

Map Fig. 5 shows bands to a uniform scale totalizing the previous figures and showing about two million passengers entering Manhattan below Fifty-ninth Street in a week day.

CENTRAL DELIVERY DISTRICT

Into lower Manhattan, *i.e.*, below Fifty-ninth Street, or an area of 10 square miles, there are daily poured two million people. This means almost doubling the population of the island. Judging from the fact that the resident population as shown by the recent census has decreased 50,000 in the past decade the influx of daily non-residents may be conceived of as forcing the residents off the island.

This daily inflow to lower Manhattan is equal to one-fourth of the population of the Metropolitan District, but of course a portion come from upper Manhattan and a small number from suburban territory beyond the limits selected. A study of the rate at which this centralized traffic has increased and the fact that it had developed largely coincident with the great rapid transit development of the past twenty years is cause for careful consideration before we adopt either the rate of increase shown or the growth of the traffic itself.

We know that the old law thought to be fundamental during the period of development of electric traction, that the riding per annum per capita of population increased as the square of the population, cannot be applied to an increase from 1,000,000 to 5,000,000, for instance. In dealing with this matter quantitatively we must, therefore, be on our guard.

Subcenters, like the retail district of Brooklyn and Newark, will grow in importance and a reaction must set in against such continued increased concentrations. Such a subcenter development will mean more local traffic of a type quite different from that carried by our long rapid transit lines.

COMPARATIVE COST OF PASSENGER CAPACITIES OF DIFFERENT TYPES OF TRANSPORTATION

The most expensive type of transportation used by urban and suburban travelers in the New York Metropolitan District is the steam railway penetrating to the heart of Manhattan and using a large terminal station. Fortunately for the later solution of the problem the volume of this travel is relatively small compared to the rapid transit and surface lines.

It is a fact, however, not generally realized, that as a city grows not only does its own local and suburban traffic into these great "steam" railway terminals increase, but the long distance travelers grow in number also at an equal or even greater rate. With limited track capacity for carrying these two classes of traffic both cannot increase indefinitely. One or the other must ultimately give way. From this type of transportation we cannot hope for present relief. On the contrary, part of their load may soon have to be taken over by city rapid transit lines.

A little consideration will show that subways cost per mile of single track thirty-five times as much as a bus line and can haul only seven times as many passengers per hour. This would seem a strong argument for buses. To try to haul a full subway load, however, on a bus system requires seven lines of buses in each direction, or a street twice as wide as Fifth Avenue at Forty-second Street. The cost of widening such a street would be fabulous and far more than the cost of a subway.

This simply illustrates by a comparison of extremes that each type of transit has a peculiar field of its own, and if we attempt to handle bus travel on a subway we

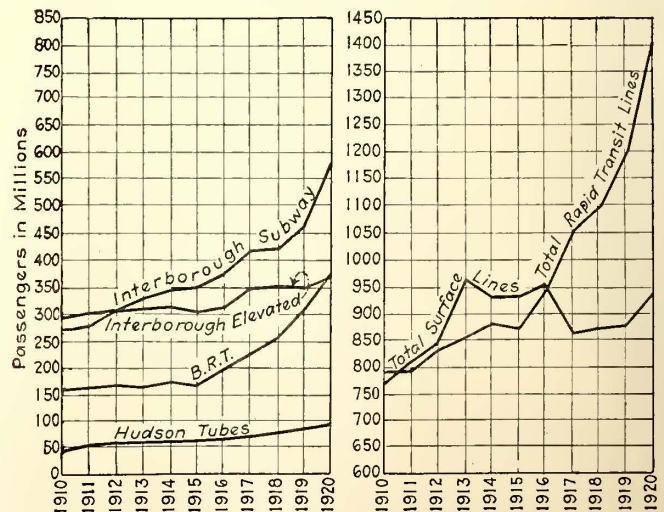


FIG. 6—PASSENGER TRAFFIC IN GREATER NEW YORK FOR PAST ELEVEN YEARS

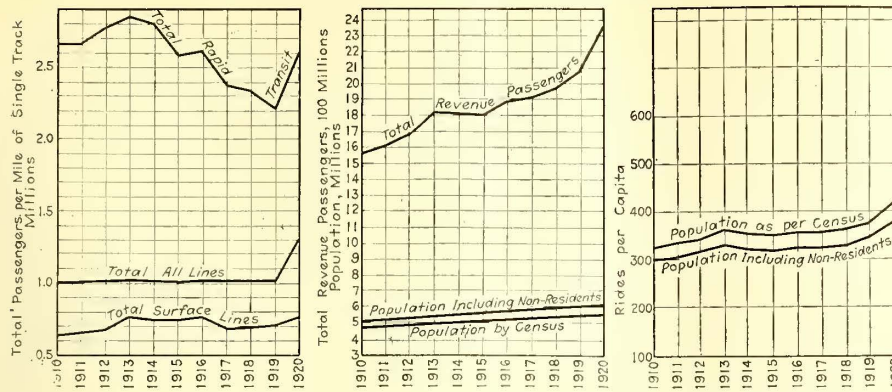


FIG. 7—LEFT-HAND CHART SHOWS TOTAL PASSENGERS PER MILE OF SINGLE TRACK IN NEW YORK CITY, MIDDLE CHART SHOWS TOTAL REVENUE PASSENGERS AND POPULATION OF NEW YORK CITY, CHART AT RIGHT REVENUE RIDES PER CAPITA IN NEW YORK CITY. STATISTICS ARE GIVEN FOR THE PAST ELEVEN YEARS

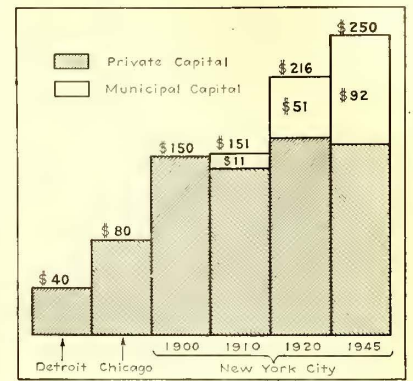


FIG. 8—INVESTMENT IN TRANSPORTATION FACILITIES PER CAPITA OF POPULATION FOR DETROIT, FOR CHICAGO, AND FOR NEW YORK, EXISTING AND PROPOSED

will be just as wrong as to attempt to carry subway long-haul crowds on buses.

GROWTH OF DIFFERENT TYPES OF TRANSPORTATION IN GREATER NEW YORK

During the past ten years the miles of single track have doubled on the rapid transit system of Greater New York. The surface lines have increased their trackage only 5 per cent. This is explained by the great rapid transit program which has been put through in this time. As a result the rapid transit lines have taken practically all the passenger increase during this period and hence have produced an unusual division of travel as between different types of equipment.

The fact is that taking the whole district into consideration the best service to the public can be obtained by a unified co-ordinated system in which each type of transportation will function to the best advantage and as part of a well balanced whole.

This is a pretty big order, but as compared to the process of disintegration and dismemberment which is now taking place it is plainly the right direction in which to work.

The nearer we can approach to a single system distributing its load among its constituent parts in the most effective way for both service and economy the nearer we will attain to 100 per cent economy and 100 per cent service.

More subways are of course inevitable, but let us build them as long-haul trunks and feed them with surface lines and buses. Thirty-five per cent of the passengers in the Metropolitan District use surface electric cars today because they are the most convenient. A study of the needs of the Metropolitan District as a whole suggests a necessity for a combined system cheap enough in its outlying sections to permit of wide distribution of travel. If the engineers can put out such a plan then it will be up to the lawyers, city officials and bankers to solve their part of the Metropolitan transportation problem.

FINANCIAL SITUATION

Accompanying chart, Fig. 8, is made up as illustrating the tendency of cost of transportation in the Greater New York district to increase more rapidly than the population. In other words, the cost per capita has an alarming upward tendency. This tendency is of course inevitable when we go into the period of city development requiring such expensive means of transit as sub-

ways. The desirability of carefully canvassing the possibility of utilizing the cheaper forms of surface and bus transit is obvious.

The chart also shows the great preponderance of private investment, so called, which is subject for thought. The comparison of smaller cities is also interesting. Detroit with about one million population and nothing but surface cars has a per capita investment of \$40. Chicago with an elevated railway rapid transit system and a very extended surface car system shows \$80 investment per capita. New York with its subways doubles this latter figure and seems headed higher.

THE POLITICAL QUESTION

We have analyzed here together the physical, the operating and the financial features of this subject, but I have purposely omitted mentioning the one great stumbling block in the way of a logical, sane solution of this Metropolitan problem, the political question.

Right down the center of the Hudson River we have an artificial political Chinese wall, the boundary between the State of New York and the State of New Jersey. Almost one hundred years ago an engineer designed a steamboat that could plow right across this Chinese wall on the surface of the Hudson. More recently engineers have built railway tunnels under this wall and river, and today engineers stand ready to build bridges over this wall and across the Hudson River.

As an engineer, let me point out to our political friends how this Chinese wall can be finally and forever removed. Let us add a forty-ninth state to the union and name it the State of Manhattan. Let it include the New York Metropolitan District as a single sovereign state; let us leave New York City, Jersey City, Newark, each with its own mayor, its own local government; but let us place matters of common interest to the whole Metropolitan area, such as transportation, water, sewerage and port development, in the hands of a governmental body representing the people of all Metropolitan New York.

Discussion on Mr. Brinckerhoff's Paper

THE first speaker to discuss Mr. Brinckerhoff's paper was Daniel L. Turner, chief engineer Transit Construction Commission, New York. He complimented Mr. Brinckerhoff on the presentation of the topic and acknowledged that there was a Metropolitan District, but he declared that there was no metropolitan authority to

deal with the problem from such a standpoint. Until such an authority was established, the problem had to be met of the increasing transit needs of New York City. Mr. Turner then outlined the main features of his recent recommendations, designed to accommodate the traffic growth of the city within the next twenty-five years and based on the following principles:

1. That rapid transit lines should precede the population—not follow it.
2. That a prospective passenger should not be required to walk a much greater distance than half a mile to reach a rapid transit line routing toward the business center.
3. That all transit lines should enter and traverse the center and thus afford the same degree of accessibility to it.
4. That the transit plan should form the real basis for the city plan.
5. That the question of obtaining sufficient revenue to produce a direct profit upon the entire cost was a secondary matter—the indirect profit which would accrue to the city was assumed to be the most important consideration.

These principles, in Mr. Turner's opinion, mean that municipal passenger transportation is a public function—not a business proposition.

His "comprehensive" plan would increase the existing rapid transit mileage by 830 single-track miles and in twenty-five years approximately 5,000,000,000 passengers per year must be accommodated in the city's traffic, most of them on rapid transit lines. This means that enough new rapid transit lines must be constructed to serve about 2,600,000,000 more passengers.

Based on this traffic requirement, the twenty-five-year building program which has been developed (1) provides for approximately fifteen separate extensions to the existing lines; (2) furnishes two new four-track trunk line subways (both double-story subways) traversing Manhattan north and south through the center, one on the East Side, the other on the West Side; (3) includes three moving platform subways crossing Manhattan east and west through the center; (4) adds six single-track tunnel crossings connecting Manhattan with Brooklyn and with Richmond; (5) increases the existing rapid transit mileage by 200 single-track miles, and (6) assumes that the maximum capacity of the existing facilities, which advances in the art demonstrate to be practicable, will be developed by reconstruction and by new equipment.

The construction cost of the new lines, at present prices, will approximate \$350,000,000, plus \$90,000,000 for interest, administration, engineering and superintendence during the period of construction. This means an annual expenditure of about \$20,000,000. The twenty-five-year cost for equipment would amount to about \$260,000,000.

Mr. Turner declared himself in favor of public ownership and private operation, as at present, for carrying out this program. He then pointed out that there are two ways in which the money may be obtained, as follows:

1. Assuming a "give and take" modification of the dual contracts, the fare could be increased enough so as immediately to take care of all fixed charges, and thus secure the exemption from the debt limit of the existing rapid transit bonds. This would make available the necessary funds to an amount of \$270,000,000. Additional exemptions would make more money available as new lines be-

came self-supporting. Under this arrangement the entire burden of municipal transportation would be imposed on the passenger, although the public at large as a community benefits from adequate transit service as much as the passenger as an individual does. For this reason it does not seem to him equitable to impose the whole burden upon the passenger.

2. The new construction funds needed may be obtained by taxation, the necessary cost each year being assessed against the enhancement in value of city real estate. This would assess the construction cost against those chiefly benefiting. Under this plan, the building program could be financed without imposing any large burden upon the real estate holders of the city and would only be making use of a very small portion of the increase in value which the city has produced. The money for equipment should be furnished by the operator, and the revenue from the passenger fares should amortize it. Then the public at large, as a community, would pay the construction cost, and the passengers, as individuals, would pay the operating expenses and the equipment cost. This, the speaker declared, was the most equitable arrangement and the one he favored.

DISCUSSION BY J. V. DAVIES

The next speaker was J. V. Davies, of Jacobs & Davies, Inc., consulting engineers, New York, who pointed out that suburban traffic of today may be urban traffic of tomorrow. This illustrates the absurdity of running a large number of rapid transit lines to the city limits and stopping them at those points. The suburban railroads, he declared, are not equipped for, nor are they the proper means to fulfill, the function of conducting urban transportation. These roads have other uses and necessities for their terminal facilities than to carry on urban transportation.

In speaking of New Jersey, Mr. Davies pointed out that its transportation needs had been ignored by the New York transit authorities on account of the political and fiscal boundaries, yet he pointed out the recommendation of the commission that future connections with Staten Island should be made by way of Hudson County. He queried how the Public Service Commission contemplated building and operating such a line and whether passengers from Bayonne and Jersey City would be accepted.

He then described the development of the Hudson & Manhattan Railroad, which in less than two years after it began operations had developed more traffic between Manhattan and Newark than had been handled between those points by all the railroads serving the territory on their through business. During the past year 21,500,000 through passengers were carried between Manhattan and Newark on this one artery alone. The future in sight for this transportation, in Mr. Davies' opinion, is a reproduction of this joint service over the Pennsylvania and Hudson & Manhattan railroads but applied to the other great arteries of suburban service. Connection through from Hudson & Manhattan terminals to points on the eastern side of Bergen Hill would enable the suburban traffic operated over the steam railroads to be intercepted in the same way that traffic is now handled at Manhattan Transfer with the Pennsylvania Railroad and that traffic delivered through into the city of New York. However desirable and necessary such connections may be, the amount of money needed for the construction and equipment of such lines will be enormous. The Hudson & Manhattan Railroad,

even with its increased fare, can hardly afford to make them. At the same time such facilities are of vital importance to the steam railroads as they are up to the limit of their capacity now for through passenger and freight business and ought not to be called upon to devote any more of their terminal facilities and irreplaceable waterfront properties to their suburban passenger business.

In discussing the Brooklyn situation, Mr. Davies pointed out that there were some inconsistencies in the plan presented by the Transit Construction Commission. Thus, there are statements indicating the desirability for developing community centers, but the plan projects every line of traffic for now and for the future, into or through the congested section of the Borough of Manhattan. The speaker said that the New Jersey example showed the advantages of the distribution of community centers. Indeed, he doubted whether, when transportation systems were planned, it would not be better to check and retard the riding habit of the people by the building up of community centers over the territory as this would lessen the extraordinary growth in recent years in the riding habit.

Such community centers would have their own homes, places of amusement, markets, factories, offices and business, so that those resident within the community would not be under the constant necessity of spending hours each day riding to and fro to carry on their business. The Brooklyn Rapid Transit Company had urged the construction of some lines which would tend to serve Brooklyn in this way, but it had never received the favor of the commission.

DISCUSSION BY GEORGE MCANENY

George McAneny, formerly president of the Board of Aldermen, New York City, was the next speaker. Referring to Mr. Brinckerhoff's paper, he said that the author had put his finger on the vital points in the New York transportation problem. The consideration of the Metropolitan section as a whole is ideal, but there are difficulties in the way. These must be overcome by patient efforts, which will take time. If the business and industrial interests on both sides of the Hudson River will accept the fundamental principles outlined, much can be accomplished.

Recent developments have shown that the State of New Jersey is alive to its community of interest with New York City, because joint consideration is being given to such matters as sewerage, the development of the port and the vehicular tunnels. In New York City the "City Fathers" have at least considered the desirability of getting the mayors of the cities interested to meet and consider their common problems. The fact that so many hundreds of thousands of people come into New York from outside the city daily makes this very desirable. A joint commission might well be appointed to consider the whole situation.

Meanwhile, the city must continue to develop in its own way, although co-operation will help. As to the rapid transit lines, the dual system first applied the radial idea and invited the development of new community centers. This in part corrected the tendency toward concentration at the lower end of Manhattan Island.

The degree of concentration already attained is indicated by the fact that if all the buildings south of Chambers Street on Manhattan Island were emptied at once, the people in the street would be five deep

from building line to building line. The original Interborough Rapid Transit line could not carry off the population of the Woolworth Building in less than one hour. Concentration brought about an impossible condition, so that lines were laid out to take people away from the congestion center, some going into such sparsely settled regions as to be nicknamed "cornfield lines."

Mr. McAneny expressed approval of Mr. Turner's scheme for developing the rapid transit system, but would have liked more cross lines, giving the plan more of the appearance of patchwork.

A practical difficulty in the way of rapid transit expansion is a financial one. Until the \$270,000,000 already invested is removed from under the debt limit, due to the subways becoming self-supporting, financing problems will be acute. However, the engineers should keep on planning for the future.

DISCUSSION BY FRANK HEDLEY

Frank Hedley, president Interborough Rapid Transit Company, pointed out that New York City is already committed to public ownership of subway rapid transit lines and has used a substantial amount of its credit to build them. Hence, it was difficult to see where the city credit would ever be used to construct lines that would build up territory in New Jersey, especially when within the present limits of New York City there were many acres of vacant or undeveloped land. The policy of the city has been to have a single, uniform car fare within its boundaries because it encouraged the building up of the undeveloped areas.

The city of New York and the rapid transit lines are partners in business and they should both work together to make the transportation for the people satisfactory and sufficient. Public officials and representatives of the operating company must co-operate and work together with the view of making a success out of the enterprise, for the investing public will not put new money into railroad lines unless they are assured of fair and decent treatment on the part of public officials and a return on the capital invested.

DISCUSSION BY FRANK J. SPRAGUE

Accord with Mr. Brinckerhoff's general point of view was voiced by Frank J. Sprague, consulting engineer, New York, who said that a development which ignores the great railway and residential territory to the westward of Manhattan, and which unduly intensifies localized routes and trackage, will invariably increase congestion, with all its attendant grave dangers. In his opinion it would be better to force a distribution of business activities instead of making rapid transit lines, which by their very existence build up traffic, unnecessarily tributary to concentration of real estate activities.

Mr. Sprague declared that the present system of three rapid transit lines was far from ideal, each being laid out with an eye to its own advantage, largely regardless of the city's needs. Even now, when there should be a whole-souled attempt by every public official to plan the future with an eye single to the good of the city, personal ambitions stand as a bar to constructive effort, while transportation is made the football of politics.

There is only one logical and sound method of development. It must begin with unity, which means that not a single foot of unnecessary trackage shall be laid down, but that a single system shall be developed without the introduction of engineering handicaps which

will prevent whatever additions may be necessary in the future, and that all trackage shall be used to its limit. The basis of such a development are longitudinals on Manhattan Island on one level, with such loops and terminal extensions as may be necessary, but with transverse routes on a different level, some local to Manhattan and others reaching into the heart of the territory to the east and west. Transfer of passengers should be via double-level stations, stairway connected at the junction points of the routes. This plan would make it possible to add longitudinals and transverses at will, while maintaining the maximum possible facility of movement as a whole, and if there were a fair basis of transfer with surface lines, car and bus, much of the short-haul underground traffic would be eliminated and these lines be more available for cross-river transportation. Almost every one seems to look at the rapid transit problem on the basis of the requirements of hours of morning and evening business traffic, forgetting that facility of traffic to and from a limited area induces greater concentration of business buildings and employment in congested localities, whereas the better decision is to help make such localization of activities unnecessary.

Mr. Sprague then recommended for the operation of such rapid transit lines cars of the largest practicable size and carrying capacity, arranged for the most rapid loading and unloading and with a motor on every axle.

DISCUSSION BY L. B. STILLWELL

L. B. Stillwell, consulting engineer, New York, sent a contribution which was read by Col. F. A. Molitor. It described particularly a new type of moving platform proposed for the crosstown services on Fourteenth Street, Forty-second and Fifty-seventh Streets. The three elements will move respectively at 3, 6 and 9 m.p.h. with working widths respectively of 27 in., 27 in. and 57 in. The third platform carries seats for two passengers seated side by side, the seats occupying 36 in. of the platform width, while the remaining 21 in. is reserved as a walk or passageway. The seated capacity of the platform, therefore, is 31,680 passengers an hour in each direction.

The 3-mile and 6-mile elements of the platform will each consist of a continuous train of cars approximately 12 ft. long and 28 in. wide, each car comprising a channel arch steel plate filled with agasote with an anti-slip tread of the length and width named and approximately $1\frac{1}{2}$ in. in thickness, resting at one end upon a two-wheel truck or bogie equipped with wheels provided with ball bearings and running upon suitable rails in a track of 18-in. gage. The other end of the 12-ft. plate will be supported by the truck attached to the next adjacent car or unit of the platform element to which it will be connected by a bolt or king pin, permitting each car to take its proper position in rounding a curve. The high-speed platform overlaps the medium-speed platform and the medium-speed platform overlaps the low-speed platform. To secure the difference in elevation of the different platforms, 6-in. wheels are used on the low-speed, 7-in. on the medium-speed, and 8-in. wheels on the high-speed platform.

The system of propulsion comprises the elements of an alternating-current induction motor, but the circular form is abandoned and the secondary, consisting of the usual steel laminæ and short-circuited windings which need not be insulated, is extended horizontally and sus-

pended beneath the truck directly above the center of the track.

The primary elements, each consisting of steel laminæ rigidly supported by a suitable casting, the upper face of the assembled laminæ being in the same horizontal plane, have insulated windings supplied through suitable circuits with three-phase alternating current. The clearance between the upper face of the primary elements thus assembled and the lower face of the continuous secondary carried by the moving platform is approximately $\frac{1}{8}$ in. The primaries being energized by currents supplied thereto from the source of power, currents are induced in the windings of the continuous secondary and the elements of the platform to which it is connected are moved by continuous and progressive magnetic attraction and repulsion. The elements of this system, Mr. Stillwell declared, have been subjected to thorough tests upon a commercial scale and there is no question that it will function as intended. The primaries are spaced beneath each element at distances depending upon the speed and therefore upon the energy required. In the case of the 3-mile platform the primaries will be approximately 400 ft. apart, in the case of the 6-mile platform 200 ft., and in the case of the 9-mile platform 60 ft. apart.

From the mechanical standpoint, this system is obviously ideal. Simplicity of design and construction can go no farther. From the electrical standpoint, the comparatively large air gap implies a rather low power factor, but the energy required for the operation of the platform is so little that the increase in electrical losses due to low power factor is negligible. The weight of the moving platform (all elements) per seated passenger is less than 400 lb., while that of a subway motor car is about 1,800 lb. It is estimated that the moving platform 10,500 ft. in length which has been proposed for installation on Forty-second Street will require for its operation less than 300 kw., say about 3,000,000 kw.-hr. per annum.

DISCUSSION BY DR. WILCOX

Dr. Delos F. Wilcox, the next speaker, made a plea for municipal ownership and operation of the transit properties. In doing so he declared that the demands made by private capital at the present moment as the price of embarking upon electric railway enterprises puts the use of private credit as the principal source of capital for the extension and equipment of future rapid transit lines quite beyond the pale of serious discussion. He explained that in taking this position he did not mean that the job of operating the unified transportation facilities of the Metropolitan District should be thrown at the head of Mayor Hylan or of Public Service Commissioner Barrett some fine morning without any preparation on the part of the community or on the part of these officials to make their successful performance of this function possible. He did not assume either that public operation means the discharge at the outset of every transportation man who has learned his job in the school of experience, whether as manager or as motorman, and the recruiting of an entirely new personnel from the ranks of those who are profoundly ignorant and inexperienced in transportation matters. His reasons for favoring public operation may be summarized as follows:

1. Local transportation in a great urban community has come to be recognized as a public function; that is to say, the service rendered and the rates charged

ought to be determined primarily on the basis of public need, not upon the requirements of private profit. This does not imply that in any particular instance the service should be rendered free or below cost, but it does imply that the extent and quality of the service and the rates charged for it shall be controlled ultimately by social considerations growing out of the community's policy of self-help and self-government.

2. The state commission plan involves the assumption by the regulatory authority of so great a responsibility for service, rates, financial policy and methods of operation with respect to the street railways under commission jurisdiction as to make the proper exercise of the regulatory function more difficult, in his opinion, than the efficient operation of the transit lines through a direct public agency. All of the dangers of ignorance, political pull and inefficiency which the opponents of public operation foresee as incidental to the adoption of that policy already beset the exercise of the regulatory power through commissions. Yet, so vital is the public interest in the operation of urban transit facilities that no one at this stage of municipal evolution seriously proposes that the hand of public regulation shall be withdrawn from the transit lines. In this matter a backward step is impossible.

3. As a means of protecting the private investments in transportation facilities, and as a means of procuring a readier response to the transportation needs of the community, the service-at-cost plan has been devised. Yet this plan, and state regulation as well, logically carried out, cut the heart out of the motive upon which the success of private operation and its alleged superiority over public operation are supposed to depend. The result is that private enterprise is paralyzed, while public initiative seeks to accomplish through indirect and circuitous methods the things which could be more easily accomplished directly.

4. The vital importance of transportation facilities increases with the increase in area and population of the urban community concerned. The very social and economic life of the community depends upon continuity of service. This means that more and more the function of fixing wages and the hours and conditions of service in the public transportation business is recognized as a function to be performed through some public agency. This involves another important encroachment upon the field of private operation.

Continuing, Dr. Willcox said that when we consider that construction, equipment, the issuance of securities, the rates charged, the service rendered, the expenses incurred and the labor policy followed are all inevitably being brought under public control, it is obvious that those who oppose public operation on principle base their argument on assumptions that are now quite out of date. Moreover, the public cannot and will not permit the transportation service of a great community to be operated by private agencies under terms that will make successful private operation possible under present conditions or under conditions that will hereafter prevail. The job is too big and too important for any agency less than the municipality itself to handle.

DISCUSSION BY O. B. WILLCOX

The next speaker, O. B. Willcox, vice-president Bonbright & Company, bankers, New York, took the position that the development of rapid transit in New York should be under private ownership and operation, and as nearly as possible brought under one control

and direction. Private construction, ownership and operation of utilities, he said, require such earnings as will not only pay charges and a fair return on the capital invested but also attract new money for expansion. The permissible rate of return has a dual function—the protection of the existing investment and the attraction of new money for expansion. The function of regulation of utilities in the public interest is to create such conditions as will provide adequate and efficient public service. This means that it must provide such conditions as will attract capital for expansion through the purchase of not only bonds and other fixed obligations but also the corporate stocks of the enterprises.

Government or municipal ownership and operation of public utilities are not desirable in the public interest and, measured by economic and financial standards, have not been successful. The field of politics; that is, of government, is mainly the regulation of conduct and the protection of rights. The field of economics is the production and utilization of material things. Utilities are economic and financial enterprises. Politics or government ownership does not approach the problem with the economic outlook and invariably has resulted in failure. The principal advantage claimed for public ownership, that new money can be raised more cheaply on public credit than on private corporate credit, would largely disappear if municipal securities become subject to taxation, as is now widely urged.

Mr. Willcox said he could not agree with the conclusion of one of the earlier speakers that private operation of utilities in America has been a failure. On the contrary, in provision of adequate service at reasonable rates for the convenience of the public and for the development of industry, lowering the costs of production and in every measure of successful service, privately owned and operated utilities in America have been a pronounced success. In many cases they have been limited in their usefulness and in their ability to expand and to provide the best service and to reduce further the costs of production through the application of labor-saving devices by the failure of public regulation to permit such earnings as would establish the financial conditions and credit necessary for the attraction of capital to continue expansion.

Referring to the New York situation, Mr. Willcox declared that the public interest required: (a) A fare that will pay charges and sinking fund on city money invested, as well as a return on private capital invested, and (b) a fare that will give the operating companies such credit as will attract new money for required expansion through the purchase by investors of the company's securities.

Mr. Willcox then raised the point of the desirability of the concentration of population in cities, which, he said, was encouraged by local utilities of all kinds, as these utilities provided, as compared with smaller communities, cheaper living in relation to income and opportunity and easier, softer and pleasanter living conditions. A survey might show the economic limit of population of cities without such transportation and public service facilities at perhaps 1,000,000 or 2,000,000. This is about the population of the great and old cities of Constantinople, Calcutta and Peking, and many others, all located with comparable natural advantages and in countries of much denser population. But in a modern city provided with ample transportation and other public utility service this same economic limit does not exist.

Continuing, Mr. Willcox said that while it is true that

large cities create and offer opportunities to individuals, there does not seem at a cursory glance to be any decided advantage to the body politic, to the interest of the public as distinguished from the interest of individuals, in such artificial concentration of population. Its disadvantages are obvious. There is enormous economic waste in the transportation of large numbers of people long distances from home to work, often in both directions; in transporting and distributing water, food, fuel and other necessities, and in the overcrowding itself, which conceivably could become so great that eventually workers would be in each other's way or could not all find room on the city's streets. Such congestion is accompanied by great perils, as from contagion and epidemics, from famine and failure of essential supplies, from fire, panics and war, and notably from strikes, the entire population being at the mercy of a number of small fractions of the population engaged in purveying necessities. These disadvantages and perils must increase with increasing concentration, obviously in some unknown ratio to the population. Whether the increase of New York's population is largely artificial, not brought about by natural causes, but stimulated and made possible by all kinds of utility service, and particularly the rapid transit systems, is a question worthy of scientific survey and study.

The most conspicuous feature of New York's rapid transit systems brought out clearly by Mr. Brinckerhoff's discussion, as well as in the report of Mr. Turner, is the delivery of an enormous number of passengers daily from the outlying parts of the Metropolitan District to the heart of the city of New York below Fifty-ninth Street, and the resulting concentration on Manhattan Island of tremendous business activities in financial, manufacturing amusement and other enterprises. Without its rapid transit system the same population in the Metropolitan District, assembled in a number of communities, self-contained and adequate in provision for all social and business activities, might and doubtless could accomplish the same production and it may well be without the economic waste and loss and without the perils of the present and the progressive daily congestion in Manhattan Island.

Should the tendency to congestion in Manhattan be checked and can it be checked? Economists have sought in vain for some means to discourage the growth of cities at the expense of the rural districts so that the supplies of raw materials out of the earth may keep pace without excessive cost with the increase in the world's population. If it be true that the enormous growth of such cities as New York results not from natural causes but from artificial conditions such as rapid transit and other public utility service, permitting and inviting congestion, then perhaps some artificial checks to concentration must be found. Thus, it is conceivable that an increase in the cost of local transportation would operate as such a check, and indeed that it may be necessary in the public interest that such a check be established against the increasing tendency to concentration of population in such great centers.

In New York an increase of local rapid transit fares to 10 cents would probably not check congestion; it would, however, give the operating companies better credit for necessary expansion, besides greatly improving the city's credit position. A gradual rise in rapid transit fares above 10 cents must eventually meet a point where unnecessary traveling would cease and local centers would develop, self-contained, more eco-

nomically supplied with necessities, safer in the assurance of a continuous supply of water, fuel, food and the like, and where work could be found near home, obviating many of the dangers and perils of great and increasing congestion; existing rapid transit might be sufficient for necessary travel between the several community centers of the Metropolitan District; a rapid increase in rapid transit facilities would probably be unnecessary; the further growth of the city would continue in and about the new centers without loss of economic capacity and political, financial and industrial power of the Metropolitan District; manufacturing could find sites and labor within walking distance not drawn away by cheap transit fares to the excitements of intense concentrated city life, and saner and more natural conditions should prevail in all the relations of life.

Engineers, Mr. Willcox concluded, may very well study not only how New York's transportation can be expanded with the inevitable growth of population of the city at the expense of the country and also the inevitable congestion in the heart of the city, but also the data on which some opinion may be formed as to whether the advantages or disadvantages of such congestion preponderate; whether we should seek a sound way to check this growth or continue to expand the population of the city through the expansion of its utility and rapid transit facilities.

DISCUSSION BY MR. PARSONS

R. S. Parsons, general manager Erie Railroad, took up the discussion of transportation in the Metropolitan District from the standpoint of New Jersey. He said that this State should awaken to its rights in the matter. The New Jersey section of the district contains fifty small municipalities, more or less, and if these would unite, they could exert a powerful influence. Stretched along the Hudson from Bayonne to Fort Lee are ten of these municipalities.

As to the relation of the steam roads to local transportation, Mr. Parsons said that the steam roads were never built for suburban business. Their function is long-haul passenger and freight traffic. At first they naturally took on suburban business for the reason that when lines were installed for freight and through passenger service they could serve commuters at low rates of fare with profit to themselves. However, this resulted in the opening up of communities which in time became powerful enough to demand increased service. This was unprofitable, but it has been impossible to increase commutation rates sufficiently to make them remunerative.

Referring to the local situation, Mr. Parsons said that the only thing that has prevented expansion west of New York City is the state boundary, but, like Mr. McAneny, he saw signs of co-operation which might in time eliminate this obstacle.

One thing urgently needed locally is a bridge across the Hudson River at 125th Street, a physical connection between two important sections which would assist in eliminating one of the main obstacles to good suburban traffic. This is the reluctance of passengers to change from one transportation agency to another. The steam railroad terminals in Jersey City and Hoboken are greatly overcrowded. Suburban traffic must be removed from them as much as possible. One suggested plan is the placing of a large union terminal in the Hackensack Meadows to serve as a terminal for the suburban traffic now taken to Jersey City, Hoboken

and Weehawken on the various steam railroads, with a moving sidewalk connection to and across New York City.

DISCUSSION BY MR. WOODWARD

P. H. Woodward, general passenger agent Long Island Railroad, the next speaker, first quoted statistics on passengers in and out of New York during 1919 as follows:

PASSENGERS HANDLED IN AND OUT OF NEW YORK CITY

Long Island Railroad	
Three terminals: Pennsylvania Station, Flatbush Avenue (Brooklyn), and Long Island City. To and from subway and elevated lines at Woodside and Hunters Point Avenue.....	48,786,000
New York Central.....	25,361,499
New York, New Haven & Hartford.....	14,886,158
Pennsylvania Railroad.....	13,940,000
Central Railroad of New Jersey.....	16,720,600
Delaware, Lackawanna & Western Railroad.....	20,400,000
Erie Railroad.....	25,116,849
New York, Westchester & Boston Railroad.....	3,750,806
New York, Ontario & Western Railroad.....	538,692
Lehigh Valley Railroad.....	408,000
Baltimore & Ohio Railroad.....	510,000

The Pennsylvania Railroad, in addition to the 13,940,000 passengers carried in and out of the Pennsylvania Station and the ferry terminals at Cortlandt and Desbrosses Streets, handled during 1919 4,420,000 passengers at its Jersey City Terminal and transferred to and from the Hudson & Manhattan Railroad at Manhattan Transfer a total of 22,640,000. This would make a grand total for the Pennsylvania of 41,000,000 passengers. The Staten Island Rapid Transit handled on Staten Island a total of 10,205,000.

It is estimated that 50 per cent of the passengers of the Delaware, Lackawanna & Western Railroad transferred to and from the Hudson tubes at Hoboken, and that 60 per cent of the passengers of the Erie Railroad transferred to and from the Hudson tubes in Jersey City. The Hudson & Manhattan Railroad handled 92,571,928 passengers during that year.

A summation of these figures, after duplications are deducted, show for the roads mentioned a total during 1919 of more than 250,000,000 passengers. In 1920, if all of the lines enumerated showed the same increase as the Long Island, or 14 per cent, the total would be 285,000,000. This compares with the rapid transit systems for 1919 as follows:

Interborough:	
Subway.....	529,471,097
Elevated.....	348,577,398
Total.....	878,048,495
Brooklyn Rapid Transit.....	726,738,213

Of course all of the passengers handled by the steam roads are not daily commuters, but this traffic is growing enormously, yet this short-haul traffic blocks terminals and hinders the expeditious handling of through passengers, to say nothing of the congestion it causes to freight traffic. This situation presents an economic problem hard to solve. A steam road, such as the Long Island, cannot adjust its rates so as to make ends meet, due to this short-haul traffic that is continually demanding lower fares, which today are unremunerative. The terminal cost alone to handle a passenger is more than a standard subway or elevated fare.

Another thing to consider, according to Mr. Woodward, is that when the steam roads introduced the cheap rate commutation ticket, they expected to profit by collateral earnings, such as members of families and visitors traveling at a higher rate of fare, freight, express, mail, etc. The elevated and trolley lines, the

motor trucks, the delivery to residences from all the department stores have taken away practically all of the collateral earnings outside of coal and building materials, leaving to the railroads only the commuter at a low rate, with nothing to carry the loss, and when the revenues derived from through freight and passenger business are too small to absorb such losses, poor service and slowing down of development is the natural result. Therefore, the remedy for the railroad is to be relieved of this near-by traffic and build up the sections beyond the rapid transit zones.

DISCUSSION BY MR. HARWOOD

George A. Harwood, assistant to the president of the New York Central Railroad, the final speaker, first described the development of the New York & Harlem Railroad from a horse railway to a steam and electric railroad. He agreed with Mr. Brinckerhoff that the most expensive type of transportation for urban and suburban travel within the Metropolitan District is the steam railway. This is due largely to the expensive terminal on highly valuable land, which often results in fixed and operating charges per passenger exceeding the total rate per ride paid by the passenger, excluding entirely the fixed and operating charges for handling him between the terminal and his destination. The fact that most of this business has to be handled in morning and night peak loads still further adds to the cost of this transportation.

But the financial waste in this business is perhaps not the most serious aspect of the difficulty, because the continued increase in suburban travel ultimately prevents the steam railroad from performing its most important function, namely, providing the long-haul transportation for the city. In the period from 1909 to 1919 there has been an increase of approximately 60 per cent in the number of passengers handled in the Grand Central Terminal and in that same period an increase in suburban travel of over 100 per cent. In 1916 41 per cent of the passengers using the terminal were suburban travelers, and in 1919 56 per cent. As the long-distance travelers want also in general to arrive and depart in the morning and evening, the peak load of this service coincides with that of the suburban service, and it is only a matter of time, and a relatively short time, when a terminal such as the Grand Central, with its elaborate provisions for the separation of suburban and long-distance travelers, will be prevented from delivering the amount of long-distance transportation which the growth of population will require.

Some relief, Mr. Harwood said, can no doubt be provided by the introduction of transfer stations at outlying points where the railroad may deliver its load of rapid transit passengers to the strictly city lines. Thus, provision has been made in the plans of the New York Central Railroad, in conjunction with the Public Service Commission, for such a transfer point to be located in the vicinity of Mott Haven. This, however, can never solve the substantial part of the problem. It will take care of a portion of the travel going to the more northerly parts of Manhattan Island, but it can probably never be made sufficiently attractive to entice away from his seat the passenger whose destination is Forty-second Street or south thereof.

The solution, therefore, seems to be in the development of the rapid transit system of the city, not only to the city limits but to such distances into Westchester County as may be accommodated within the limits of

reasonable running time which such a rapid transit line may provide. Mr. Turner, in his recommendations covering the extension of the present rapid transit system, estimates that such distance is 18 to 20 miles from the center of the city, providing sufficient tracks are constructed so that express service is permissible, but with improvements in the art it may not be unreasonable to suggest that these extensions ultimately should go to distances of 22 to 30 miles. Such initial extensions would enormously benefit the present situation. In conclusion, Mr. Harwood made definite recommendations in regard to certain of the routes proposed by the Transit Commission.

Two Recent Foreign Standard Rail Sections

New Australian and French Standards Are in Opposition as to the Curved Head—
Notable Joint Plate Design

THE conference of electric tramway engineers held in Sydney, N. S. W., during May, 1918, for the purpose of developing a standard girder grooved rail has resulted in the adoption, recently, of the standard

The width of the head is much less than that of the American rail, but it follows British practice closely. The head width is largely dependent upon the width of the average wheel tread in use and no doubt this suits the Australian wheel conditions.

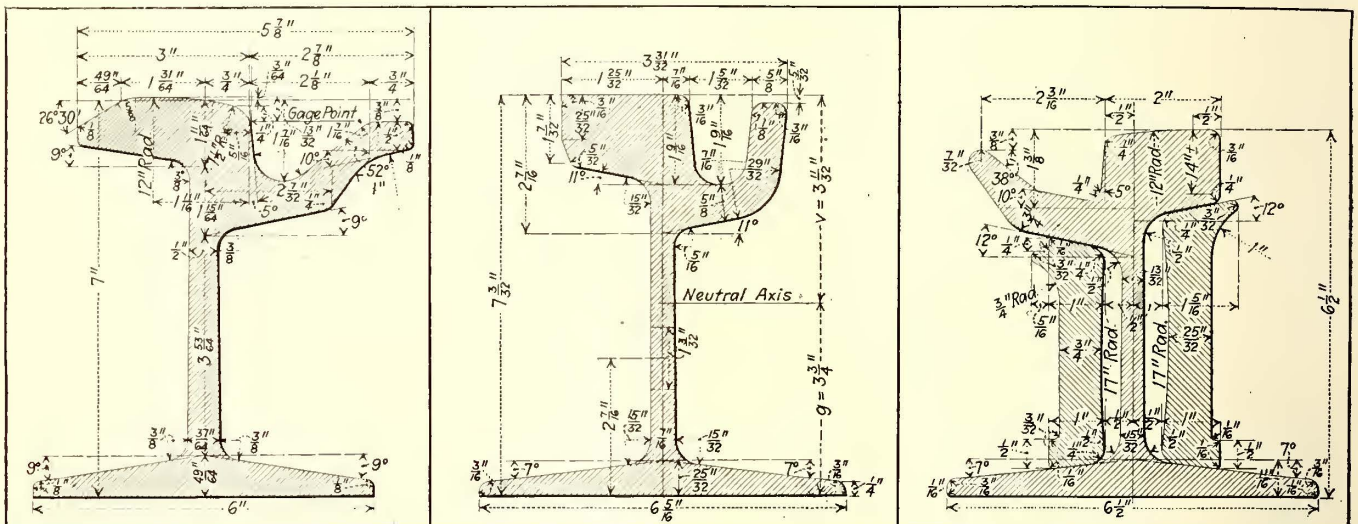
The design of the joint plates is notable because provision is made in the top edges for electric arc welding by providing places upon which to lay the welding rods.

NEW FRENCH STANDARD GIRDER GROOVED RAIL

The French Light Railways Association has recently adopted the new standard girder grooved rail shown in the illustration. In common with most recent British and other foreign designs the tendency to increase the depth or thickness of the head is noted.

The most striking feature is the return to a horizontal flat tread, in contrast to the combined horizontal and convex tread. In former designs the head surface was level for about half the width from the back of the head toward the gage line, thence leading downward into the groove by means of a curve of about 12 in. radius.

The return of the French standard to a level flat head design is in line with arguments advanced in favor of such a procedure by several British engineers at the



NEWLY ADOPTED AUSTRALIAN RAIL SECTION NEW FRENCH STANDARD EMBODIES FLAT HEAD A. E. R. A. STANDARD 7-IN. GIRDER GROOVED RAIL

rail shown in the drawing herewith. In the issue of this paper for Sept. 21, 1918, the principles laid down for guidance in preparation of the design were published. Notable among these were the agreement that the form of groove and guard of the rail should follow the designs of the American Electric Railway Engineering Association and that the tread of the rail head should be curved or convex.

The resultant design differs considerably from the American standard, but in the main the principles of the American design are followed. For instance, the tapered web and curved head are adopted, although the curved head does not follow the compound curve recently added to the American standard. The very wide base will be noted. This follows a recent designing principle governing British rails which calls for a width of base substantially equal to the height. The shape and width of the bottom of the groove varies from the American design considerably. The increased width here is to give more room for wheel flanges when the head is worn down.

recent meeting of the Tramways and Light Railways Association. However, the British engineers do not agree on this by any means and the tendency in Great Britain is toward standardizing upon some form of convex tread. The difficulty in determining upon a standard seems to be that each tramway engineer in the British Isles wants his own particular wear conditions met in the design. Naturally the British standards committee is having trouble in satisfying such claims.

For the purpose of comparison a drawing of the recently revised American standard 7-in. girder grooved rail, which has the new convex tread design, is reproduced.

The Motor Truck Association of America has announced that a highway transportation show will be held in New York City from Jan. 3 to 8, 1921. The show will be held in the Twelfth Regiment Armory, Sixty-second Street and Columbus Avenue, and First Field Artillery Armory, Sixty-eighth Street and Broadway. The combined floor space is about 50,000 sq.ft.

Compromise Joints in Electric Railway Trackwork

The Author Outlines Some of the Difficulties Which Have to Be Met in Joining Rails of Different Cross Sections and Shows How These Difficulties Have Been Overcome

BY R. C. CRAM

Engineer Surface Roadway Brooklyn Rapid Transit Company

THE joining of two rails of unlike cross section is by no means an easy task and the difficulty in successfully doing so is increased when either one, or both, of the rails is worn. The wear which adds to the trouble can take place in the head surface, in the sides or undersides of the heads and sometimes in the tops of the bases. If we add to these items the contour or sectional differences we have a problem of no mean order when we attempt to make up the joint. It is thought that, in proportion to the number of compromise joints on any one electric railway as compared with regular joints, one of the former will cause more maintenance expense than several hundred of the latter.

As a matter of fact the joining of two rails of the same cross section (mechanically, at least) has presented

a problem which has not yet been solved to the entire satisfaction of track engineers. One of the difficulties lies in the minute differences and discrepancies in the "fishing section," which are found in what appear to be the most perfect of new rails and the angle bars or joints designed to fit them. These differences and discrepancies tend to magnify the compromise joint problem.

A compromise is an adjustment of differences by mutual concessions, and, since this is just what happens when rails of different sections are joined, the joint plates or splice bars which are used for this purpose are called "compromise" joints. These, by the way, must not be confused with "compromise" rails, to which reference will be made later. Compromise joints are sometimes called "combination joints," "taper joints," or

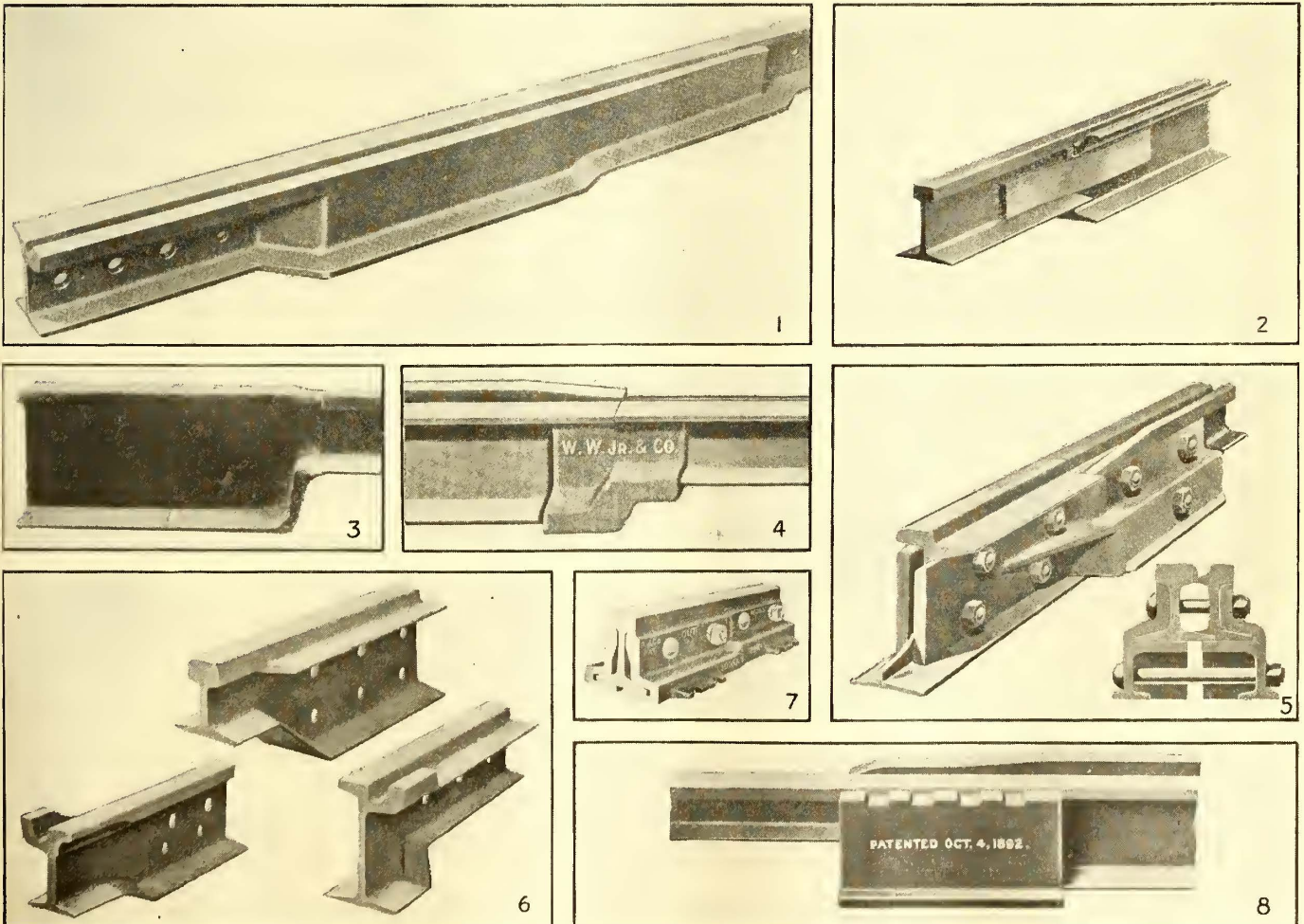


Fig. 1—Cast-steel combination rail.
 Fig. 2—Electrically welded combination rail.
 Fig. 3—Thermit-welded combination rail.
 Fig. 4—One make of east-welded compromise rail.

Fig. 5—Cast-steel combination joint.
 Fig. 6—Cast-steel combination rail.
 Fig. 7—Continuous step joint.
 Fig. 8—Another make of east-welded compromise rail.

Several Types of Compromise Joints

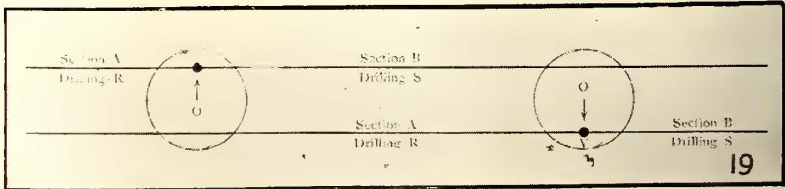
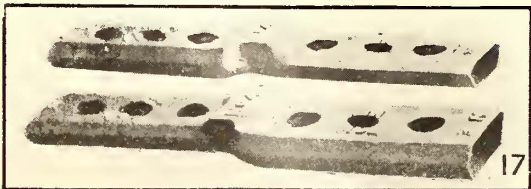
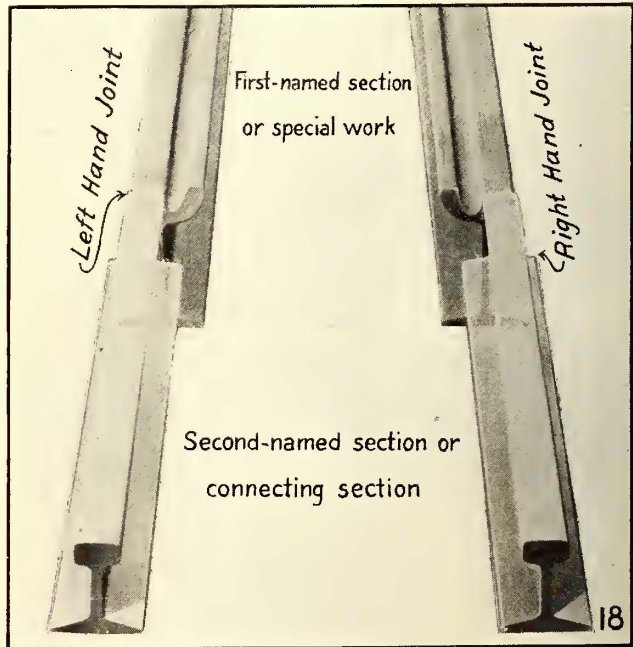
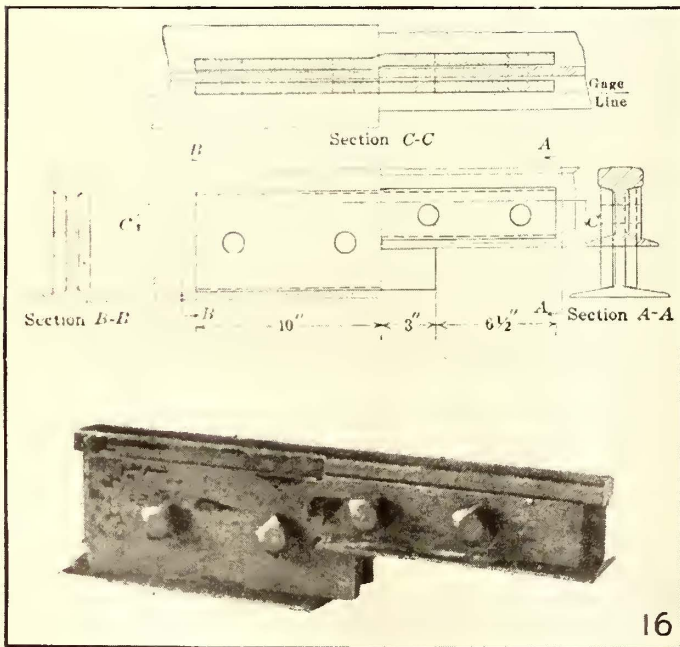
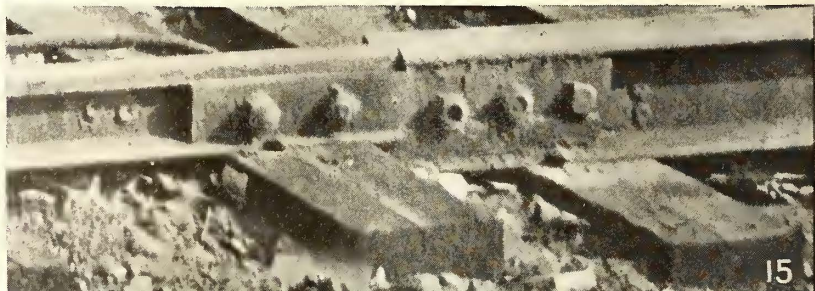
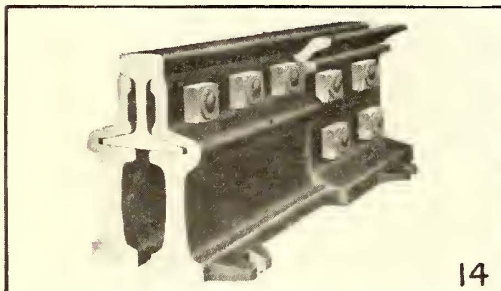
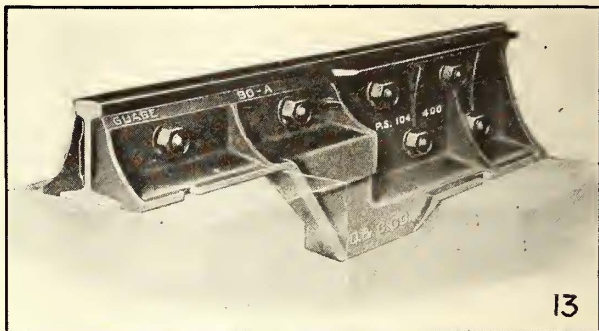
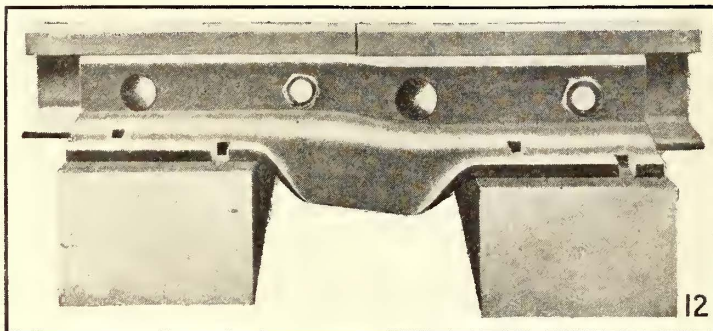
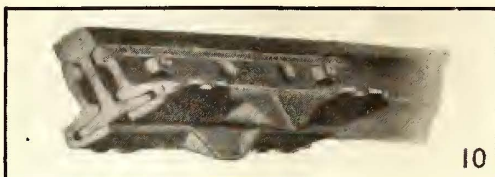
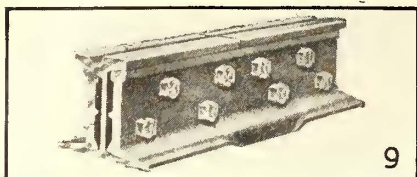


Fig. 9—Reading cast-steel compromise joint.
 Fig. 10—Trasco cast-steel compromise joint.
 Fig. 11—Cast-steel step joint.
 Fig. 12—Bonzano rolled-steel step joint.
 Fig. 13—Cast-metal step joint.
 Fig. 14—Continuous compromise rail joint tee and girder rail.
 Fig. 15—R. P. Williams' compromise joint.

Fig. 16—R. A. Willson's compromise joint.
 Fig. 17—"Joggle plates," as the British term compromise or step joints.
 Fig. 18—Manufacturers' method of determining "hand" of compromise joints.
 Fig. 19—A. E. R. E. A. method of designating compromise joints.

"step" joints. Our British friends are apt to call them "joggle plates."

Compromise joints are confined mainly to special trackwork, where they are used to connect the guard rails and other special rails used in special trackwork with the adjacent rails in tangent or connecting tracks. Compromise joint troubles have emphasized the desirability of having guard rails "fish" with the rails used in tangent tracks and there is a marked tendency in this direction, which has been accelerated by the efforts of maintenance engineers to adopt rail standards for their systems. It will be noted that the American Electric Railway Engineering Association took good care to provide standard guard rails which would "fish" with the rails which the association adopted for tangent tracks.

There are at least ten different types of compromise joints or means for accomplishing the same purpose which have been used with more or less success. The earliest forms consisted of the regular splice plates or angle bars, upset and offset in the field or in the shop by the blacksmith. With T-rails where the sectional differences were not great, such joints gave fair service provided the smith was good at retempering the bars and had fair skill at reproducing the fishing angles and fairly true surfaces. With a job of connecting a 4-in. T-rail and a 9-in. tram girder rail, however, such a joint has several objections, and is particularly difficult to make even when it takes the forms of special cast steel

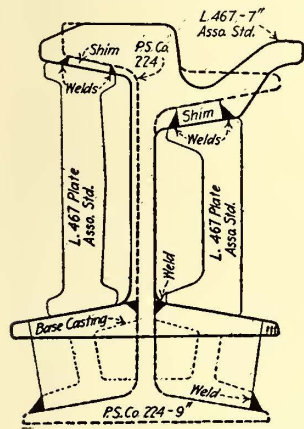


Fig. 20—R. P. Williams' compromise joint

Nevertheless the old custom of making such joints by cutting and smithing deep plates prevails to a large degree. Although the arc welder and the acetylene welding and cutting torch are more and more coming into use for this purpose, there is little doubt that in many cases the skilled blacksmith will never be entirely supplanted. Mention should be made here of the machine devised by C. H. Clark for upsetting joint plates, which greatly facilitates this sort of work. This device has had its greatest use on overhauling or rehabilitation work on old tracks, where a great number of plates of the same shape require upsetting. This work is quite similar to regular compromise joint work, since plates must be upset and sometimes offset in order to take up wears and head pounds or dishes.

Incidentally, the rail grinder has greatly aided in the work of making satisfactory repair joints of this type, by facilitating the detail of finishing the head surfaces to a true level.

COMPROMISE RAILS

Compromise rails present another means of connecting dissimilar rail sections. They usually consist of two pieces of rail, one of each section to be joined and each having a length of from 4 to 5 ft., which are joined by some form of welding so that they present a length over all of from 8 to 10 ft. (Sometimes they may be only 6 ft. long over all, as when made entirely of cast steel conformed to each of the rail sections to be joined or

compromised.) A compromise rail of this type is shown in the figure on page 1107. Compromise rails are quite often used at special trackwork where the outside pieces join the tangent track rails. In some cases, as in crossings, the outer arms of the frogs may consist of compromise rails, and this method of making connections between the T-rail arms of railroad crossings and adjacent girder rails in tangent tracks is quite often used as one of the best ways of making up such connections. The particular feature of compromise rails which commends them is that they permit the use of the regular joint plates or angle bars in making connections with the two dissimilar rail sections which are to be joined. They are quite often used in making connections between plain girder and groove girder rails in tangent tracks. Another use is for making temporary connections between new and old rail sections, which are dissimilar during the progress of reconstruction work.

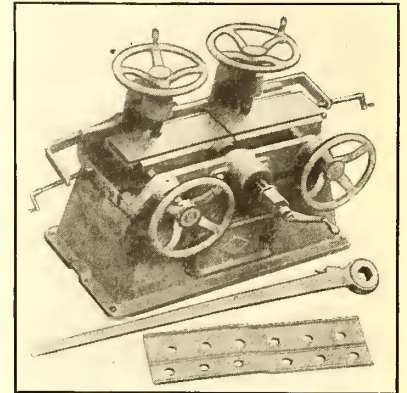


Fig. 21—Machine devised by C. H. Clark for upsetting joint plates

The three general types of compromises are as follows: (a) Welds, (b) cast-steel or composite, and (c) plates or bars. The weld type may be cast, thermit, electric-bar or electric arc. The cast steel or composite type may be made of cast steel or a combination of cast iron fillers and regular bars or plates. The plate type includes all such joints made up by the use of bar steel planed and upset or regular plates and angle bars upset and offset by forging. The accompanying figures on pages 1107 and 1108 show the general details of most of these types.

It should be remembered that the manufacturers of

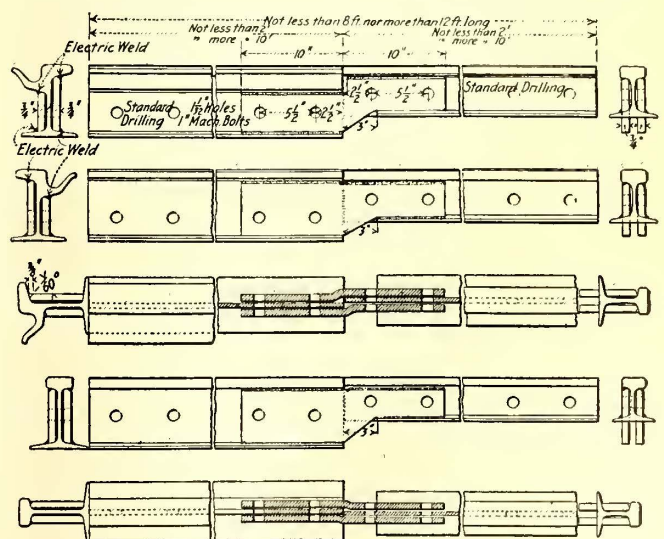


Fig. 22—Taper rails as developed by Pacific Electric Railway

most of the patented joints for regular service in tangent tracks are prepared to furnish compromise joints which retain the general features of their regular joints. Some of these are also shown on page 1108, but it is not



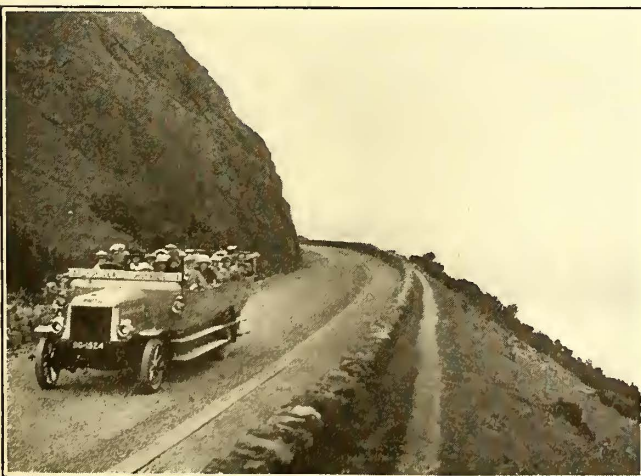
EDINBURGH CORPORATION NEW MOTOR BUS SERVICE
FROM CABLE CAR TERMINUS AT CRAIG-
LOCKHART TO COLINTON

car. This difficulty, however, has gradually been overcome by designing the buses to carry a larger number of passengers. This, at the same time, helps solve the problem of financial difficulty in the way of their general adoption. The problem is still easier where the double-deck buses with their larger seating capacity are already in use. Because of the steep grades on certain routes of the city the tramway committee has not favored the operation of double-deck buses for Edinburgh streets.

As a solution for this difficulty, R. S. Pilcher, tramways manager, has been designing a bus body which he thinks will suit the needs of Edinburgh. It is a "single decker," but can seat thirty-nine passengers, or nine more than the buses at present running in Edinburgh. An extraordinary feature of the design is that the passengers enter the bus at the center instead of the end. Should this design accomplish the results hoped for, the city's transportation problem will be rapidly approaching solution.

THE SLATEFORD BUS LINE

The tramway committee has proposed that the electric cars should be taken off the Ardmillan Terrace-Slateford route and motor-bus service instituted. This proposal was contained in an interesting report drawn



CHAR-À-BANC ABOVE DUDDINGSTON LOCK ON ARTHUR'S
SEAT TOURIST ROUTE

up by Mr. Pilcher and was given careful consideration by the committee. In the course of the report the tramway manager states:

The Slateford route was constructed in 1910 at a cost of £13,287. The length of the route is 1½ miles. This route is isolated, and the passengers who use these cars are required to change either from the cable cars or the motor buses when traveling to or from the city.

The break in the journey at Ardmillan Terrace is very inconvenient, and acts adversely on the traffic; the consequence is that this route, taken by itself, has never paid its way since it was constructed. At the present time the cost of operation on the cable system may be said to be 23.9d. per car-mile, and the cost of this electric line is certainly not less than 20d. per car-mile.

The committee is aware that the motor-bus route from Easter Road Station runs to Ardmillan Terrace, where it forms a junction with both the electric line and the cable line from Gorgie.

The natural route for this bus line would be to continue west via Angle Park Terrace and Slateford Road, and to connect up Slateford Village and Juniper Green to the city. If this were done, it would make an admirable route, and would be more economically run than by having the electric line with a break at Ardmillan and a break at the Slateford terminus. Such a route as indicated would form a quick and convenient means of transportation for the residents in the new housing estate and the new city suburbs of Clinton and Juniper Green.

The facilities given by a direct bus route to Slateford Slaughter Houses and Markets would be better, from the public point of view, than the present system.

The abandoning of this tramway is not a serious question, as the present high value of the overhead equipment and rails would warrant their being removed and utilized elsewhere. The Slateford route, if worked as a through route connected with the Easter Road route, could be made to pay its way; whereas, if it is continued as a separate route, it is not likely to pay for many years to come.

This report of Mr. Pilcher's was cordially approved by the committee, and it was agreed to run the buses to Slateford as soon as convenient. The electric cars, it is understood, may come in useful on the Leith system when once it has been taken over by the city.

The Edinburgh Corporation Tramway Department is now operating char-à-bancs for the benefit of sight-seeing visitors, making a tour around Arthur's Seat. As this is located at an elevation of nearly 300 ft., from it an excellent view of Edinburgh, the neighboring towns, and the Forth can be obtained. These tours are made only from 10 a.m. until dusk, so that there is a possibility of using the buses to handle the morning rush if necessary.

2,200-Volt Line in Austria

ACCORDING to *Elektrotechnik und Maschinenbau*, the highest voltage direct-current line on the continent of Europe is a road recently put in operation between Peggau and Uebelbach, Austria. The pressure on the trolley wire is 2,200 volts, obtained from a 220-kw. motor-generator operated from the Peggau central station. The generator end of the motor-generator set has 12 poles and a commutator about 2 ft. 3 in. in diameter, with 483 segments in the commutator.

The electrical equipment for the single combination passenger and baggage car in use at the time of the publication of the article included four motors, permanently connected electrically in couples, so that each had a maximum operating voltage of 1,100. A dynamotor supplies 220 volts for the brake and other auxiliary equipment. The electrical equipment was supplied by the Austrian branch of Brown, Boveri & Company.

Herbert Hoover Heads Federated Societies

American Engineering Council Holds Meeting in Washington Nov. 18-20—Plans Are Laid for Nationwide Industrial Survey—The Engineers Adopt a Broad Policy of Public Service and Elect Herbert Hoover President to Guide the New Organization's Destiny

THE election of Herbert Hoover to its presidency, the adoption of a program involving a huge national survey in industrial conditions, and the selection of Washington for its headquarters were outstanding features of the first meeting of American Engineering Council held in Washington last week. Representatives of some twenty-two societies with an aggregate membership of approximately 50,000 constituted the official members of American Engineering Council and started the newly-formed Federated American Engineering Societies on an ambitious program. There were fifty-one authorized representatives, of which fifty were present. Since the representation on the council is proportionate to membership of the societies, some of the twenty-two societies represented sent from six to twelve delegates to the meeting.

It will be recalled that last June there was an organizing conference in Washington attended by some 141 delegates representing practically the entire body of engineers of the nation. At this organizing conference a tentative constitution and by-laws were drawn up, as reported in *ELECTRIC RAILWAY JOURNAL* for June 12, 1920, page 1213. Since that time the various engineering associations, both local and national, have been invited to become charter members of the Federated Societies and up to the time of meeting last week twenty-two have taken advantage of this invitation. There were present in Washington representatives of many other societies who are at the present time considering the invitation to join as charter members, some of whom have already taken favorable action but could not yet take final action due to constitutional limitations. The council at its session last week authorized the invitation to become a charter member of the association to be held open to any society until July 1, 1921.

"SERVICE" TO BE THE WATCHWORD

The formal sessions were opened by Richard L. Humphrey, chairman of the joint conference committee, which has been intrusted with the detailed steps of organization and with administering the affairs of the Federated American Engineering Societies between the organizing conference in June and the meeting last week. Mr. Humphrey spoke at some length in relating the history of the movement which has resulted in the organization and laid special stress upon the progress of the organization whose underlying policy is "service." Mr. Humphrey said in closing: "Indeed, the organization by the preamble adopted at the organizing conference, at which it was created, is dedicated to the service of the city, state and nation. In living up to this you should carefully guard each act and each step in the progress of the organization, to the end that the Federated American Engineering Societies shall stand for the highest possible ideals and shall enrich the glorious traditions of the engineering and allied technical professions."

E. S. Carman, American Society of Mechanical Engi-

neers, was elected temporary chairman, and William E. Rolfe, Associated Engineering Societies of St. Louis, Mo., was elected temporary secretary.

The chief business accomplished the first day was the appointment of necessary committees to effect the permanent organization, and the decision to place the headquarters of the council in Washington. It was also decided to elect at this time only twenty members of the executive board rather than the twenty-four provided by the constitution, who with the six officers constitute the executive board of thirty. This provision was made to allow societies which become members between now and July 1, 1921, to have an opportunity to have representation on the executive board.

TRANSPORTATION AND HIGHWAYS DISCUSSED

J. Parke Channing, chairman of Engineering Council, which will turn over its affairs to American Engineering Council on Jan. 1, 1921, made an address outlining some of the work done by Engineering Council. Other addresses were given by E. Ludlow on conservation of fuel, L. W. Wallace on conservation of labor, and L. B. Stillwell on transportation. Mr. Stillwell devoted most of his remarks to the question of highway transportation and emphasized the fact that the variables of highway engineering are at present unknown. He further pointed out that out of every 100,000 motor vehicles, 7,000 of them are heavy trucks in excess of 4½ or 5 tons, and that these 7,000 are the chief agencies in destroying the highways. One of the problems which American Engineering Council can profitably take up is to try to determine the economic radius of truck transportation and its relation to railway and railroad transportation and as a result of this to guide the government in appropriations for, and regulation of, the highways. He pointed out that his home state, New Jersey, builds wonderful highways but allows private companies to wear them out with a few trucks to the great advantage of private capital.

On Friday, the council finally adopted the tentative constitution prepared in June, with a few very minor changes. Considerable discussion was held with reference to the provisions for publicity, but they were allowed to stand as written, the principle of open meetings and open discussions of all matters being sustained. Particular notice was taken of the helpful work done by the technical press as well as the publicity in the daily press with reference to the new organization.

The following six men were elected to be officers of the council: Herbert Hoover, American Institute of Mining & Metallurgical Engineers, president; Calvert Townley, American Institute of Electrical Engineers; William E. Rolfe, Associated Engineering Societies of St. Louis; Dexter S. Kimball, American Society of Mechanical Engineers, and J. Parke Channing, American Institute of Mining & Metallurgical Engineers, the four vice-presidents; L. W. Wallace, the Society of Industrial Engineers, treasurer.

In accepting the presidency, Mr. Hoover said that he recognized the position meant responsibility and work, but that he could not refuse a call from his engineering associates wherever that call meant useful service.

At the evening session, Mr. Hoover made an address in which he discussed the problems growing out of American industrial development and suggested that "engineers, with their training in quantitative thought, with their intimate experience in industrial life, can be of service in bringing about co-operation between these great economic groups of special interest," and

Mr. Hoover then referred to the public statement of the officials of the American Federation of Labor that they desire the support of engineering skill in the development of methods for increasing production, and it is following this that Mr. Hoover suggests that the definite program of the new American Engineering Council include a complete investigation of industrial waste and the elements contributing to low production or low activity on the part of large employed groups.

The executive board at its meeting on Saturday passed resolutions in support of the project above mentioned as proposed by Mr. Hoover and also in support

The Officers of American Engineering Council



No. 1. CALVERT TOWNLEY*
Vice-President
No. 2. HERBERT HOOVER*
President
No. 3. WILLIAM E. ROLFE*
Vice-President

No. 4. DEXTER S. KIMBALL†
Vice-President
No. 5. J. PARKE CHANNING†
Vice-President
No. 6. L. W. WALLACE
Treasurer

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stated that engineers will have performed an extraordinary service by so doing. He emphasized that this engineers' association stands somewhat apart among the various economic groups in that it has no special economic interest for its members. Engineers should be able to take an objective and detached point of view. Their calling in life, he said, is to offer expert service in constructive solution of problems to the individuals in any of the various groups. The wider vision is group service of engineers to group problems.

He pointed out that the majority of the membership of organized labor are individualists in their attitude of mind and in their social outlook, and that the expansion of socialist doctrines finds its most fertile area in the ignorance of many workers, and yet the labor organizations as they stand today are the greatest bulwark against socialism. He did point out, however, that some labor leaders overlook the fact that if we are to maintain high standards of living or productivity, it can only be in a society in which we maintain the utmost possible initiative on the part of the employer and that we can expand only by a steady increase of production.

of the proposed federal department of public works, as advocated by Engineering Council and further, the compilation and preparation of tables of physical and chemical constants as undertaken by the National Research Council.

According to the constitution as finally adopted, the executive board will hold regular meetings, at least bi-monthly, to carry on the direction of the work of the council. The council, itself, will hold annual meetings with no restriction as to place of meeting. As a matter of fact, there is no restriction as to the place of meeting of the board, either, the action taken by the council merely locating the official headquarters at Washington.

An executive secretary, to whom will be intrusted the active organization of the various lines of work, will be chosen soon so that American Engineering Council will be able to take over the functions of Engineering Council on Jan. 1, 1921, as well as to undertake its own program. Meanwhile, L. P. Alford, American Society of Mechanical Engineers, one of the members of the executive board, is acting as secretary. Active work to interest other societies not yet members will be continued.

Letters to the Editors

Motor Bus Versus Trolley Car in Passenger and Freight Transportation

INTERNATIONAL MOTOR COMPANY

NEW YORK, Nov. 10, 1920.

To the Editors:

I have read the editorial in the Nov. 6 issue of the *ELECTRIC RAILWAY JOURNAL* to the effect that "Mr. Graham's Address Should Be Read by the Automotive Industry." It may interest you to know that at least one truck manufacturer has already taken measures to advise its various sales departments of its policy toward the electric trolley. Immediately after the convention at Atlantic City the International Motor Company sent a letter, copy inclosed, to its branches in which it was stated that the company was in accord with Mr. Graham's principles and believed that electric railway service is essential to meet transportation needs.

There is one feature of this matter, however, which should not be overlooked: With the granting of authority to increase fares the trolley companies are showing a tendency to abuse the privilege and overcharge the public. For instance, in Connecticut the Connecticut Company is charging 10 cents on routes radiating not more than 1 mile from city centers. The public considers this charge unreasonable and naturally turns to the motor bus for relief. It may be well at times for the trolley to have the motor bus as a competitor in order to save the trolley from itself.

With reference to your other editorial on the question "Shall We Turn the Freight Business Over to Motor Trucks?" I am sure there is an opportunity for considerable discussion on this point. At present we agree with Mr. Graham that the freight transportation is essentially the field of the motor truck just as urban passenger transportation is essentially the field of the electric trolley.

L. D. MILLER,

Sales Engineering Department.

[Copy of International Motor Company Letter]

INTERNATIONAL MOTOR COMPANY,

NEW YORK, Oct. 15, 1920.

TO ALL BRANCHES:

Yesterday, at the American Electric Railway Association Convention held at Atlantic City, George M. Graham of the Pierce-Arrow Motor Car Company gave a talk on "The Motor Vehicle—Ally or Competitor of the Trolley," in which he stated the following principles:

That the problem of surface transportation of passengers in cities is best solved by the existing trolleys, and that the proper field for the motor bus is to augment the trolley service. The motor bus is an ally, not a competitor of the trolley.

That the trolley companies do not possess the goodwill of the public because of insufficient service during rush hours and that a step toward gaining this goodwill would be to augment the trolley service by the operation of motor buses, even though such service might not be financially profitable.

That the trolley companies have no legitimate field in handling freight. This is essentially the field of the motor truck, and the trolley companies should apply their energies and resources elsewhere.

This company is in entire accord with the foregoing principles and they will constitute the sales policy of the company relative to motor buses and freight handling by trolley.

The statements made by Mr. Graham were accepted enthusiastically by the trolley men present, especially his statement that the bus was essentially an ally of the trolley, not a competitor, and thus bus service could be used to advantage in offsetting public criticism of lack of service during rush hours.

You are, therefore, requested to get in touch immediately with the representatives of the local trolley companies in your territory who attended the convention and who heard Mr. Graham's speech, advising them of the intention of this company to co-operate with them in solving their transportation difficulties, mentioning the twenty-five-passenger steel body motor bus which we exhibited at the convention and which they, no doubt, saw and examined. Advise them that we are advocating a better type of motor bus which will last as long in service as the one-man safety car. Assure them that we are not in sympathy with uncontrolled jitney service, which is, at the present time, eating into their resources, but which, for evident reasons, cannot survive indefinitely. In other words, approach these people in a sympathetic attitude and see if we can help them.

That the motor bus is a live issue with the trolley companies was apparent to all who attended the convention and observed the way the remarks of Mr. Graham were received. Every effort should be made, therefore, to push motor buses while the incidents of the convention are still fresh in the minds of those who attended.

R. E. FULTON,
Vice-President.

Centralizing Responsibility for Employment and Labor Relations

NOTE.—The following communication was sent in with the suggestion that it be published in the *JOURNAL* to induce discussion on this important subject of employment and labor relations. The plan related has been worked out for and is about to be inaugurated in a medium-sized street railway and power company. The author requested that his identity be not disclosed for obvious reasons. Any discussion of the subject will likewise be run without signature if requested.—EDS.

To the Editors:

The establishment of an employment bureau on the ground floor, centrally located, taking over every phase of employment from all departments and centralizing all of this effort in one place, is the first essential in the effort to bring about correct employment relations in the public utility. All employees should enter service through this central bureau, and all separating from the service should leave through this employment bureau. Private interviews should be had with each applicant, by a person trained to the point of being a specialist in employment matters.

To function properly, the employment bureau should start out by preparing, through conferences with the department heads and foremen, the specifications covering every job in the entire organization and placing these in its files. This will be needed later when requisitions come from department heads for additional employees to fill certain jobs. The employment interviewer then fits the applicant and the specifications together.

Any interruption of service to the public is against public policy and tantamount to being illegal; therefore, every applicant for a job with a public utility should be told, in the employment bureau in private interview, that he is applying for a position to serve the public, and if sincere in his desire to serve the public he must agree in advance to an understanding that he is willing to sacrifice to some degree his freedom of action and subscribe to continuous service without interruption. He must agree to forego the privileges and right to strike, as the public demands continuous service. And if he is not willing to become a party to these agreements, then he must seek employment that does not require him to serve the public nor give up his right to strike. Acceptance by the applicant of employment with a public utility on these conditions places him where he may or may not become a member of a union. If he becomes a member of the union, he is pledged to arbitration in lieu of strikes. If he works as non-union,

then the public utility should provide for him an employees' association as a means for collectively negotiating with the company that will prevent the union employees from having any advantage over the non-union employee.

If the association of employees is properly conducted and covers every department, it should cost vastly less than the union and give the employees a great deal more in the way of sick and death benefits, ample medical advice both for prevention and cure to the employee and family, ample service from a trained nurse, and a centrally located food emporium that should sell, under the cash and carry plan, all of the necessities of the average family at cost to employees only.

An honestly conducted plan of employment relations along this line will soon swing the loyalty of the employees to the employer. There should also be two other separate and distinct organizations, namely, the safety department and the building and loan association. The latter should be not only self-sustaining but it should be mutual.

This plan for new employment relations should not be heralded by an orator from the stage to the mass of employees, nor should it be put over in anything like the manner of pressing a button to flood the room with light. On the contrary, its installation should consume from one to two years in accomplishment, and many weeks of preparation should be put in before any headway is apparent that would disclose a desire on the part of the employer to commune a little closer with his employees.

EXECUTIVE.

Theory and Practice at Harvard

HARVARD now offers opportunity for third year mechanical, electrical and civil engineering students to receive practical training along with their theoretical school work by means of a co-operative arrangement with more than fifteen large industrial establishments.

Students electing the co-operative program are divided into two sections, which alternate in two-month periods between the industries and school from September to September, with a vacation allowance of six weeks in the summer.

The students are placed in those industries for which they express a preference and for which they seem to have the necessary qualifications. In each industry they are placed in the various departments of the industrial organization in order to give them a broad perspective of the human, economic and engineering features of the business. Each student is supplied with a prepared list of questions upon entering each department and he is asked to answer these questions. In addition he is required to submit a semi-monthly technical report of some particular phase of the work which he has done.

Upon his return to school he reports twice a week to a class where he describes to his fellow students what he learned on his job. An instructor guides the discussion and questions in this classroom work. The student is supervised in his industrial work by the faculty, but is on an employee status in the industry and receives wages in accordance with his ability.

The industries have heartily indorsed the plan, as it fits in with their apprenticeship courses, permits them to size up promising material for their business and brings them and the colleges into closer relations with beneficial results.

Association News

Mid-Year Meeting in Chicago

Association Sets the Date for Feb. 10—Committees Are Actively at Work

THE mid-year meeting of the American Electric Railway Association will be held in Chicago on Thursday, Feb. 10, 1921. This announcement was made at association headquarters this week. The papers to be presented at the meeting will deal largely with problems relating to the financing and refinancing of electric railway companies. This topic was selected because, in the opinion of the subjects committee, it is one which is of great general importance and interest at the present time. The committee on subjects, of which J. D. Mortimer is chairman, expects to be able to announce soon the names of those who will present discussions on this subject. The meeting headquarters in Chicago will be at the Drake Hotel.

The program of the mid-year meeting will also include a banquet in the evening, at which it is expected there will be addresses of unusual interest. A meeting of the committee on arrangements for the dinner was held in Chicago on Nov. 18. The chairman of this committee is L. E. Gould. The other members of the committee are: B. I. Budd, F. R. Coates, Henry A. Blair, F. W. Brooks, H. E. Chubbuck, A. T. Perkins, H. L. Monroe, C. C. Peirce, H. J. Kenfield, John A. Benham, E. F. Wickwire, T. J. McGill, Edwin D. Meissner, D. W. Smith, R. P. Fisher, W. J. Pine, W. T. Butler, F. C. J. Dell, W. H. Sawyer and D. B. Dean. At the meeting on Nov. 18, sub-committees were appointed with chairmen as follows: Sub-committee on hotel arrangements, L. E. Gould; on speakers, H. A. Blair; on invitations, W. P. Butler; on ladies' entertainment, John A. Benham; on publicity, H. J. Kenfield; on seating arrangements, F. C. J. Dell; on transportation, R. P. Fisher, and on reception, F. R. Coates.

New York City's Subways Achieve World's Safety Record

NEW YORK CITY'S subways during the past sixteen years have achieved a world's record for safety. Three times the population of the globe have traveled on the lines of the Interborough Rapid Transit Company since the opening of the first route in 1904. In all that time accidents have resulted in seven deaths, or one to 614,400,000 passengers. The original subway was built to carry 400,000 passengers a day. By March, 1913, it was carrying 1,000,000 and now 2,000,000 persons often travel on it in a single day. Passenger service has increased during this period about 325 per cent.

The company's first line was only 17 miles long, with 62 miles of single track. Now the subway is 75 miles long and has 220 miles of single track. The employees during the first full year of operation numbered 2,600 and the wages amounted to \$1,671,500. For the last fiscal year 9,000 men were employed and the cost of paying them had increased to \$11,406,600. The coal bill during that period increased from \$426,000 to more than \$3,000,000.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City Still Unyielding

Duluth Authorities, Following Defeat of Fare Plan, Seek to Force Service Increase

The City Council of Duluth, Minn., is again seeking a solution of the transportation muddle in that city growing out of the refusal of the Duluth voters to allow the Duluth Street Railway to increase its fare. The Council on Nov. 15 asked the city attorney for an opinion as to whether the company could be required to improve its service.

RELIEF TWICE REFUSED

The city attorney replied that the Council had the power to order the company to increase the service on various lines as well as to order the making of extensions. He further stated that, if the railway refused to comply with the Council's demands the city would have grounds for asking the courts for a writ of mandamus.

The present situation has been brought about by the refusal of the Duluth voters to allow the company to raise its fare from 5 cents to 6 cents. Several months ago the Council passed an ordinance providing for a 6-cent fare. At a referendum election held soon after, the proposition was rejected. The carmen, who had been promised an advance in wages contingent upon the raising of the fare, then went out on strike to force the city's hand.

To bring about a settlement of the strike the Council agreed to repass the fare ordinance. This, substantially in its original form, was resubmitted to the voters at a special election on Oct. 4. The proposition was again turned down, in spite of a warning by the railway that it could not continue to maintain its standard of service at a nickel fare.

SERVICE MUST BE REDUCED

Immediately following the election Herbert Warren, general manager of the railway, announced that a substantial reduction in service would be made at once. Non-rush-hour service was reduced to a minimum and "owl" service was eliminated. At the same time a number of crews were laid off. The wages of the men retained on the payroll were increased 10 per cent.

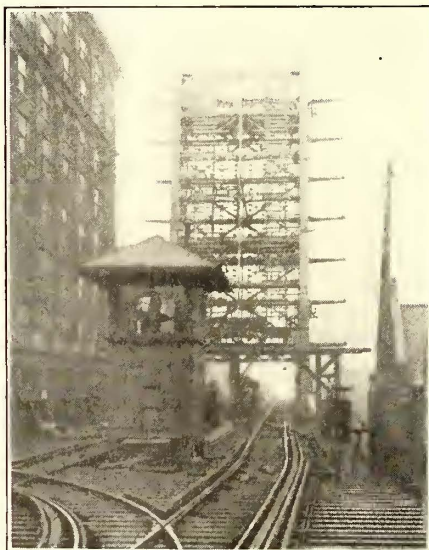
In answer to the demands of the city authorities, officials of the company contend that they are unable under present conditions to put on additional cars. Mr. Warren, in discussing the railway's predicament, said recently:

We are giving the best service possible on a 5-cent fare. I have said this before and it is as true now as when the statement was first made. We are willing to meet the City Council and will promote any plans for the betterment of the service that

are possible considering the reduced income of the company. When the meeting takes place I will endeavor to have Mr. Robertson (president of the Duluth Street Railway) here with me so that we may be able to give a decision on whatever plans the Council lays before us.

Another Double-Deck Bascule Bridge in Chicago

Chicago already has two double-track bascule bridges in use. A third one is now under construction across the Chicago River at Wells Street to replace the present double-deck swing bridge, which carries the elevated trains above and the surface cars and heavy vehicular traffic below. The new bridge is



WELLS STREET BRIDGE WITH BASCULE RAISED. PHOTOGRAPHED FROM LEVEL OF ELEVATED LINE

being built over and around the old one without interruption to traffic. As it stands, reaching up into the air, the section of the new bridge shown in the accompanying illustration would appear to be long enough to span the river alone, but there is another half just like it on the opposite bank.

A previous undertaking of similar nature was the replacement of the Lake Street bridge, which carried both surface and elevated cars, with a bascule bridge three years ago. In this case traffic had to be stopped for only a night while the old bridge was removed. The Wells Street bridge is an even more important link in the transportation systems of Chicago than the Lake Street bridge, as it carries all the through north and south elevated trains. It is expected that the delay to traffic incident to putting the Wells Street bridge into commission, however, will not be prolonged for more than one night.

Co-operation Essential

Judge Mayer, Discussing New York Transit Situation, Calls on Civic Bodies to Aid

Settlement of a city's transportation problems calls for the co-operative effort of local civic and business organizations. This is the opinion expressed by Judge Julius M. Mayer of the United States District Court in an address to the Flatbush Chamber of Commerce, Brooklyn, N. Y., on Nov. 18. In the course of his remarks Judge Mayer declared that "once the people are aroused to the pressing importance of the situation, they will be impatient at insincere obstruction and will insist on a prompt and fair solution of problems already too long unsolved."

As judge of the Federal Court he is in charge of affairs of a number of roads now in receivership, including the Brooklyn Rapid Transit Company and the New York Railways. Referring to the local situation he declared that, "nothing can be gained from the kind of controversy which has for its ultimate purpose the accomplishment of some political end."

CONSTRUCTIVE ACTION NECESSARY

The transit problem, said Judge Mayer, should be approached "with good temper and with the single purpose of arriving at a solution which will be fair to the public and fair to the investors."

Judge Mayer said further:

For nearly two years the B.R.T. and the New York Railways have been in the hands of receivers. Both the court and the receivers would be happy if they could be relieved forthwith of their responsibility.

During these two years the receivers and the companies have been compelled to litigate certain questions of law, but not one single constructive act, in the way of the solution of the transit problem, has been contributed by the officials having any power in the premises. On the contrary, everything seems to have been done to embarrass and delay a solution of the problem.

It is not a fact that there is a universal 5-cent fare. The financial condition of the surface lines has compelled disintegration, both in your borough and in other boroughs, with the result that the public is paying in some instances 10 cents and 15 cents where heretofore they paid 5 cents for a similar ride. In some sections of your borough and other boroughs surface line service has been temporarily discontinued and such steps have been necessary in order to make it possible to run other parts of the system.

The subway systems have been greatly handicapped in regard to increased equipment and questions of maintenance and have not made the progress which could have been made, if the subject had been fairly and intelligently treated.

The problems are so vital to the welfare of the city and its people and so difficult and varied that, on an occasion of this kind, I cannot do more than refer to them. The health, welfare and happiness of the people at large and the growth and prosperity of the city, as a municipality, demand that there should be immediate effort to deal with the problem in a broad high-minded and statesman-like way.

Collective Bargaining on B. R. T.

Court and Receiver Work Out Plan Whereby Employees Will Deal Directly with the Management

An employees' representation plan intended to create an organization to take the place of the Brooklyn locals of the Amalgamated Association of Street and Electric Railway Employees of America, was announced on Nov. 18 by Lindley M. Garrison, receiver of the Brooklyn (N. Y.) Rapid Transit Company. The scheme provides for the election by the employees of representatives who will deal directly with the management. The election is to be by secret ballot, and the votes will be canvassed by Alfred M. Barrett, Public Service Commissioner of the First District, and Transit Construction Commissioner John M. Delaney. Through the new organization the employees will be able to bargain collectively with the receiver.

JUDGE Julius M. Mayer of the United States District Court co-operated with Mr. Garrison in the preparation of the new plan. Judge Mayer, in whose hands the affairs of the B. R. T. system now are, has steadfastly declined to recognize or have any dealings with the Amalgamated Association. He stated his willingness, however, to treat with a committee representing the employees as employees. On Sept. 2 he declared that "the court will see to it that the right of collective bargaining will be carefully safeguarded and that representatives of their own choice shall have direct dealings with the management."

STRIKERS ARE BACK

Unable to secure recognition for the Amalgamated, the strikers returned to work as individuals. The strike was officially declared "off" when three hundred former employees, the last to give in, applied for their former jobs and were taken back. Employees who are members of the Amalgamated Association will not be permitted to vote in the election of representatives, or to act as representatives. To be eligible for membership in the new organization, each employee must sign the following pledge:

I am not a member of the Amalgamated Association of Street and Electric Railway Employees of America, and I will not become a member while in the employment of any of the above (companies), and I agree that while I am so employed I will not make any effort among the other employees to induce any such employees to become members of said Amalgamated Association of Street and Electric Railway Employees of America.

ENTIRE SYSTEM INCLUDED

The new plan will apply to all employees of the entire Brooklyn Rapid Transit System and the Brooklyn City Railroad who at the present time are not represented by committees under working agreements. A primary election will be held on Nov. 29, and an election of representatives on Dec. 13. That there may be no suspicion that the management is attempting to control or to influence the choice by the employees of their own representatives, the management has requested Messrs. Barrett and Delaney of the Public Service Commission to supervise the primary at which the nominations will be made. These officials have consented to act.

Under the new plan the employees will be divided into voting units, each of which will be entitled to one or more

representatives. Any matter which in the opinion of any employee requires adjustment, and which the employee has been unable to settle with the foreman or official in charge of the work on which he is engaged may be referred to the representative or representatives of the voting unit in which the employee works. The method of procedure to be followed in such a case is outlined as follows:

Such representative, or representatives, if they consider the matter worthy of attention, will then take it up for discussion and adjustment with the foreman or official in charge of the work. If such representatives and such foreman or official in charge of the work, cannot adjust the matter, then such representatives may take the matter up with the head of their particular department. If the matter is not then adjusted, where there is more than one voting unit in a group, and the representatives feel that it is of general interest to employees of that group, the matter may be referred to the representatives of that group, who may then take it up with the head of the department.

If the representatives of a group or department, or the executive committee of such representatives, as above provided, fail to adjust the matter with the head of the department, they may then take the same up with the management.

MANAGEMENT ASSUMES EXPENSE

Each representative will be free to discharge his duty in an independent manner without fear that his individual relations with the company may be affected by any action taken by him in his representative capacity. It is further provided that each representative shall have the right to appeal in person or through the other representatives of his group, to the head of the department for redress in respect to anything alleged to be a personal discrimination on account of acts performed in a representative capacity. If a satisfactory decision is not then forthcoming from the head of the department, the representative may appeal directly to the management. Failing of an agreement in this case, the plan provides that an appeal may be taken to the Public Service Commission.

The management will assume all necessary expense of the nominating primaries and elections, and will also provide places at which the primaries, elections and meetings may be held. The management will further pay the employees at their regular rates for all time directly and necessarily lost by them on account of time devoted to their duties as representatives.

Representatives shall be elected for a term of one year and shall serve until their successors are elected. They shall be eligible for re-election. A repre-

sentative shall be deemed to have vacated office upon ceasing to be an employee of the company, or upon permanent appointment to the position of inspector, foreman, assistant foreman, or other position in the supervisory forces of the company. The qualifications for voters are as follows:

At the first nominating primary and election, every employee who has been in the employ of the company for the sixty consecutive days prior to the date of the primary and who is not a member of the Amalgamated Association of Street and Electric Railway Employees of America, shall be eligible to vote at the nominating primary and at the election, in his or her particular voting unit, provided, however, that no inspector, foreman, assistant foreman, or other member of the supervisory forces of the company shall be able to vote at the primary or election.

Nominations and elections shall be by secret ballot and shall be so conducted as to avoid any undue influence upon, or interference with voters in any manner whatsoever, and to prevent any fraud or mistakes in the casting or counting of ballots. At each primary there shall be elected inspectors of election who shall conduct the ensuing election and the next primary election thereafter. There shall be elected one inspector for each voting unit, who shall serve with a representative of the company and the election officials.

DETAILS OF ELECTION PROCEDURE

No more than three times the number of names to be voted for as representatives at any election will be placed on the ballot for that election. Those receiving the highest votes at the primaries up to that number, will be placed on the ballot. For example, if a unit is to elect two representatives, the six names receiving the highest number of votes at the primaries will be placed on the ballot for the election. The names of the nominees for election shall be conspicuously posted for a reasonable time before the day of election.

Toledo Wants Commissioner

Applications to Be Held Open Until
Dec. 4—Engineer Not Essential—
Mixed Bus and Car Service

The board of control of Toledo's street railway system under the new service-at-cost commission was called together for a meeting on Nov. 18 for the purpose of organizing and to take a preliminary look at the problems confronting it in getting the new franchise plan into working order. Henry C. Truesdall, banker and attorney, was elected to be chairman, and W. W. Knight, business man, to be secretary by unanimous consent.

Mayor Cornell Schreiber sat with the members of the board on account of the fact that the appointments are not legally effective until the ordinance has been formally accepted by the Toledo Railways & Light Company, and assignment of its rights made to The Community Traction Company, created by the ordinance. The Mayor also wanted to sit with the board of control so that a mutual choice might be made for transportation commissioner.

At the meeting it was decided to hold applications open for the position of commissioner until Dec. 4. The applications are to be addressed to Henry C. Truesdall, Northern National Bank, or Mayor Cornell Schreiber, Toledo. They will be considered strictly confidential in order to protect any men who may apply.

ENGINEERS NOT NECESSARY

The board members made it clear at their meeting that an engineer will not necessarily be appointed to the position. It was felt that a business executive with a good record of service and able to appoint qualified assistants to gather engineering and financial technical data might be appointed to the position.

The appointment is to be made by the board of control but must be confirmed by the Mayor. All applications will be considered jointly so that there will be no delay in the selection of the transportation commissioner.

Toledo engineering bodies and some luncheon clubs have expressed themselves as favoring the appointment of a Toledo man for the position. One group has publicly backed Harry C. McClure, city engineer under Board Member David H. Goodwillie, for the place. Cecil Rood, county surveyor, and several others have been named as applicants.

The board of control at its meeting also looked into several provisions of the ordinance in respect of their duties. They were practically unanimous that crosstown service should be provided as soon as possible.

After selecting the commissioner the board must prepare a plan as provided in section ten of the ordinance:

For the rearrangement of the street railway system in the city of Toledo, with a view of giving the best service to the city with the highest operating efficiency and economy. Such proposed plan shall also contain provisions for a crosstown line or lines.

Members of the board expressed themselves as favorable even to a mixed service of buses and street cars to make some sort of crosstown service available as soon as possible. They will probably begin on this question as soon as the transportation commissioner has been selected.

NEW ARRANGEMENT OF LINES

The new arrangement of the railway lines approved by the board of control will have to be submitted to the Council for final approval before it is put into effect.

City Clerk Albert Payne and the Mayor have construed the ordinance provision requiring acceptance to be filed within ninety days after passage to mean that this time limit shall begin to operate from the date when the ratification by the people was certified to the city clerk. In this case the final date for putting the cost-of service plan into effect may be about Feb. 15, 1921. At the will of the company it can be put into effect at any time before that date.

Referendum to Be Taken

National Chamber of Commerce Plans Nation-Wide Vote on Transit Facilities and Submits Report of Its Public Utility Committee

Declaring that equitable readjustment and not past performance is the immediate problem confronting the electric railways, the public utilities committee of the United States Chamber of Commerce in a report made public on Nov. 24 urges the retention of the principle of private ownership with public regulation. The report, devoted to a discussion of the present status of the traction industry, recommends a more constructive attitude on the part of the people at large and asks that electric railways be relieved of burdensome costs not directly connected with the rendering of service. The recommendations of the committee will be submitted to the members of the United States Chamber of Commerce in the form of a referendum.

EIGHT propositions will be submitted to the members for approval. These are:

1. Existing traction facilities should be conserved.
2. The attitude now taken toward street railway problems should be based upon the present and future needs of the community.
3. The attitude which is taken toward street railway problems should contemplate private ownership and operation.
4. Regulation should everywhere be instituted that will promptly follow changes in the situation of the companies rendering service of local transportation.
5. Provision should be made against the consequences of unfair competition.
6. All burdens unrelated to the service performed should be removed from street railways.
7. Official responsibility should be definitely fixed for the application of regulation.
8. Each company should seek to have available for the public at all times the facts as to the results of operation and should have resident responsible executives wholly conversant with local requirements.

EXHAUSTIVE STUDY MADE

The committee's report follows an exhaustive study of the electric railway situation. Those signing the report are: Lewis E. Pierson, chairman, board of directors Irving National Bank, New York City; Henry G. Gradlee, president, Stone & Webster, Boston, Mass.; Arthur W. Brady, president, Union Traction Company, Anderson, Ind.; F. B. DeBerard, director of research, Merchants' Association, New York City; E. K. Hall, vice-president, American Telephone & Telegraph Company, New York City; Albert W. Harris, president, Harris Trust & Savings Bank, Chicago, Ill.; Charles L. Harrison, president, Sinking Fund Trustees, City of Cincinnati, Cincinnati, Ohio; J. W. Lieb, vice-president, New York Edison Company; H. L. McCune, of the firm of McCune, Caldwell & Downing, Kansas City, Mo.; P. N. Myers, president, St. Paul Association of Public and Business Affairs, St. Paul, Minn.; John W. Van Allen, of the firm of Wilcox & Van Allen, Buffalo, N. Y.

This will be the thirty-third referendum of the chamber's membership. With each ballot put out there goes the report of the committee making the recommendations, and in addition extensive references to arguments in the negative.

The committee finds that one great cause for public indifference to the situation of local street railways lies in widespread belief that in the earlier history of many traction companies there was financial mismanagement. Even in cases where this has been the fact, however, it becomes relatively unimportant at this time, says the report,

inasmuch as the problem should be approached from the point of view of the value of the property used for the public service rather than from the point of view of the outstanding securities. On this point the report says:

If it be conceded that the public interest is to obtain good service at lowest cost and that street railways are essential and necessary, then the sensible way to deal with the problem is to permit existing organizations and present properties to earn a sufficient sum over their operating expense to induce investment of capital for extensions and improvements to existing facilities. It is not a question of past financing but of present earnings and there should be provided a margin sufficient and cheapest service to patrons of utilities and to the public in the communities served. Believing that this position is in the highest public interest the committee recommends that the attitude which is now taken toward street railway problems should be based upon the present and future needs of the company, and not upon earlier conditions. Equitable readjustment and not past performance is the immediate problem.

With regard to ownership the report states that a canvass of every consideration that has been brought forward in support of public ownership has resulted in the committee's finding it "no solution of present problems or means for meeting future requirements." The committee therefore recommends "that the attitude which is taken toward street railway problems should contemplate private ownership and operation of local transportation facilities."

REGULATION SHOULD BE REASONABLE

The committee recognizes regulation as a necessary corollary to private ownership and operation. Regulation should have for its purpose the conservation of the public interest which "centers in adequacy of service at reasonable cost." It is further stated that:

As adequacy of service is possible only from an enterprise that can command capital with which to provide the facilities the public interest requires, regulation must in this regard contemplate the situation of the companies that are regulated. Both for the present and the future, elasticity should be substituted for rigidity. Through public authority provision can be made on the one hand to adjust charges for service to yield revenues that are adequate for proper conduct of the utility. Moreover adjustments through regulation must promptly follow the conditions that call for them; for every delay in the application of a remedy that bears upon a matter of public interest is detrimental to the public itself.

Regulation in whatever form involves duties on the part of the public as well as on the part of the companies, continues the report. One of these duties is to protect a company serving the public from unfair competition from any source. This does not mean that local transportation as it now exists should

be perpetuated regardless of advances that may be achieved in the art of transportation or in the science of regulation. It does mean, however, that a company which is rendering service and should be developed in efficiency should not be subjected to competition from any other source which is not under corresponding regulation and obligations. Continuing, the report says:

The whole purpose of regulation implies that the companies subject to regulation should be responsible only for performing the service they have undertaken. Their efficiency and the reasonableness of their rates of charge are the matters which should have undivided attention. Reasonableness in rates should be decided only with reference to the service that is rendered. In other words the rates charged for street railway transportation should not be made an indirect method of taxation for the community. A street railway company should be taxed only on the basis of other comparable taxpayers. Your committee recommends that all burdens placed upon street railway companies and unrelated to the performance of the service they render the public should be discarded.

A SINGLE AGENCY NECESSARY

Both the public and a company which serves it, says the report, should be able to look to a single agency of the public, whether a local official, or a board, or a public utilities commission, as directly and solely responsible for the application of regulation. Responsibility for exercise of the public function involved in finding facts and applying to them the principles which have been laid down by the public, should be clearly located. In matters of public importance there should be no division of authority; for division of authority is almost invariably followed by escape for everyone from responsibility for performance of the public function. The committee recommends that official responsibility should be definitely and unmistakably fixed for the application of the regulation.

Adequate provision for having the public informed regarding the company and its operations and for having the company acquainted with the needs of the community, the committee points out, will serve to prevent controversies that may have little relation to facts and to concentrate attention upon the one question which is of paramount importance to the company and to the public—adequate and efficient service at the lowest rates consistent with the maintenance of such service. To this end the committee recommends that a company providing local transportation should seek to have available for the public at all times the facts as to the results of its operation.

Twenty-five Miles for Five Cents

The Utica Avenue (Brooklyn) extension of the Interborough Rapid Transit Company's rapid transit lines was opened on Nov. 21. The extension is less than 2 miles long. It extends from Utica Avenue and Eastern Parkway to Livonia Avenue and Junius Street, East New York. With the opening of this extension it is now possible to ride for a single 5-cent fare from 241st Street and White Plains Avenue in the Bronx to the Brownsville section in Brooklyn, a distance of about 25 miles.

Kansas City Undisturbed

Receivers Function in Harmony With Previous Management—Plea for Co-operation of Public

The receivers of the Kansas City (Mo.) Railways are continuing the operation of the system with the organization as they found it. Because of their relation to the public, the city, the company and the employees, the receivers are apparently able to bring about results which the company alone found it difficult to achieve. The most striking instance of this kind is the success so far attending the installation of the rerouting program.

BEELER PROGRAM TO BE CARRIED OUT

This plan had been worked out by the company long before the advent of the receivers, but it waited for introduction on action of the City Council. The receivers now plan to introduce in full the Beeler program, completed several months ago, few of the isolated suggestions of which have up to the present been put into effect by the company. The comprehensive system of routing is comprised in an ordinance which the receivers have discussed thoroughly with the city officials and Aldermen.

The receivers have said that they expect the Beeler program to effect a substantial improvement in service. They installed a new schedule on one of the lines on Nov. 10, increasing the headway in rush hours, and showing a gain in revenue from \$3.44 to \$3.68 per car-hour. They are studying the data which the departments of the company have been collecting, and are inclined to put into effect promptly orders based on conclusions from such study and recommendations of officials.

Colonel Fred. W. Fleming is giving close personal attention to all reports filed by departments, as indeed is Francis M. Wilson, the other receiver. They have offices in the executive suite of the railway building. There seems to be slight if any disturbance of routine because of their control of the property, all officials and heads of departments functioning practically as before. Colonel Kealy, president of the company, acting as adviser of the receivers, and other heads are performing their duties very much as usual. There has quickly developed a sense of confidence in the continuity of the organization, which has done a great deal to preserve the morale and stimulate the energy of the personnel.

GOODWILL PROMOTED

The receivers have held meetings with department heads to learn the previous program as to building of morale and to make suggestions along this line. Other meetings of groups are planned. The receivers have said that they wish to promote especially such conduct of employees toward the public as will best cultivate goodwill.

In the direction of cultivating goodwill and a complete understanding of the company's situation with reference

to giving service, Mr. Wilson addressed one of the community improvement associations recently. He presented a statement of the financial affairs of the railway, and gave details as to equipment used. He also declared that the improvement of service was "up to the public."

CITY OVER-SERVICED

The receivers are impressing upon the public of Kansas City the fact that Kansas City is already receiving an unusually high grade of service. One of the receivers said recently that the city was over-serviced with cars. He declared Kansas City had almost exactly the same trackage as Cleveland, with only half as many people.

A specific instance of the scrupulous maintenance of the organization already operating the railway is the use being made by the receivers of the machinery of the board of control. This board, consisting of P. J. Kealy, president, representing the company, and Colonel E. M. Stayton, representing the city, formerly had authority to institute certain matters; under the receivers the board continues to work practically as before, except that when authority is required the receivers supply it through their own orders.

CONTRACTS SOON TO COME UP

Action regarding certain contracts, particularly that for the construction of the Twenty-third Street viaduct, may be taken soon. The Federal Court had postponed decision until the receivers could familiarize themselves with the matters. On Nov. 19 the court issued an order relative to the viaduct. This was to the effect that the receivers should have an opportunity to secure modification of the existing contract, under which modification different terms of payment might be prescribed and the railway might have actual property interest in the viaduct when completed. Negotiations are under way with the contractor, the city, and other parties at interest. If these are successful the receivers may adopt the contract.

Urges Hydro-Electric Development

The California Railroad Commission in its last report declares that what California needs most at this time is the development of its unused water powers. The commission states that the utility consumer, utility owner and utility labor through just distribution and proper co-operation can best bring about this state development.

The commission further states that of all utilities, electric railways have borne the greatest burden within the last few years due to rapidly advancing costs. Still, it contends that they are a utility that could not be dispensed with even though jitney and automobiles have perhaps become a more important factor in transportation in the State of California than in any other state in the Union.

Des Moines Case Put Off

Company Going Behind, but Fears Effect of Further Advance in the Rate of Fare

The hearing of evidence looking toward a solution of the electric railway controversy at Des Moines, Ia., was started during the week ended Nov. 20 before the three masters appointed by Federal Judge Martin J. Wade. The masters in the case are John A. Guiher, member of the Iowa Railway Commission, E. D. Perry, attorney, and Paul Beer, engineer.

COMPANY GOING BEHIND FOR MONTHS

Attorney Gamble for the Des Moines City Railway introduced evidence to show that the company had been running behind for months and that the total deficit for the fiscal year ended Sept. 30 was \$22,407. According to the figures introduced by Mr. Gamble the gross returns for the year were \$1,989,328. Operating expenses were \$1,612,212, leaving net earnings of \$362,116. Fixed charges, including interest on notes, were shown to be \$384,623. Counsel indicated that with the deficit of \$22,407 no account was taken of depreciation. Neither did the figures just cited take into account a sum of \$56,844 due the employees for back pay. This amount was originally \$72,878, but a number of payments have been made reducing it to the above figure. A payment of \$12,389 was made on the back pay in October.

The company further showed that on the basis of the experience of the past two years, even considering a continuation of the present 6-cent fare, the deficit for 1921 would be \$19,000.

Two possibilities were presented by the company as a remedy for the present financial difficulties—a further increase in fare or a considerable cut in the service now being furnished.

Attorney Gamble outlined the plans of the company as a way out of the difficulty to include an 8-cent fare for adults, 5-cent fare for children and continuation of the present 10-cent fare on lines extending beyond the city limits. The company is apprehensive, however, that in the event the higher fare were granted traffic might fall off to such an extent that there would still be financial questions to meet. Even the 6-cent fare has reduced traffic over what it was under the former rate. In the event the higher fare is granted, however, the company outlined material increases in service, but stated that if the 6-cent fare was continued it would mean a service cut to the minimum.

HEARING CONTINUED TO NOV. 24

Before the company completed its evidence the hearing was continued until Nov. 24 by reason of the fact that W. E. King, of the engineering firm of Toltz, King & Day, which recently made the appraisal of the railway property for the city could not be present at the hearing until that time.

Officers of the union of railway employees announced that they would

make no attempt to force payment of the back wages until such time as they could be met by the company, as they realized the present financial troubles which the company was facing.

Akron Ordinance Advanced

The proposed new contract between the Northern Ohio Traction & Light Company, Akron, Ohio, and the city of Akron for the operation of the company's local lines, referred to at length in the *ELECTRIC RAILWAY JOURNAL* for Nov. 20, page 1072, came up for second reading before the Council last Tuesday. It is necessary that the ordinance shall be presented for third reading before the Council passes finally upon the matter.

According to the provision of the city charter the ordinance will then have to pend for thirty days, during which time a referendum may be called. In order that there may be a referendum 10 per cent of the registered voters must file such petition within thirty days of the passage of the measure. The city clerk has ten days following the presentation of any referendum petition to check the referendum. If the matter does go to a vote, it may be ninety days before the ordinance is finally submitted to the people for their approval.

The ordinance has been reprinted in pamphlet of thirty-two pages. It is being distributed very thoroughly among the residents of the city. The head of practically every family will receive a copy of the ordinance by mail at his home for his careful consideration.

Interurban Men Accept Award

The motormen and conductors employed on the interurban lines of the East St. Louis & Suburban Railway, East St. Louis, Ill., have voted to accept the wage increase of 13.41 per cent awarded recently by a board of arbitration.

The carmen are not satisfied with the increase granted, according to W. L. Perry, president of the local union, but he said they would accept because of an agreement entered into previously to the effect that they would accept the ruling of the board of arbitration.

The board was composed of David M. Walsh, representing the men; C. E. Smith of St. Louis, representing the company, and Henry F. Bader, former Mayor of East St. Louis, representing the public. Messrs. Bader and Smith signed the award, the union representative dissenting. The increase brings the salary of crews on two-man cars to 60 cents. Men on one-man cars will receive 66 cents an hour. The award is retroactive to May 1, 1920, and is effective until May 1, 1921. D. E. Parsons, general manager of the system, said about seventy-five men would be affected by the award and that each would receive about \$100 back pay.

The city men in East St. Louis are now receiving from 70 to 73 cents an hour. That scale was decided upon by another board of arbitration.

News Notes

City Asked to Arbitrate.—Representatives of several labor unions in Trenton, N. J., have appealed to the Trenton City Commission to intervene in the dispute between the New Jersey & Pennsylvania Traction Company and its employees. The carmen are now on strike, demanding higher wages. The commission is asked to act as a board of arbitration in the case.

Saginaw Men Still Out.—The situation at Saginaw, Mich., with respect to the strike of the trainmen of the Saginaw-Bay City Railway, was unchanged on Nov. 15. The men were still out then and no cars had been run in Saginaw since Oct. 31. The men still refuse to work for the former rate of wages. They want an advance of 10 cents an hour. This the company finds itself unable to grant with the fare now in effect. On the other hand, the company has been unable to recruit men to take the places of the strikers at the rate of wages in effect prior to Sept. 30. So far as the situation over fares between the company and the city is concerned that remains deadlocked. The conditions leading up to the strike were reviewed at length in the *ELECTRIC RAILWAY JOURNAL* for Nov. 13.

Crosstown Transit Line Advocated.—A transportation improvement plan for the Borough of Brooklyn has been outlined recently by M. T. Donnelly, Deputy Public Service Commissioner. In his opinion the Queensboro Plaza-Crosstown Route, plans for which were adopted and approved in 1914, is now of vital necessity to the development of Brooklyn. In a review of the transit needs of Brooklyn and Queens, he says: "The aim is to run a line as nearly straight as practicable from Queensboro Bridge Plaza to the Brighton Beach division of the Brooklyn Rapid Transit System. A crosstown rapid transit route is the only improvement needed to round out the development of Brooklyn. Such a crosstown route would connect with 7 miles of the four-track Brighton Beach line and the Astoria and Corona elevated lines—a rapid transit route from the Atlantic to Long Island Sound."

Program of Meeting

New York Railroad Club

The New York Railroad Club will hold its second annual dinner at the Hotel Commodore, New York, on Dec. 16. The program includes a prominent speaker, a friendly crowd, music and chorus singing under the direction of Miss "Bobby" Besler. Charles R. Ellicott is chairman of the dinner committee.

Financial and Corporate

Brazilian Companies Do Well

Rio de Janeiro and Sao Paulo Tramway, Light & Power Companies Show Highly Satisfactory Results

The seventh annual report of the Brazilian Traction, Light & Power Company, Ltd., Toronto, Ont., for the year ended Dec. 31, 1919, shows that the company's financial position has been strengthened. The gross earnings from operations in Brazil for 1919 were about \$30,320,000. This was an increase of \$4,450,000, or 17 per cent over 1918. Net earnings from operations in Brazil amounted to \$15,655,477 in 1919, compared with \$13,236,477, or 18.4 per cent. The miscellaneous revenue and non-operating income, together with the operating income, increased the gross income to \$16,118,408 in 1919. In 1918 the gross income was \$13,440,-

627, so the increase of 1919 over 1918 was \$2,677,781, or 20 per cent. After all charges for bond interest, depreciation, sinking funds, etc., had been deducted, the gross revenue of the company for 1919 was \$8,877,000, an increase over 1918 of \$2,625,540, or 42 per cent. Expenses of the company, taken as a whole, increased 20.5 per cent from \$832,800 in 1918 to more than \$1,000,000 in 1919. The net revenue left for dividends and other deductions was \$7,873,967, an increase over 1918 of \$2,454,295, or 45 per cent.

245 MILES OF RAILWAY

More than 245 miles of track in Brazil are operated by the Rio de Janeiro Tramway, Light & Power Company. This line in itself had gross earnings of \$9,375,000 in 1919, an increase of 28.6 per cent over 1918. The

net earnings increased from \$4,120,000 in 1918 to \$5,270,000 in 1919, or about \$1,150,000. The car-miles for 1919 were 27,677,655. In comparison with 1918, this was an increase of more than 11 per cent. The total number of passengers carried was 256,165,076, an increase of 36,127,706, or 16.4 per cent over 1918. The operating ratio remained practically unchanged. Twenty-four passenger cars and twenty-three passenger trailers were added to the company's equipment during 1919.

Another subsidiary of the Brazilian Traction, Light & Power Company is the Sao Paulo Tramway, Light & Power Company. The gross earnings were \$6,940,000, an increase over 1918 of 21.6 per cent. For 1919 the net earnings were \$4,445,000, an increase of \$645,000, or 17 per cent. More than 143 miles of single track are operated. The total car-miles were 10,821,370, an increase over 1918 of 6 per cent. Over 12,658,000 more passengers were carried in 1919 than in 1918, an increase of 20 per cent. The operating ratio changed only 2.6 per cent.

The revenue of the companies is received in Brazilian currency—milreis—and the exchange rates prevailing between Brazil and London or New York determined the revenue expressed in dollars in the tables.

INCOME STATEMENT—BRAZILIAN TRACTION, LIGHT & POWER COMPANY

Year ended Dec. 31	1919	1918	Percentage Change
Gross earnings from operation in Brazil.....	\$30,320,000	\$25,870,000	+17.1
Total expenses of operation in Brazil.....	14,664,523	12,533,777	+16.8
Net earnings from operation.....	\$15,655,477	\$13,236,223	+18.4
Miscellaneous revenue.....	86,160	74,354	+15.9
Operating income.....	\$15,741,637	\$13,310,577	+18.3
Non-operating income.....	376,771	130,050	+190.0
Gross income.....	\$16,118,408	\$13,440,627	+20.0
Deductions from gross income:			
Bond interest, etc.....	\$4,143,517	\$4,377,310	-5.4
Reserve for depreciation and sinking fund.....	3,097,886	2,810,854	+10.2
Total deductions of subsidiaries.....	\$7,241,403	\$7,188,164	+0.7
Gross revenue of Brazilian Traction, Light & Power Company....	\$8,877,005	\$6,252,463	+41.9
Total charges Brazilian Company.....	1,003,038	832,791	+20.5
Net revenue.....	\$7,873,967	\$5,419,672	+45.2

STATISTICAL INFORMATION RIO DE JANEIRO TRAMWAY, LIGHT & POWER COMPANY

Year ended Dec. 31	1919	1918	Percentage Change
Gross earnings from tramways.....	\$9,375,000	\$7,285,000	+28.6
Net earnings from tramways.....	\$5,270,000	\$4,120,000	+27.8
Miles of single track.....	245.62	243.34	+0.9
Car-miles.....	27,677,655	24,829,807	+11.4
Number passengers carried.....	256,165,076	220,037,370	+16.4
Statistics per car-mile:			
Gross earnings per car-mile (cents).....	33.9	29.3	+15.0
Net earnings per car-mile (cents).....	19.0	16.6	+14.4
Number passengers per car-mile.....	9.26	8.86	+4.5
Car-miles per passenger.....	0.108	0.113	-4.3
Operating ratio—per cent.....	43.7	43.4	+0.3
Rolling stock owned:			
Passenger cars.....	553	529	+4.4
Passenger trailers.....	480	457	+5.0
Freight cars.....	85	85
Freight trailers.....	126	126
All others.....	15	14	+7.1
Total equipment.....	1,259	1,211	+4.0

STATISTICAL INFORMATION SAO PAULO TRAMWAY, LIGHT & POWER COMPANY

Year ended Dec. 31	1919	1918	Percentage Change
Gross earnings.....	\$6,940,000	\$5,710,000	+21.6
Net earnings.....	\$4,445,000	\$3,800,000	+17.0
Miles of single track.....	143.43	142.85	+0.6
Car-miles.....	10,821,370	10,218,314	+5.9
Number passengers carried.....	76,087,246	63,429,063	+20.0
Statistics per car-mile:			
Gross earnings per car-mile.....	64.2	55.8	+15.8
Net earnings per car-mile.....	41.1	37.2	+10.5
Number passengers per car-mile.....	7.3	6.2	+17.7
Car-miles per passenger.....	0.142	0.161	-11.8
Operating ratio—per cent.....	64.0	6.6	-2.6
Rolling stock owned:			
Passenger cars.....	305	304	+0.3
Passenger trailers.....	56	48	+16.7
Freight cars.....	56	58	-3.5
Freight trailers.....	36	37	-2.7
Total equipment.....	453	447	+1.3

Lower Interest Rates Here, Says Banker

Public utility corporations are now able to obtain loans at rates considerably lower than was the case a few months ago, according to a recent statement by E. W. Niver of Halsey, Stuart & Company, New York bankers. Regarding the general outlook for utilities, Mr. Niver said:

At this time banking houses are purchasing long-term securities of high-grade companies to sell on a 7.5 to 8 per cent basis that they could not have considered five months ago owing to market conditions which existed at that time. One of the best indications of the present trend is the increasing demand on the part of investors and dealers for utility securities. While the present market cannot be termed a "utility market," there is, nevertheless, a very noticeable inclination on the part of investors to favor this class of security rather than other issues which have been popular during the past two or three years.

An electric utility which might have had difficulty six months ago in putting out securities at a net cost of 10 to 12 per cent can now obtain money at approximately 9 per cent, and in case of a long-term issue of two or three million dollars the net cost would be somewhat lower. In other words, money is costing 2 to 3 per cent less than last spring, when the utilities could do only short-term financing, for which they paid as high as 13 per cent in some instances.

There is no one particular reason to which can be assigned the improved demand for the issues of electric utilities. The fact that public service commissions are granting rate increases and inserting coal clauses in contracts has strengthened the position of the companies. Another important factor is the work which the utilities themselves have done in improving public relations by putting their case squarely before the public. The policy of customer ownership has been the best thing that they could have adopted. It has resulted in the sale of millions of dollars' worth of preferred stock widely distributed, and many of these small preferred stockholders are now buying utility bonds.

With the increasing demand for utility securities investment bankers are able to give more favorable consideration to new issues, and the natural result, as has already been shown, will be cheaper money for the public utility companies.

Decision Against Original Cost Theory

Judge Van Valkenburgh Considers Present Fair Value Correct Basis for Rate Making

Judge Arba S. Van Valkenburgh in the Federal Court at Kansas City, Mo., granted an injunction on Nov. 10 restraining the Public Service Commission of Missouri from enforcing its order fixing fares on the railway lines of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo. The grounds of the court's opinion are the wrong methods used by the commission in valuation—specifically, the use of original cost figures, and standards of prices of a past period, and of a pre-war period. The Missouri Public Service Commission is said to be preparing to appeal to the Supreme Court from Judge Van Valkenburgh's finding. Members of the commission are quoted as saying that if this opinion is allowed to stand the whole system of rate making by the commission, affecting many utilities, must be made over.

IN HIS opinion Judge Van Valkenburgh points out vital discrepancies in the order of the commission as based on its valuation. He suggests that the company's funded debt is \$5,805,000—practically the amount on which 5.4 per cent earnings is permitted by the commission. He goes at length into a discussion of the "present fair value" as the correct basis for rate making and concludes that since present fair value was not sought by the commission its resulting computations necessarily reduced the total valuation so substantially as to make the rates based thereon inadequate and practically confiscatory.

CASE STARTED IN 1919

In the summer of 1919 the St. Joseph Railway, Light, Heat & Power Company filed with the Public Service Commission an application for an order allowing it to charge a straight 8-cent fare in lieu of the 5-cent fare then charged and collected by it. It also asked permission to charge increased rates for steam heat. The company made no request for an increase in its light or power rates.

On Oct. 1, 1919, the commission heard evidence in support of this application. A further hearing was held on Oct. 10, 1919. The matter having been submitted to the commission upon the evidence heard and upon the briefs of counsel the commission on Nov. 20, 1919, made its report and order allowing the complainant a maximum cash fare of 7 cents, with ticket fares of two for 13 cents and for passengers between five and twelve years of age a cash fare of 4 cents, or ticket fares of eight for 26 cents. The commission refused to allow any increase in the complainant's rates for steam heating.

VALUATION PLACED AT \$5,800,000

The commission's engineers and accountants valued the applicant's property as a whole at \$5,784,883; its railway department at \$3,388,436; its light and power department at \$1,786,814; its Savannah Interurban property at \$33,250, and its steam heating department at \$276,360. Substantially adopting these figures the commission in its report and order fixed the value of complainant's property as a whole for rate-making purposes at the sum of \$5,800,000; its railway department at the sum of \$3,395,000, and its steam-

heating department at \$197,500. Upon this valuation the commission said in its report:

Table No. 6 shows that the property as a whole earned an amount during the year ended June 30, 1919, equivalent to 2.67 per cent on \$5,800,000 for return, surplus and contingencies.

It is estimated that under the increase in fares granted herein the property as a whole will earn an amount equivalent to 5.4 per cent on \$5,800,000 for return, surplus and contingencies. We are confident that this return can be increased through increased operating efficiency of the generating plant, and by the increased use of one-man cars.

Against the values found by the commission just noted the company has an authorized capital stock of \$6,000,000, consisting of \$2,500,000 of preferred stock and \$3,500,000 of common stock. It has a funded debt comprising first mortgage bonds, first and refunding bonds and car service trust certificates aggregating \$5,805,000.

In its interpretation of the facts before the court Judge Van Valkenburgh ruled as follows:

It may be stated in passing that a return of 5.4 per cent, which must provide also for surplus and contingencies, has not been regarded by courts and commissions generally as a reasonable return for a public utility, and still less so now under existing conditions. The commission apparently looks for some indefinite increase of this percentage through changed methods of operation suggested by the commission. This is, of course, entirely speculative, and the principle falls nearly, if not quite, within the disapproval of the Supreme Court and of this court as constituting an invasion of the right of the company to conduct and manage its own affairs, subject to a proper exercise of the power of regulation. (Kansas City, C. C. & St. J. Ry. vs. Barker, 242 Fed. 310, and cases cited.)

VALUES DIFFERED BY \$5,721,639

The engineers and accountants for complainant, as shown by the record, valued the complainant's property as a whole at \$11,521,639; the railway department at \$7,195,333; the Savannah Interurban property at \$5,888,392; the light and power department at \$3,228,362, and the steam heating department at \$509,552. We thus find a difference in total valuation between \$11,521,639, tendered by complainant, and \$5,800,000, adopted by the commission for rate making purposes, or \$5,721,639.

The complainant's figures are arrived at upon the basis of present day reproduction cost without depreciation. The commission took the original cost when obtainable, and when not obtainable average prices for a fixed period of five years before war prices prevailed; going back approximately to the year 1910. It also allowed cost price for additions and betterments made since present prices have prevailed, but it appears that no improvements or betterments of consequence have been made since that time. It will be observed that the valuation fixed by the commission barely exceeds the complainant's funded debt; so that the return expected by the commission to be earned by complainant at 5.4 per cent, if realized, would substantially cover only the interest upon such indebtedness.

There was no substantial difference of opinion between complainant's engineers and accountants and the engineers and accountants for the commission except as to the method of valuation and as to the question of what would constitute a reasonable

return upon any given valuation. It was conceded at the argument that complainant's figures were correct upon their theory, and that the commission's figures were substantially correct upon the theory upon which they proceeded; therefore, while complainant's valuation may be too high, because no allowance is made for depreciation and elements of reduction uniformly recognized, nevertheless there must remain a very large amount of valuation to which complainant would be entitled unless the standard adopted by the commission is the correct one, which would have a decisive effect upon the reasonableness of the return possible from the rates allowed by the commission.

VALUATION THE ONLY CONSIDERATION

It seems unnecessary to consider any phase of this case except that of valuation, because, in my judgment, that consideration is conclusive upon the reasonableness of the present rates. Complainant, in its bill, charges that the same are inadequate, unreasonable and confiscatory, and prays injunctive relief against their enforcement. Of course the power of this court is limited to an adjudication upon this point, it being invested with no rate making power.

It is my judgment that the great weight of authority is against the adoption of a standard of original cost as a controlling basis for determining present value. The present fair value is the object to be attained. Nor do I think it permissible substantially to restrict the inquiry to a period antedating present cost prices. In *Joplin & Pittsburg Railway vs. the Public Service Commission of Missouri, et al.* in this same division of this court, before Stone, Circuit Judge, Wade, District Judge, and the writer of this opinion, we said:

"It appears upon the face of the report (of the commission) that great, if not undue, emphasis was laid upon the original cost of the property * * * at a period greatly antedating that with which this investigation must deal; nor can we say that the present period of high prices is so temporary or abnormal that it may practically be disregarded in arriving at the value of complainant's properties. No one can say what degree of depression may ultimately come, but it is reasonably certain that the cost of the properties now under consideration will never again approximate figures prevailing in the years before the world war."

The Supreme Court of New Jersey, in an opinion filed on Aug. 7, 1920, in the case of *Elizabethtown Gas Light Company vs. Board of Public Utility Commissioners*, still further elaborates this view, citing *Lincoln Gas Company vs. Lincoln*, 250 U. S. 256 in support of its conclusions.

"In the very recent case of the United States ex rel. *Kansas City Southern Railway vs. Interstate Commerce Commission*, decided by the Supreme Court on March 8, 1920, it appears that Congress has given legislative recognition to this same principle, and the court ordered the commission to make its valuation in compliance with the act of Congress. While the decision in that case was predicated upon the express provisions of the act, nevertheless we find in it a recognition, both by Congress and by that court, of the necessity of adapting the standard of rate making bodies to conditions existing at the time the power is to be exercised."

It follows that the method of valuation adopted by the commission in the case at bar was wrong, and that the resulting computation necessarily reduced the total valuation of complainant's property so substantially as to make the rates based thereon inadequate and practically confiscatory. For this reason it will be unnecessary to resolve other questions presented by the briefs. By common consent this was deemed the crucial question. The court does not undertake to lay down any hard and fast rule in the premises. Many elements must enter into the final determination of a question of this nature. It is sufficient that the procedure disclosed by this record leads unavoidably to the conclusion that the relief prayed must be granted. It is so granted.

The issuance of the injunction has been the source of some confusion as to the position in which the St. Joseph fares stand. Company officials assumed that the injunction permitted them to charge a higher rate than 7 cents, and preparations were therefore made to install a straight 10-cent rate on Nov. 18.

When it became known on Nov. 17 that the company purposed to charge 10 cents, beginning Nov. 18, the city

officials, speaking in the name of the prosecuting attorney of Buchanan County, with his consent, brought a petition for injunction to Judge Allen of the State Court. Late in the afternoon of that day the injunction was granted, restraining the company from charging more than the rate established by the Public Service Commission (setting forth these rates specifically and not stating that they were the rates established by the commission), the injunction to prevail until further ordered by this court or by the Public Service Commission. This action stopped the steps toward immediate fare increase based on the Federal Court opinion.

COMPANY SOUGHT TEN-CENT FARE

Meanwhile representatives of the city suggested that the commission put into effect a temporary rate, lower than the proposed 10-cent fare. A majority of the commission responded to this request with a formal statement that the commission maintained the justness of its processes of ascertaining values for rate-making purposes. Chairman Busby of the commission dissented from this opinion, however, and in a statement intimated his belief that in view of the Federal Court's opinion the commission should proceed to fix a new rate.

Some time previous to the issuance of the injunction by Judge Van Valkenburgh, the company sought a 10-cent fare from the Public Service Commission. After the injunction was issued the company renewed its petition to the commission for hearings looking toward the fixing of higher fares. The matter was now becoming so complicated that both the city and the company were eager to discover an expedient for avoiding continuous passages in courts. A compromise was therefore proposed under which slightly increased fares might be charged pending the further consideration of the matter by the commission and the hearing of the commission's appeal from Judge Van Valkenburgh's decision to the Supreme Court. It had also been suggested that the Federal Court's opinion might be so modified as to enable the Public Service Commission to fix a new rate without technically incurring a charge of contempt of court and without entirely revising its methods of valuation.

Further steps in St. Joseph depend, it is reported, on the consent of the company's owners in New York to the acceptance of a fare lower than 10 cents. The utilities commission is said to be ready to grant an immediate hearing in case Judge Van Valkenburgh's order is so modified that the commission would not be in contempt by fixing a higher rate without a new valuation. Judge Van Valkenburgh would, it is reliably reported, modify his order to allow a new rate to be fixed as suggested though such order would not be a recession from his finding as to the commission's wrong basis of valuation, and the commission would proceed with

its appeal from the present injunction order to the Supreme Court. The city officials of St. Joseph, the members of the commission and the attorneys of the company are said to have agreed on the wording of a new order acceptable to them, but such modified order has not been presented to Judge Van Valkenburgh for action by him.

Passenger Receipts Decrease

An analysis of the reports of Howard C. Foss, receiver for the Savannah (Ga.) Electric Company, shows an apparent falling off in passenger receipts since the 7-cent fare went into effect. Passenger receipts for August were \$72,396 and ticket sales were \$23,927, a total of \$95,423. For the month of September passenger receipts were \$70,610 and ticket sales \$22,468, a total of \$93,979, which shows a decrease of \$1,785 in passenger receipts and \$558 in receipts from ticket sales.

Following is the detailed report of the receiver for the month of September:

Receipts:	
Cash on hand and in banks	
Aug. 31, 1920	\$155,608
Passenger receipts	\$70,610
Ticket sales	22,468
Freight and express receipts	427
Light and power receipts	67,286
Accounts receivable, miscellaneous	3,413
Miscellaneous	2,970
	<u>161,177</u>
	\$322,786
Expenditures:	
Salaries and wages	\$47,676
Supplies	7,724
Supplies, fuel	17,044
Accidents account	3,887
Taxes	8,104
Sundry interest	8
Refunds on deposits	258
Other miscellaneous operation	27,305
	<u>112,008</u>
Cash on hand and in banks	
Sept. 30	\$210,777

NOTE—This is a cash statement and makes no provision for even the large items, such as payrolls, taxes and interest on bonds until actually due and paid. No provision whatever is made for the interest on coupon notes, bank notes, etc., nor for dividends on any stock nor extraordinary items, depreciation, replacements and obsolescence.

Glasgow Has Small Surplus for Quarter

An interesting statement on the finances of the Glasgow (Scotland) Corporation Tramways was made on Sept. 29 by Councillor Kelly, convener of the tramways committee. The revenue from the increase of fares had, he said, exceeded expectations. During the first quarter of the current financial year, from June 1 to Aug. 31, the revenue amounted to £559,770. The working expenditure for the same period was £444,585, leaving a gross balance of £115,185. Deducting from this depreciation and renewal allowances, income tax, etc., there remained a surplus for the three months of £45,165. From this there had to be deducted, however, a quarter of last year's deficit, amounting to £27,000, and an additional sum to renewals fund of £14,700, so that the actual surplus was only £3,915. The top of the working expenses had not been reached, as demands for increased wages were coming forward. If concessions were made, the fares would have to be further increased.

Electrification Urgent

Great Growth of Traffic Makes Immediate Action Necessary in New South Wales

The latest report of the New South Wales Government Railways & Tramways shows such heavy gains in both steam suburban and local street railway traffic that the matter of electrifying the former lines, comprising 400 single-track miles, has become acute. Plans for electrification, as described in the ELECTRIC RAILWAY JOURNAL for March 3, 1917, have been held up because of the war, but it is expected that construction will begin at an early date. The necessity for this may be judged from the fact that the steam traffic increased from 77,817,452 passengers in the fiscal year ended June 30, 1915, to 101,428,991 in the year ended June 30, 1920, or roughly 30 per cent. So, too, the local electric street railway traffic (City & Suburban Lines only) increased from 240,545,317 to 269,255,935, or about 12 per cent.

As a matter of fact, the tramways had a severe slump during part of the war, but the recovery has been rapid, judging from the fact that the City & Suburban Lines had carried but 222,111,451 passengers in the fiscal year 1919, so that the 1920 figures show an increase of more than 20 per cent. This increase occurred in spite of a fare rise on Jan. 1, 1920.

CITY AND SUBURBAN LINES PROFITABLE

The City & Suburban Lines, which constitute the principal street railway system of Sydney, compare as follows for 1920 and 1919, figures for the latter year being in parentheses: Trackage, 207.1 miles single track; revenue passengers as above; car-miles, 21,811,695 (20,094,167); gross earnings, £2,370,309 (£1,832,911); operating expenses, £199,070 (£1,481,332); earnings per car-mile, 26.08d. or 52.16 cents (21.89d. or 43.78 cents); expenses per car-mile, 21.90d. or 43.8 cents (17.69d. or 35.38 cents); operating ratio, 83.96 per cent (80.82 per cent); return on investment, 5.86 per cent (5.48 per cent).

However, the actual tramway mileage in the Sydney district is greater than the foregoing would indicate, as there are lines at North Sydney and in various thinly settled suburbs. Subtracting the returns of the Newcastle, Broken Hill and Maitland lines, which are not in the metropolitan district, gives a total of 300 miles single track. Passengers for the combined tramways were approximately 95 per cent of the grand total of 324,884,651 (268,797,814). About 94 per cent of all tramway mileage (26,889,077 car-miles in 1920, against 24,674,306 car-miles in 1919) was made in the Sydney district. While the City & Suburban Lines made money, as indicated, the result of all tramway operations, including sparsely patronized steam lines, was a deficit of £8,449 on £2,881,797 gross earnings. The number of rides per inhabitant per annum exclusive of ferries is now close to 500.

Financial News Notes

Seeks \$5,000,000 Stock Issue.—The Pacific Gas & Electric Company, San Francisco, Cal., has applied to the State Railroad Commission for permission to issue stock for \$5,000,000, the proceeds to be used for hydro-electric power plant construction and development work.

Voters Approve P. R. T. Loan.—A municipal loan to the Philadelphia (Pa.) Rapid Transit Company has been approved by the voters of the city. The loan will make available \$3,500,000 for completing and equipping the Frankford elevated line, now under construction. The city is still negotiating with the Philadelphia Rapid Transit Company with a view to the operation of the new line by the company.

Ten-Year Notes Offered.—Bonbright & Company, Inc., New York, N. Y., are offering for subscription at 96 and accrued interest, yielding more than 8.60 per cent, \$2,250,000 of ten-year 8 per cent bond-secured sinking fund gold notes of the Pennsylvania-Ohio Power & Light Company, Youngstown, Ohio. The bonds are dated Nov. 1, 1920, and are due Nov. 1, 1930. The securities are among the issues included in the plan for the recapitalization of the utility properties at Youngstown, dealt with at length in the *ELECTRIC RAILWAY JOURNAL* for Nov. 6, page 985.

May Allow Abandonment.—The Ohio Public Utilities Commission has served notice on the city authorities of Findlay that, unless they can come to an understanding with the Toledo, Bowling Green & Southern Traction Company, Findlay, before Dec. 17, the company will be permitted to abandon service on its local lines. The railway some time ago notified the city officials that it must have financial relief. An ordinance was then passed granting the company an increase in fare from 5 cents to 10 cents. This measure was subsequently repealed. The company then applied to the State Public Utilities Commission for authority to discontinue service.

Betterment Funds Not Available.—In a recent opinion Assistant Corporation Counsel Robert H. Evans of Seattle, Wash., ruled that the use of the betterment fund moneys for reconstruction of cars for one-man operation and for the replacement work at Second Avenue and Pine Street is not authorized under the bond ordinance creating the fund. D. W. Henderson, superintendent of railways, had considered using the betterment fund cash to pay for these two items, totaling about \$60,000, but the ordinance did not specifically refer to these improvements and an opinion was asked.

Additional Payment Contested.—Judge Johnson, sitting in an equity session of the United States District Court in Boston, Mass., has been hearing a case to set aside an award of \$250,000 to Patrick McGovern, a New York contractor, against the city of Boston and the Boston Transit Commission for additional expenses incurred over original estimates in the construction of the Dorchester tunnel. The award was made by Judge Remick, sitting as master for the Federal Court. The case now up was originally brought in the state courts, where a decision was made against payments to Mr. McGovern. This was reversed in the Federal Court, however, in an opinion handed down last January.

Public Service Shows Deficit.—The operation of the Public Service Railway, Newark, N. J. for the month of September shows an actual deficit of \$104,495, without making allowances for depreciation. Gross receipts totaled \$2,280,500, while operating expenses totaled \$2,384,996. During September the company's cars traveled 4,988,062 car-miles and carried 38,082,527 passengers. Wages in the transportation department alone amounted to \$148,700 more than during the same month a year ago; power cost \$72,651 more than in September, 1919, while taxes exceeded those for the same month of last year by approximately \$24,000. The deficit of the company for the last three years, including allowance for renewal of equipment, is given as \$888,323 for 1918, \$1,514,735 for 1919, and \$1,247,217 for this year, November and December figures being estimated. The total for the three years is shown to be \$3,650,276.

"L" Payment Protested.—The constitutionality of the act of the Massachusetts Legislature of 1918 which provided for public operation of the Boston Elevated Railway for a period of ten years, is attacked by the city of Boston. The city is seeking to recover \$2,905,930 paid to the Commonwealth under protest on Nov. 15, 1919, as its proportion of a deficit of about \$4,000,000 declared to have existed on July 1, 1919. It is claimed by the city that in ascertaining the deficiency the trustees charged for depreciation in the twelve months ended June 30, 1919, about \$2,000,000 for maintenance and repairs notwithstanding that the average amount charged by the company for depreciation during the ten years prior to July 1, 1918, was about \$98,000 per annum, and that the deficit of \$4,000,000 is therefore unreasonable and excessive. The case was argued recently before the full bench of the Supreme Court.

Colorado Company Sells Bonds.—H. M. Byllesby & Company are offering for subscription at 96 and accrued interest to yield more than 8 per cent an issue of \$1,400,000 first and refunding mortgage 7.5 per cent bonds of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., due Nov. 1, 1931. These bonds are a direct obli-

gation of the company and are secured by a first mortgage on the entire property, subject only to an underlying issue of \$1,647,000 in bonds on that part of the property formerly owned by the Pueblo & Suburban Traction & Lighting Company. A sufficient amount of the 7.5 per cent bonds has been set aside to retire the underlying bonds which mature Oct. 1, 1922. At that time the new issue will become an absolute first mortgage on the entire property. These bonds, together with \$600,000 in 8 per cent notes, will provide funds for extensions and improvements to the property and will retire \$1,684,900 in other obligations.

\$2,000,000 Issue of Gold Notes.—Bonbright & Company, Inc., New York, N. Y., are offering for subscription at 97 and interest to yield about 8.45 per cent \$2,000,000 of ten-year 8 per cent bond-secured gold notes of the United Light & Railways Company, Grand Rapids, Mich. The notes are dated Nov. 1, 1920, and are due Nov. 1, 1930. It is explained that the company operates nineteen public utilities, mainly electric and gas, which it owns or controls, supplying without competition fifty-five prosperous manufacturing and agricultural communities, located in the heart of the Middle West. These notes will be the direct obligation of the company and will be secured by first and refunding mortgage 5 per cent bonds of the company, due on June 1, 1932, in the ratio of 133½ per cent of bonds to each 100 per cent of notes outstanding, or by cash equal to the face amount of the notes.

\$4,200,000 of St. Louis Certificates.—The Guaranty Company, New York, N. Y., is at the head of a syndicate of bankers which offered for subscription on Nov. 23 at 97.48 and interest to yield about 8 per cent \$4,200,000 of United Railways, St. Louis, Mo., receiver's three-year 7 per cent certificates of indebtedness. The certificates are dated Oct. 1, 1920, and mature Oct. 1, 1923. The present issue is known as Series A. The proceeds will be applied toward the payment of \$1,900,000 of St. Louis Railroad first mortgage 4½ per cent bonds due May 1, 1920, and to reimburse the receiver for funds used to retire \$2,300,000 one-year 6 per cent certificates of indebtedness of the receiver of the United Railways paid on Sept. 2, 1920. These certificates are to be a first and prior lien on 277 miles of street railroad, of which 79 miles were formerly mortgaged by the St. Louis Railroad and the Union Depot Railroad. They are also to be a lien, subject to \$10,600,000 divisional bonds all maturing before this issue, on the remaining property and franchises of the United Railways including 184 additional miles of track. These certificates rank prior to \$30,300,000 of first general mortgage 4 per cent bonds of the United Railways and \$9,790,000 junior bonds, upon which interest has always been paid. The United Railways controls without competition all the local electric railways operating in St. Louis.

Traffic and Transportation

One-Man Cars Approved

Massachusetts Board Refuses to Bar Rebuilt Double-Truck Cars—
Carmen Seek Injunction

Double-truck one-man cars can be legally operated in the State of Massachusetts, according to an opinion handed down on Nov. 8 by the Massachusetts Department of Public Utilities. The department has dismissed a petition that the operation of such cars by the Eastern Massachusetts Street Railway, Boston, be prohibited. The company and all other railways having cars of this type in use are directed to install safety devices on all such cars before May 1 next. The department has prescribed a number of regulations to be followed by the railway in car operation.

William J. Murphy and other members of the joint conference board representing the employees of the Bay State system, have applied to the State Supreme Court for an injunction to restrain the company from operating cars of this type. The Bay State management has announced that it will discharge all men detected in the act of spreading propaganda against the one-man cars.

MEN OPPOSE OPERATION

The operation of rebuilt double-truck cars by one man has for some time been a disputed question between the management of the Eastern Massachusetts system and its employees. The men have contended that the use of such cars endangers both the car operators and the public. They also strongly object to the introduction of the one-man cars on the ground that many of their number are thus deprived of work. A majority of the cars now in service are operated by one man.

The most vehement protest came from the carmen of the company's Fall River division. A controversy arose some time ago when the company first proposed to install cars of the rebuilt type. The men did not object to the use of one-man cars with but a single truck, but did object to double-truck cars being turned into one-man cars even with such apparatus installed as would be necessary to make the scheme feasible. Several meetings of the employees were held to decide on the policy the union would follow should the cars be placed on the lines, and at a meeting held about Oct. 15 it was decided to strike. On Oct. 31 another meeting was held, at which James H. Vahey, counsel for the Amalgamated Association, urged the men to reconsider their action. It was later decided to postpone action pending a ruling from the Department of Public Utilities.

In refusing the petition the department said:

The petitioners allege that the cars now operated are a "menace to public safety." With this we do not concur. Safety is a relative term and just how far safety devices should be required at a particular moment and just how much the car rider should be called upon to pay for that insurance is a practical question dependent upon actual conditions as they exist. We feel it our duty, therefore, to say affirmatively that the one-man cars in question are not in our opinion "menaces" as characterized in this petition and that we do not think that either passengers or operators should, until the rules mentioned above go into effect, feel apprehensive as to the safety of the cars as now operated.

SAFETY REGULATIONS PRESCRIBED

Summarized, the regulations for safety are as follows:

Every (subway) car or train shall be equipped with a lighted headlight, together with a reflector, so as to illumine the roadway in advance of the car or train.

Every street railway car operated on a surface line shall be equipped with wheel guards across the front and rear of each truck.

Every street railway car shall be equipped with hand brakes, at all times in good working order, effective when applied from either end of the car.

Every car operated on the surface lines shall be equipped with mechanical devices for distributing sand on the rails, maintained so as to be of immediate service to the operator of the car at any time.

Every one-man car shall be equipped with one or the other of the following devices: One so designed and maintained that upon the release of the controller of the car by the motorman the motive power will be cut off and the brakes will be applied; together with a device, located in a conspicuous place and accessible to passengers, by the operation of which a door at the rear of the car will be unfastened. Another, located in a conspicuous place and accessible to passengers, by the operation of which the motive power will be cut off, the brakes applied, and a door at the rear of the car unfastened.

Instructions as to the location of the safety devices accessible to passengers and their use in an emergency must be posted in a conspicuous place in the car.

Emergency lifting jacks must be installed.

May Grant Eight-Cent Fare

An ordinance is now under consideration by the City Commission of Grand Rapids, Mich., providing for an increase in the fare of the Grand Rapids Railway from 7 cents to 8 cents. Under the terms of the measure the company will be permitted to sell four tickets for 30 cents and fifteen for \$1. The railway recently applied to the commission for a 10-cent cash fare with four tickets for 30 cents.

Counsel for the company, testifying at a recent hearing before the commission, declared that the company was not seeking for a return on its investment but only for revenue to meet current operating expenses. He said that the loss for the period from June 30 to Sept. 30 was about \$17,000. The total deficit now approximates \$204,000. Beginning on Sept. 1 last the railway increased the wages of its employees 9 cents an hour, thus adding \$9,000 monthly to the operating cost. The carmen are now receiving 60 cents an hour.

Terminal Increase Sought

Indianapolis Street Railway Seeks Advance in Trackage Rates Paid by Interurbans

The Indianapolis (Ind.) Street Railway on Nov. 17 filed with the State Public Service Commission a petition for a readjustment of the rates paid by interurbans entering Indianapolis for the use of tracks and terminal facilities owned by the company. The petition does not ask for a specific increase, leaving the fixing of equitable rates in the hands of the commission.

The city of Indianapolis recently applied to the commission for authority to withdraw its petition for a service-at-cost franchise for the Indianapolis Street Railway. The railway immediately asked the commission to allow it to charge 2 cents for each transfer. The company now states that the city has indicated that it will oppose the granting of a transfer charge on the ground that the rates received by the company from the interurbans are inadequate.

INTERURBANS' TERMINAL RIGHTS

It points out that the interurbans entering Indianapolis are dealt with on equal terms, that each company has the use of the passenger and freight terminal and of certain lines of track for all passenger, freight and express cars entering the city. The petitioner points out that contracts are made with the companies under a special act of the State Legislature and with the approval of the city. The contracts are to continue in force until April 7, 1933, when the railway's franchise expires.

Attached to the petition are extracts from contracts with the interurban companies, which show that 4 cents is charged for each passenger on interurban lines, except the Broad Ripple and the Beech Grove lines. On the Broad Ripple line a charge of 2 cents is made for each passenger and a charge of 3 cents is made on the Beech Grove line. In addition 4 cents is charged for each piece of baggage for which the passenger pays transportation. The freight charges are 75 cents a round trip plus 15 cents a car-mile.

An attached statement shows the revenues from these charges totaled \$310,644 in 1919 and \$239,367 during the first nine months of 1920. The 1919 revenues are divided by companies as follows: Union Traction Company, \$101,827; Terre Haute, Indianapolis & Eastern Traction Company, \$135,727; Interstate Public Service Company, \$42,386; Indianapolis & Cincinnati Traction Company, \$24,143; Beech Grove Traction Company, \$6,559.

The revenues received from the interurbans for the first nine months of 1920 were divided as follows: Union Traction Company, \$63,406; Terre Haute, Indianapolis & Eastern Traction Company, \$117,315; Interstate Public Service Company, \$33,157; Indianapolis & Cincinnati Traction Company, \$20,446; Beech Grove Traction Company, \$5,041.

New York Commission Overruled

Interstate Commerce Commission's Order Raising Intrastate Passenger Fares Hailed as Blow at States' Rate-Making Powers

A decision of far-reaching consequence for all carriers under the jurisdiction of the Interstate Commerce Commission was handed down by that body on Nov. 18. The commission overruled an order of the Public Service Commission for the Second District of New York, refusing to allow the increase on intrastate passenger rates granted to interstate carriers under the terms of the Esch-Cummins act. The federal commission directed that passenger fares on intrastate traffic be raised to the same level as those on traffic crossing the state line. This is taken to mean that roads operating wholly within a state may charge the same rates as those engaged in interstate business. The ruling of the Interstate Commerce Commission will be immediately appealed by the New York commissions. The National Association of Railway and Utilities Commissioners is also expected to ask leave to intervene in the litigation on the ground that the power given the state commissions by their Legislatures to control public service corporations is in peril. The case will ultimately reach the United States Supreme Court.

THE opinion of the federal commission, which will soon be followed by similar decisions in cases from Illinois and other states where intrastate rates have not been raised to the level of the new interstate tariffs is expected to precipitate a great legal battle to test the right of the federal government through the Interstate Commerce Commission to interfere with the prerogative of the individual states to deal with intrastate rates. The action of the federal commission challenges the right of the states to deal with railroad rates, for it takes the position that under the provision of the new railroad act, state commissions and state laws fixing intrastate rates are subordinate to the mandate of Congress that rates shall be allowed which will yield $5\frac{1}{2}$ to 6 per cent return.

STATES' RIGHTS AT ISSUE

If the Interstate Commerce Commission is sustained by the Supreme Court in this, the first decision of such a sweeping character involving a claim of broader power over the rates of roads wholly within state lines, the difficulty will be remedied which is confronting the roads in their efforts to obtain sufficient revenue to meet increased costs, without bringing the return to the roads below $5\frac{1}{2}$ to 6 per cent on their investment. But if the court fails to sustain the commission and holds that those states which have failed to bring all their freight and passenger rates up to the new interstate commerce levels, were justified in such refusals, then the individual states will be able to install lower rates on traffic wholly within their borders.

Under the ruling of the federal commission, the roads in New York State will raise their intrastate passenger rates to 3.6 cents a mile, this being the level at which interstate passenger rates have been permitted by the commission for interstate passenger travel. The state commission has already granted the increases in intrastate freight traffic, except milk.

The Interstate Commerce Commission refers in its opinion to the decision in the Shreveport case, which held that it had power over intrastate commerce, so far as it affects interstate commerce. While this principle, up-

held by the Supreme Court, "continues to be our guide," the commission says, it considers the New York case in the light of the fact that the commission's position has "been put in the form of a mandate" by the Esch-Cummins act. The commission holds that "most cogent reasons" for an extension of authority have been supplied by the situation in which the transportation interests of the country have been placed.

COMMISSION'S STAND EXPLAINED

The commission points out that the decisive factor in this case is "whether the rates under consideration injuriously affect intrastate commerce." It shows that Congress directed that rates be allowed which would yield $5\frac{1}{2}$ to 6 per cent return on the value of the property. The commission continues:

There can be no doubt of the power of Congress to devise and provide for carrying into effect a plan for assuring the nation's interstate railroads a fair return on the value of their property; and the full control of Congress in this matter is not to be denied on the ground that the carriers' aggregate earnings are a combining of intrastate revenue and interstate revenue.

Of passenger fares, the commission says that the record leaves no doubt as to the "unduly preferential character of the intrastate fares and charges now in effect in the State of New York." The commission says further:

The record shows beyond question, that there are no transportation conditions in the State of New York that justify lower rates or fares on the whole than those applicable in neighboring states, or lower than the interstate rates and fares between points in New York and points in other states.

COMMISSIONER BARRETT PROTESTS

Alfred M. Barrett, Public Service Commissioner for the First District of New York, declared that the decision of the federal commission "is one of the greatest blows the doctrine of state rights has ever received." He contended that if the decision be upheld on appeal, it will be possible for the Interstate Commerce Commission to regulate any rate in the state where the claim is made, either that the railroad is engaged in interstate commerce, or that the rates of a local road are lower for a similar service than a line engaged in interstate commerce.

James M. Walker, secretary of the New York commission for the First

District, and secretary of the National Association of Railway and Utilities Commissioners, also issued a statement. Mr. Walker pointed out that the ruling of the federal commission struck at the root of the states' powers.

Legislative Action Urged

At the annual meeting of the Connecticut Chamber of Commerce in New Haven on Nov. 10, recommendations regarding the state electric railway situation were made to the board of directors of the organization. The public utilities committee advised that the state chamber suggest to the Connecticut General Assembly that laws be enacted to bring about:

1. A new system of taxation for trolleys and jitneys so that all common carriers doing a similar business shall be similarly taxed.
2. Abolition of paving requirements imposed on electric railways.
3. Abolition of bridge building and maintenance requirements.
4. Supervision by municipal authorities subject to appeal to the Public Utilities Commission of jitneys as to routes, schedules and fares.
5. Authority for trolley companies to abandon certain lines which cannot hope to be self-sustaining.
6. Authority for municipalities to make service-at-cost contracts with electric railways after state appraisal.
7. Authority for municipalities to subsidize electric railways by a general municipal tax or by assessment upon property immediately benefited.

Seven Cents Not Enough

The Houston (Tex.) Electric Company, operating the electric railway system in Houston, is not earning the 8 per cent return authorized under the decree of the United States District Court that held the former fare ordinance of the city of Houston insufficient and confiscatory. This fact was disclosed by Luke C. Bradley, district manager for Stone & Webster, in a formal statement recently before the City Commission. W. E. Wood, manager for the Houston Electric Company, substantiated Mr. Bradley's statement. The company is now charging a 7-cent fare under authority of the court.

Mr. Bradley disclosed that during August the company earned 6.8 per cent on the agreed valuation, which, he said, left a deficit of \$5,699 from the authorized return of 8 per cent. This means a deficit of \$68,400 for the year, he said. At the same time, he declared, maintenance costs have advanced \$313,000 for the year.

Mr. Bradley intimated that either the fare must be increased from 7 cents to 8 cents or possibly 9 cents, or the city must enact legislation to halt the operating of the jitneys. Jitneys have continued to operate in Houston despite all legislation directed against them, and they have cut deeply into the revenue of the railway. When the fare was raised to 7 cents, the jitneys continued to charge only 5 cents and as a result the traction company has lost many passengers. After the meeting with Mr. Bradley, Mayor A. E. Amerman told the City Commission that the jitneys must be restricted.

Commission Backs Railway Against Buses

Connecticut Board Upholds Right to Suspend Service If Competition Continues—Cars Run in Waterbury Pending Settlement

The question of whether the Connecticut Company may legally withdraw service from any city in the State because of jitney competition, came before the State Public Utilities Commission for decision at a hearing in Hartford on Nov. 23. The commission had intervened to halt the summary suspension of trolley service in Waterbury on Nov. 17. Following the hearing the railway agreed to continue service in Waterbury for a period of not more than ten days pending action by the city authorities looking to the removal of bus competition. Richard T. Higgins, chairman of the commission, indicated that, unless the city took steps to regulate the jitneys, the utilities board would not oppose the withdrawal of the electric cars. Chairman Higgins declared that "a regulatory body is not warranted in compelling a utility to continue to supply service at an absolute loss."

LUCIUS S. STORRS, president of the company, presented data to the commission showing that the company had suffered a loss in the operation of its Waterbury division totaling \$1,146,215 for the entire year of 1919 and the first ten months of 1920. The loss for the ten months of this year was \$31,348 more than the total loss for 1919. This total loss for the twenty-two months includes an item of \$902,475, the 8 per cent return on the investment. The daily average passenger receipts during November show a continual decrease as the month progresses. The week ending Nov. 5 averaged a daily income of \$809 or 18½ per cent less than the receipts for Nov. 1.

JITNEYS CAUSE BIG LOSS

President Storrs told the commission that it was the desire of the trustees to bring to a head in the state the whole question of jitney and trolley competition before cold weather. The company wanted to obtain from the cities of Connecticut an answer to the question of whether or not the jitney should be permitted to run on streets served by trolleys. It was for this reason that the order for withdrawal of Waterbury service was issued last week, Mr. Storrs asserted.

Mr. Storrs summed up the case for the Connecticut Company in the following statement:

For the period beginning with the day 7-cent fares were collected and extending to the day the original ordinance was made effective the average daily revenue was \$3,923 on the whole division. For the period in which the 7-cent fare was collected and the jitneys under regulation the daily average was \$4,137, an increase in revenue during that period of the year when earnings are falling off from the higher summer receipts. For the one day the 10-cent fare was collected with full jitney regulation the receipts were \$4,372 or \$449 per day more than during the summer. Since the jitneys have been fully operating the receipts have averaged but \$3,762, or \$610 per day less than Nov. 1 and about \$160 less than during the summer.

As the summer revenues were not enough to pay for operations at that time it is clear that lower receipts at the period of higher costs will not permit long continued operation. It has, therefore, been necessary to bring the issue to a conclusion now rather than wait for the mid-winter period, when the street car service is so much more necessary and have it fail at that time due to lack of funds.

Chairman Higgins, in outlining the views of the commission, said:

Possibly at this point the commission would make a suggestion, which is only a suggestion. Some question might arise in this case as to the ultimate jurisdiction of

the commission, which we hope will not arise or that the occasion will not arise to bring it up. The commission has already assumed jurisdiction over the subject matter. Having done so we make this suggestion, but first I want to state that the compelling by a state tribunal of a utility company to render service must of necessity depend upon the return to that company being sufficient to warrant its operation. In other words, no tribunal can compel a utility commission to continue service at a continuing loss.

On the other hand this company is chartered to render service in Waterbury and the surrounding territory. The importance of that service to Waterbury and connecting communities is without question. If possible the service ought to be continued. The city of Waterbury passed an ordinance recently which it claims is a restriction upon the jitney competition. The company does not think it is a proper restriction. The ultimate result of that ordinance is not yet known.

FURTHER TRIAL ASKED

Therefore the commission suggests that the company for a limited time continue its operation under the new ordinance, and, if by virtue of jitney competition it is unable to receive sufficient revenues to warrant its operation, then that a request be made either through the commission or directly from the company—the commission will be willing to act as an intermediary in the matter—upon the city of Waterbury for further restriction of jitney competition.

If this is ultimately brought about then it may result in continued street railway service at least until some possible permanent remedy or regulation may be prescribed by the incoming Legislature. If the losses to the company are going to continue under the ordinance and the city would not make any change we will not pass upon the question other than to say that under the laws pertaining to regulation a regulatory body is not warranted in compelling a utility company to continue to supply service at an absolute loss. This is informally expressed, but the thought is that possibly the company and the city might get together under an arrangement whereby the company shall for a limited time continue service under the ordinance which goes into effect today and see what the result will be, and if that result is not satisfactory to see if some other ordinance may not be passed.

EFFECT OF 10-CENT FARE

To show the effect of the 10-cent fare the company has offered the following figures of gross revenue on the Hartford division of the company's lines. In connection with these statistics it is to be remembered that the 10-cent fare went into effect on Nov. 1 but that the jitneys continued to operate until Nov. 8 as indicated by the increased revenue since Nov. 8. The table follows:

Oct. 1-10	\$95,835
Oct. 11-17	64,425
Oct. 18-24	65,257
Oct. 25-31	63,434
Total	\$288,954
Daily average	9,321
Nov. 1-7	70,710
Nov. 8-14	73,316
Total	\$149,026
Daily average	\$10.644

Meanwhile the city of Waterbury is without jitney service. Following the passage by the Board of Aldermen of an ordinance barring the buses from certain streets, the operators withdrew their cars, announcing that no buses would run until the measure had been repealed. They intimated that if further restrictions were imposed by the city they would seek an injunction to restrain the municipal authorities from interfering with their "right" to operate where they chose. The ordinance passed by the Aldermen on Nov. 15 failed to exclude the buses from certain streets containing trolley tracks.

St. Joseph Rate Case Followed Closely

Public utility companies at Kansas City, Mo., are watching carefully the developments in the St. Joseph Railway, Light Heat & Power Company's rate case, in which the method of valuation by the Missouri Public Service Commission is the cause of an injunction restraining the commission from enforcing an order increasing fares.

While attorneys are inclined to agree that the Federal Court cannot fix rates, there is much discussion of the power of the court to allow a utility to charge more than permitted by the commission, such increases to be within reasonable limits—the limits possibly to be set by the Federal Court.

A case is pending affecting a water company, in which the Federal Court set a limit of charges higher than those allowed by the commission. This is in the matter of the Missouri Public Utilities Company, a concern with headquarters at St. Louis, owning and operating many utilities; and affects its Webb City water service property.

The company filed revised schedules with the commission, involving higher charges. The commission "suspended" these. The company sought an injunction against such suspension, and the injunction was granted. The hearing produced evidence and testimony regarding the need for larger revenue, and the petition specified the rates that had been filed with the commission. The order of the court, therefore, put into effect the higher rates. The ruling directly provided that no rates higher than those specified should be charged. These higher charges have been collected since June 29, 1920, without opposition from the commission.

"Safeties" for Springfield

The first of seventeen one-man safety cars to be installed by the Springfield (Ill.) Consolidated Railway has arrived in Springfield and the other sixteen are expected to arrive soon. They were purchased at an expenditure of \$117,000. According to announcement of the management the adoption of these new cars will result in no reduction of the present working force, but will reduce the present twelve-minute schedules to one of ten minutes.

Transportation News Notes

Ten Cents on Another Line.—The Maine Public Utilities Commission has authorized the Fairfield & Shawmut Railway, Fairfield, to raise its fare from 7 cents to 10 cents. The commission has directed the company to permit school children riding to and from school to continue to pay the 7-cent fare.

Wants More in Walla Walla.—The Walla Walla Valley Railway, Walla Walla, Wash., has filed with the State Public Service Commission a new schedule of rates, under which it proposes to raise its fare from 5 cents to 10 cents, beginning Nov. 20. The company proposes to charge a 10-cent fare in each of the zones into which its line is divided.

No Decision on Albany Fares.—The Public Service Commission for the Second District has taken under advisement the petition of the United Traction Company, Albany, N. Y., for an increase in fare to 10 cents. At the final hearing before the commission, witnesses for the company testified that the total replacement valuation of its property was \$18,646,195.

Ten Cents in New Albany.—Effective Nov. 1, the new fare charged by the Louisville & Northern Railway & Lighting Company and the Southern Indiana Traction Company, both of which operate between New Albany, Jeffersonville and Louisville, was raised to 10 cents. Protests against the increase were filed with the Interstate Commerce Commission. The new schedule will abolish the book-buying privilege.

War Veterans Pay Less.—Disabled war veterans taking vocational training in or near Seattle, Wash., will in the future be permitted to ride for a 3-cent cash fare on the lines of the Seattle Municipal Railway. The Seattle City Council recently voted to allow such men to ride at the same rates as those charged to school children. By buying tickets they may have two rides for 5 cents. There is no restriction as to hours during which the reduced fares will be in effect.

Six Cents in Each Zone.—The Massachusetts Department of Public Utilities has authorized the Berkshire Street Railway, Pittsfield, to raise its fare from 5 cents to 6 cents in each zone, except on its Lenox Branch where a 10-cent fare has been approved. C. Q. Richmond, general manager of the company, recently informed the commission that the railway must have an immediate increase in revenue if it was to continue operation. The new rates have already gone into effect.

Would End Skip-Stop.—An organization of citizens of Fort Worth, Tex., known as the non-partisan league, has started a campaign for the elimination of the skip-stop system on the local lines of the Northern Texas Traction Company. At a recent meeting the league passed resolutions calling upon the City Commission to take action looking to the improvement of the service furnished by the railway. The company recently raised its fare from 6 cents to 7 cents.

Mr. Jackson on Zone Fares.—Walter Jackson has an article on zone fares for electric railways in the *National Municipal Review* for 1920. He urges that the zone fare is not the dominant cause of congestion in cities, comparing cities with high population density where the unit fare prevails with cities of low population density where the zone fare is in use. In conclusion he says that the spirit of scientific research of merchandising service and of the relation of transportation to community welfare must be studied by the managements of today as it never was by their predecessors in the carefree period of electric railway development.

Needs More in Spokane.—The Washington Water Power Company, Spokane, Wash., will have to raise the fare on its Spokane city lines if it is to continue to furnish service of the present quality. Announcement to this effect was made by the officials of the railway in making public the cost of operating the system for October. The net revenue for the month totaled \$2,188, a decrease of \$3,865 compared to that for October a year ago. This was in spite of the fact that the number of passengers increased by 131,203. The company has been operating at a loss for several months. The fare is now 6 cents.

Disputes High Fare Claim.—In answer to the complaint of patrons on its Holliday line that the present fare from Salt Lake City to Holliday is excessive, the Utah Light & Traction Company, Salt Lake City, Utah, denies that the fare is unjust or excessive. The company points out that the round trip covers a distance of 19 miles for a charge of 37.5 cents, or at the rate of 2 cents a mile, which is lower than that exacted in other localities. The average length of ride on the system is about 2 miles, for which 3½ cents per mile is paid. The company further claims that the Holliday territory is sparsely settled, and that this rate does not bring an adequate return.

Service Cut Approved.—Judge Julius M. Mayer, in the United States District Court, has granted an injunction to Lindley M. Garrison, as receiver of the Brooklyn (N. Y.) Rapid Transit Company, prohibiting the Public Service Commission, First District, from taking steps to compel the restoration of service on various trolley lines in Brooklyn that have not been operated since the recent strike. The injunction, as served upon Commissioner Alfred M. Barrett, is similar to the one that

was served some weeks ago upon his predecessor, Lewis Nixon. The last of the company's striking employees have voted to return to work.

Mayor Asks Aid for Railway.—A special committee has been appointed by Mayor Freeman of Springfield, Mo., in an attempt to solve the Springfield traffic problem arising out of the controversy between the Springfield Traction Company and the jitneys. Bus lines were established in Springfield during the carmen's strike three years ago. The public appears to have acquired the jitney habit to such an extent that although the traction company has obtained a 7-cent fare it is said to be losing between \$4,000 and \$5,000 monthly. Recently the jitney lines established a universal transfer system. Railway officials say that unless something is done to relieve the company of the jitney competition street railway service may have to be suspended.

More Cars for Holiday Crowds.—By placing all available rolling stock in use and by keeping the number of cars in the shops and carhouses at the very minimum for emergency needs, the Los Angeles (Cal.) Railway has been able to add eighty cars to handle the Christmas holiday season travel. The first additions to service were made early in November and in some cases will be maintained permanently. The railway, co-operating with merchants' organizations, appealed to the public through the newspapers advertising for early Christmas shopping. It was pointed out that street congestion in Los Angeles and the heavy influx of people together with the extra holiday travel made the need for even distribution of traffic more important than ever. Shoppers were urged to make purchases in the downtown section between the morning and late afternoon rush hours.

Service at Cost Favored.—The Indiana Service Corporation, Fort Wayne, Ind., which operates the city line in Fort Wayne and a number of interurban lines radiating from that city, is compiling reports on the first sixty days' operation under a 7-cent fare. During September half of the month was on the old basis of 5-cent fares and half on the new rate. The month showed a total revenue of \$73,256 with operating expenses of \$56,265. During the month of October 1,218,052 passengers were carried, while in the same month of last year the number of passengers carried was 1,201,537. The revenue for October of this year was \$79,851. Officials of the company are fairly well satisfied with the results of the new fare, but are of the opinion that a better plan is the service-at-cost method. They are said to feel that there is a probability of its being adopted. The Indiana Public Service Commission granted the company permission to charge 7 cents for a period of sixty days. It is considered certain that upon the submission of reports by the company at the end of this period the commission will extend the time during which the company can operate on a 7-cent basis.

Personal Mention

George H. McFee Promoted

Arthur E. Stone, general manager of the Boston & Worcester Street Railway, Framingham, Mass., has resigned to take a responsible position with Gilmore, Rothery & Company, insurance brokers, of Boston and New York. Mr. Stone will continue to act in an advisory capacity for the railway and as treasurer of the Boston & Worcester Electric Companies.

George H. McFee, superintendent of transmission, has been appointed general superintendent of the Boston & Worcester.

F. C. Lewis has been made general freight and passenger agent. Mr. Lewis was formerly general freight agent of the railway.

L. J. Miller has been appointed chief engineer in charge of track, line and power. Mr. Miller was formerly roadmaster of the system.

Mr. McFee gained his early experience in the transportation field with a steam road. From 1894 to 1901 he served as telegraph operator and train dispatcher of the Boston & Maine. He then joined the Boston Elevated Railway as a tower-man on the elevated division. He became connected with the Boston & Worcester Street Railway shortly after the opening of that road in 1903. In 1913 he resigned to enter the employ of the United Fruit Company in Panama. Four years later he returned to the Boston & Worcester, assuming the position of superintendent of transportation. He is a Canadian by birth.

J. J. Kress, Superintendent

John J. Kress, formerly general manager of the Arkansas Southwestern Railway, has been appointed superintendent of the railway department of the Pine Bluff Company, Pine Bluff, Ark. Mr. Kress retired from steam railroading a number of years ago. Entering the banking business at that time, he helped to organize the Merchants & Planters Bank in Arkadelphia, Ark., and was for a number of years vice-president of that institution. He also served as Mayor of Arkadelphia for several years.

Mr. Kress was born on June 18, 1856, at Starkey, N. Y. He entered railway work in 1872 as an agent with the Pennsylvania Railroad. Six years later he was made assistant dispatcher of the same road, but resigned shortly thereafter to become superintendent of telegraph and chief dispatcher of the Ohio Southern Railway. From 1883 to 1886 he served as chief dispatcher and trainmaster of the Cleveland, Lorain & Wheeling Railway and the Pittsburgh & Western Railway.

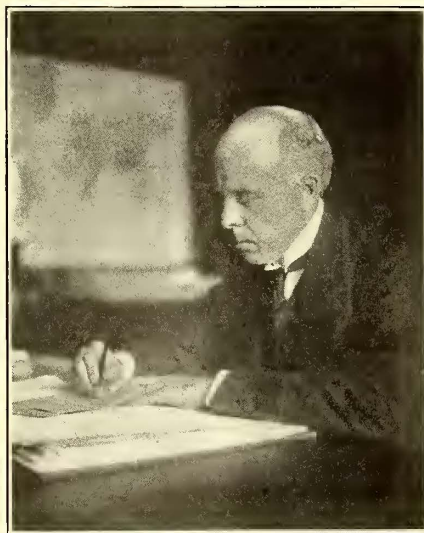
In October, 1899, he became gen-

eral superintendent of the Texarkana, Shreveport & Natchez Railway. He was appointed general manager of the Arkansas Southwestern Railway in 1901, resigning ten years ago to enter private business.

Lord Ashfield's Views

Chairman of London Underground Discusses Transportation Problems Before Institute of Transport

Among the numerous organizations that have been formed in Great Britain as a result of the war, focusing attention more directly upon the commercial and industrial problems of the day, is the Institute of Transport. This organization was established in 1919, "to promote and encourage knowledge of transport science in all its branches, and the means and appliances con-



LORD ASHFIELD

nected therewith; and to provide facilities for the study of and exchange of information and ideas on traffic problems and all means and methods of transport."

The first president of the Institute was Sir Eric Geddes, the British Minister of Transport, who has been succeeded by Lord Ashfield, the chairman and managing director of the London Underground Railways and formerly, as A. H. Stanley, manager of the Public Service Railway of New Jersey. During the war Lord Ashfield occupied a post in the British cabinet as President of the Board of Trade.

The first meeting of the 1920-1921 session of the Institute was held in London on Oct. 18 last, when Lord Ashfield delivered a very instructive and comprehensive address upon the importance of transport in the welfare of mankind and on the need for promot-

ing the higher education of the administrative staffs of transport undertakings. According to Lord Ashfield, transport has rendered practicable that specialization of function which is at the bottom of the success of the material progress of mankind. Thus, Greater London can support a population of more than 10,000 and Greater New York of more than 17,000 to the square mile, because the inhabitants can be fed by distant agricultural workers.

Transport, he said, was not a science so much as the practical application of many sciences to the solution of a special problem. There entered into it engineering in all its branches, economics in their most liberal extension, statistics and the imaginative treatment of figures, psychology in its modern social applications. Up to but recently only little attention had been given to studies leading up to a special understanding of transportation problems. This was the purpose of the Institute of Transport.

Part of its scheme, continued the speaker, was to provide for lectures, the holding of classes and examinations, the award of certificates, medals, scholarships and diplomas in connection with traffic and transportation. But education in this line was never finished. It was not once or twice that one needed the provocation of an altered post, a new position. It was throughout life, if one should seek to come out at the top and be a leader in transportation.

Frederick S. Pratt, superintendent of the Springfield (Vt.) Electric Railway, has been appointed auditor of the company. Mr. Pratt will continue to serve as superintendent.

E. S. French has been elected president of the Springfield (Vt.) Electric Railway. Mr. French succeeds Edward C. Crosby. The company is now in the hands of a receiver.

J. B. Moran has been elected president of the Escanaba (Mich.) Traction Company to succeed the late John J. Stack. Mr. Moran has been identified with the company for several years.

Edwin F. Zuehlke, superintendent and electrical engineer of the Escanaba (Mich.) Traction Company, has been appointed general manager of the company. Mr. Zuehlke succeeds P. L. Utley, deceased.

Frederick M. Abbott, who has been special investigator and safety inspector for the Public Utilities Commission of Utah for the past three years, has tendered his resignation. Mr. Abbott, in addition to his investigating work, has had charge of enforcing the commission's rulings with regard to general safety conditions. His work has attracted the favorable attention of the claims departments of some of the larger railroad lines and he has received several offers of positions with them. He has not yet announced his future plans.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Stocks of Poles, Crossarms, Etc., Good

Pole Buying Has Been Quite Heavy and Better Conditions Are Looked for This Winter in the Woods

Crossarm stocks have built up to the extent that plentiful supplies are on hand in local Mid-Western yards. Coast yards, it is reported, can make immediate shipment in any reasonable quantity. Certain jobbers are promising three weeks' delivery. There is not very much movement of crossarms around the Chicago territory, but in the neighborhood of St. Louis they are moving fairly well.

The season for pole buying is ending with a heavy demand in the Northern territory, which has been well taken care of. Stocks now, though, are very low. Farther south jobbers are having some difficulty getting the right kind of cars in which to ship poles, their stocks in yard are good and demand is falling off as the season advances. At the same time indications point to a good labor supply in the woods this winter and ample supplies at perhaps lower figures next year.

Base prices at mill of poles are quoted in St. Louis at from \$11.35 on Western cedar 8-in., 40-ft. to \$20 on the Northern white cedar 8-in., 40 ft. size. Locust pins are quoted there as follows: 1½ in. x 9 in. \$60 per 1,000 in lots of 5,000, and the 1¼ in. x 8 in. pins \$30 per 1,000. Large stocks are being reduced with difficulty.

Easier Market on Bolts, Nuts and Spikes

Slack Demand and Cancellations Have Reduced Back Orders—Tendency of Prices to Weaken

Since the market conditions reported a few months ago on track bolts, nuts and spikes, to the effect that demand was heavy and manufacturers far behind on filling orders, the market has taken a complete reversal of form. The steam railroads following their rate increases were especially heavy buyers of this class of material during the fall. Exceptionally mild weather and an easier supply of common labor were factors in the large amount of track material consumed.

At present, even though this is normally the dull season in this line, conditions have probably eased up more than ordinarily. Cancellations are reported numerous, especially in the bolt industry and from foreign consumers too. Demand, both domestic and foreign, has slumped badly, in the latter case largely due to a continuance of

unfavorable exchange rates. Manufacturers of bolts, nuts and spikes are just now catching up with their back orders, however, and no surplus stocks have accumulated as yet.

Favorable conditions in the raw material and labor markets are leading to heavier production. Deliveries have greatly improved. Shipments of bolts, which last summer were ranging as long as six months, can now be obtained in one to two months on the standard sizes and spikes can be delivered in two to four weeks. Some softening of prices has occurred on bars, but on the finished product, while a slight shading of the level of independents is reported, there has been no decided

change in price. A further price trend is largely dependent upon labor and raw material prices, in the case of spikes more directly upon the latter and with bolts more directly upon the labor costs. A representative independent's price at present on standard railroad spikes, ⅝ in. x 5½ in., is 4½ cents in car lots and 5¼ cents in smaller quantities. On track bolts the quotation is 6 cents in car lots and 7 cents in quantities less than that.

The outlook for 1921 business is held to be excellent because of the fact that both electric and steam lines have not yet entered the market nearly as heavily as their needs for track material would seem to require.

Big Demand for Rails Foreseen in 1921

Present Buying Curtailed by Price Uncertainties and Level of Foreign Exchange—Production Increasing and Deliveries Improved—Prices Not Yet Set

Domestic buying of steel rails, while not extra large at present, is said to be about average by several producers. Orders for 1921 are being placed, with price to be set later when the schedule for 1921 is announced, which is expected to be some time in December. Foreign demand, both from electric and steam railroads, is not up to standard.

A survey of the situation reveals the fact that inquiries from abroad are many, but actual orders placed are few. This indicates that the need for rails in foreign countries is strong, but adverse factors are holding up buying. Chief among these is the present foreign exchange situation, which makes it very expensive for consumers in other countries to buy in the United States. Furthermore, electric traction companies abroad are said to have suffered even more severely from depressing war conditions than those in this country, with a consequent curtailment of buying power.

These circumstances, it is hoped, will be improved next year. Certainly all present indications seem to point to one of the biggest buying years in the rail business for both foreign and domestic trade. In fact, it is pointed out that the known rail requirements of electric and steam roads in this country for 1921 are sufficient in all probability to curtail greatly the tonnage available for export shipment. Thus far the buying of steam railroads has not been up to expectations following their general rate increases three months ago.

A considerable number of unfilled orders for rails is reported on hand and in several cases there is quite a large

tonnage awaiting shipment. Back orders are rapidly being reduced, however, and the recent order of the Interstate Commerce Commission releasing more gondola cars to general service is expected to aid considerably. Independent mills are still booked ahead with rail orders sufficient to carry them well beyond the first of the year. Production conditions have been steadily improving and as a result deliveries can be made in much better time than a few months ago. Chief among the factors bringing this about are decreased demand in many iron and steel lines, a better labor supply, with increased efficiency of workmen, due to the salutary effect of men being released, and less transportation difficulty in obtaining raw material. Considerable complaint is still heard of the fuel supply, however.

PRICE SCHEDULES UNCERTAIN

No rail prices, so far as can be learned, are definitely outlined for 1921, and this uncertainty is undoubtedly reflected in the buying market at present. A representative independent producer reports having accepted some orders for standard rails at \$57 per ton and rumors are current of other quotations being made at \$62, but these prices merely indicate the probable trend. The opinion is given from an authoritative source of information that the future level of independents' prices, when set, will not represent much change from the market level in the recent past.

The statement of Judge Elbert H. Gary, chairman of the board of the United States Steel Corporation, to the

effect that base prices on products of the corporation will remain unchanged at this time unless changes become necessary to conform to altered conditions, has aroused considerable speculation as to whether this policy will be adhered to on rails. In several quarters is heard the view that the present corporation level of \$45 per ton for standard bessemer and \$47 for open hearth rails will be revised upward for 1921 to conform to increased costs of production. The present corporation prices on rails are the base selling prices mutually suggested by iron and steel interests with representatives of the United States government in March, 1919. The independent producers have gradually drifted further and further away from that level.

Linemen's Tools Becoming Available

Needed Labor and Raw Material Now Back in Market—Sixty to Ninety Day Delivery Anticipated

Jobbers and others who have been discouraged by their inability to get linemen's tools except on deliveries of from twelve to eighteen months will be able to get pliers in sixty to ninety days by January or February of next year, according to the estimate of one of the foremost manufacturers of this line. The war cut off the foreign supply of these tools, and the necessary skilled labor became so scarce that up to a few months ago the manufacturers of linemen's tools were getting further and further behind with their orders.

Pyramided orders have been canceled and all the needed labor and material have been obtained, so that the delivery not only on pliers but on connectors, climbers, etc., is being gradually reduced. This is especially true of climbers, which are intermittently obtainable from manufacturers' stocks.

Buying of Cattle Guards Curtailed by High Cost of Steel

Sales of cattle guards are not especially heavy at present. The volume of buying on the whole, it is stated, may still come up to the standard of other years, however. Ordinarily the installation of cattle guards by interurban lines is large at this time of year. Farmers take advantage of the additional grazing space afforded by the harvesting of crops and allow their cattle greater freedom in grazing, up to the time snow flies. Consequently, more protection is needed along rights-of-way. With the high cost of the special steel sheets from which guards are fabricated, however, both electric and steam roads have been holding off buying to some extent. Recently, it is true, steam roads have been buying cattle guards more briskly, possibly as a result of their improved financial condition, but this circumstance has not affected the supply materially. One manufacturer who specializes in Cen-

tral and South American trade has been very successful in placing American products and reports good sales.

Some traction companies have adhered to wooden guards because of their lower cost, but these have been found less effective in operation. Even on the wooden product the price has been very high because of the great cost of lumber. In comparison with the number of steel guards placed in operation, the total of wooden guards used is said to be small. Raw material is apparently occasioning no trouble and manufacturers maintain a surplus supply sufficient to care for the needs of all customers. Deliveries are reported as satisfactory.

Buying of Electric Headlights Has Been Good

Better Deliveries Now With Improved Labor and Raw Material Conditions —Demand Slackening Recently

Manufacturers of electric car headlights report a very substantial increase in buying over last year on the part of electric railways, ranging as high as 100 per cent in some cases. The replacing of the old type metal reflectors on street cars and the large numbers of new safety cars that have been equipped with headlights are said to be strong factors in the demand. During the past few weeks, however, producers have been finding the market falling off, orders in some cases being as plentiful in number but much smaller in the quantity of headlights bought. Lamp manufacturers have felt the increase in new electric headlight installations this year, as evidenced by the increasing sales of incandescent lamps of this type reported by a leading producer.

Production conditions have gradually improved since midsummer, when transportation congestion and material shortages curtailed the supply of raw material with some manufacturers as much as 50 per cent and caused deliveries to range as long as eight to ten weeks. Labor troubles that were experienced, especially in the foundry field, now seem to be past, raw material in general is coming through nicely, and though deliveries vary all the way from almost stock shipment up to six or eight weeks' time, back orders are being steadily cut down.

Prices are steady, according to manufacturers, with no early reduction apparently contemplated. Recently, as a matter of fact, some talk was heard of a possible advance in quotations on the 1921 product, depending upon the trend of labor and material costs, which have been high. An encouraging view is taken of the prospects for future business in the electric headlight field, as it is hoped that current fare-rate increases will have their effect upon equipment buying, and that steam roads too will order substantially. In fact the electric headlight buying of steam railroads is said to have been far larger than usual of late.

Present Cost of Materials Compared With 1915

An interesting comparison of the cost of materials used by a public utility between July 1, 1915, July 1, 1918, and July 1, 1920, was brought out in a recent hearing before the Rail-

COSTS OF COMMODITIES AND MATERIALS
F.O.B. ATLANTA

	1915	1918	1920
Coal, per ton.....	\$2.56	\$5.01	\$11.80
Gas oil, per gal.....	0.046	0.091	0.14
Copper, per lb.....	0.23½	0.27½	0.24½
Steel wire, per lb.....	0.024	0.037	0.039
Standard poles, each, set.	10.50	14.00	20.00
Crossarms and brackets..	0.58	0.94	1.67
Yellow pine lumber, per 1,000 ft.....	16.00	34.00	55.00
Insulators.....	0.95	2.24	2.80
Creosoted ties, each.....	0.69	1.07	2.02
Cement, per bbl.....	1.25	2.18	4.50

road Commission of Georgia. The accompanying table includes the costs of materials which were recognized by the commission as greatly increasing operating expenses over pre-war times.

Coal Shortage Still Serious Condition with Many Utilities

Despite a gradual improvement in the general coal situation many public utilities are in very bad condition. This is particularly true of those dependent on the gas-coal region served by the Louisville & Nashville Railroad and those using Monongahela gas coal. Utilities drawing their supplies of coal from the central Pennsylvania region are now getting better deliveries.

Rolling Stock

The Detroit (Mich.) Municipal Railway, mentioned in the Nov. 13 issue as placing an order for twenty-five safety cars, has let the contract for the cars at a cost of \$6,745 each. General Electric motors and Westinghouse airbrake and safety equipment will be used.

The Northern Texas Traction Company, Fort Worth, Tex., has received the thirty-five safety cars recently ordered, and these have been placed in service. Purchase of these cars was one of the improvements in service promised by the company when it increased fares from 5 cents to 6 cents.

Recent Incorporations

Union Traction Company, Morgantown, W. Va.—The Union Traction Company has been chartered. The capital stock is \$50,000. The incorporators are: James H. McGrew, Aaron J. Garlow, David H. Courtney, Frank Cox and George C. Baker, all of Morgantown. The charter authorized the company, in addition to maintaining an electric railway, to sell artificial gas, generate electricity and maintain water works in the city of Morgantown.

Track and Roadway

Detroit (Mich.) United Railway.—The Detroit United Railway has opened a new extension in the city of Pontiac known as the Sanford-Huron line.

Indianapolis (Ind.) Street Railway.—A comprehensive improvement plan for 1921 for the Indianapolis Street Railway has been outlined by the Board of Public Works which would require the expenditure of several million dollars. Several lines are to be rebuilt, among them the Shelby, Prospect and Virginia Avenue. In addition a new power plant and several substations are needed in various parts of the city. These would cost about \$700,000.

Atlantic City & Shore Railroad, Atlantic City, N. J.—The City Commission has refused permission to the Atlantic City & Shore Railroad to build a loop at Boston and Atlantic Avenues, Atlantic City. The company has presented a petition to the commission asking permission to build a loop on Providence Avenue.

Northern Texas Traction Company, Fort Worth, Tex.—The Northern Texas Traction Company is constructing a single-track line on Commerce Street from Sixth to Weatherford. When this line is completed some of the cars now routed on Commerce Street will be rerouted via Weatherford, which will relieve the congestion of traffic on Commerce. George H. Clifford, general manager, reports material on hand to complete this line.

Dallas (Tex.) Railway.—The Standard Traction Company, which owns and operates a shuttle car line connecting with the line of the Dallas Railway, proposes to turn over the Mount Auburn line to the Dallas Railway. Last July the equipment of this line was offered to the Dallas Railway with a cash bonus for the construction of a new line to Mount Auburn, but the matter is still open. The Standard Traction Company, through its president, has announced that a considerable saving in the cost of electric power would be the result of the railway taking over the line.

Power Houses, Shops and Buildings

Northern Ohio Traction & Light Company, Akron, Ohio.—The Northern Ohio Traction & Light Company contemplates building an \$18,000,000 to \$20,000,000 power plant to supply the demand for industrial power in northern Ohio. Construction of the plant, however, is held up for the present because certain industries in Akron are undergoing important readjustments and until these are completed the Northern Ohio Traction & Light Company will not have signed up all the contracts necessary for the starting up of this construction. An option has been se-

cured upon a site for the plant, which according to present plans will have an initial capacity of 120,000 kw. and will form part of a loop of power plants serving northern Ohio industries. The site of the plant is on the Muskingum River near Coshocton, Ohio, and was selected because of the proximity of coal and water supplies.

Trade Notes

The Black & Decker Manufacturing Company, Baltimore, Md., manufacturer of electric drills, etc., has awarded contract for the construction of a one-story machine shop, to cost about \$50,000.

W. S. Quigley, president of the Quigley Furnace Specialties Company, New York City, has just returned from Europe after an extensive trip made in connection with large installations of the Quigley powdered-coal system in Italy and Belgium.

The Ohio Grease Company, Londonville, Ohio, announces that R. W. Beardsley has been elected treasurer. The capital stock has been increased from \$250,000 to \$500,000 and a large addition to the factory has been finished which will triple the capacity.

Belden Mfg. Company, Chicago, Ill., manufacturer of electrical wires, cable, etc., through the action of its stockholders has rescinded the increase in capital stock from \$2,000,000 to \$4,000,000 that was recently granted and has voted to increase the capitalization to \$3,000,000.

The Economy Electric Devices Company, Chicago, Ill., has made a complete installation of watt-hour meters on the eighty cars of the Buffalo & Lake Erie Traction Company in Erie, Pa. These meters will be supplied with the special dials for inspecting equipment on the kilowatt-hour basis.

The Economy Fuse & Manufacturing Company, Chicago, Ill., announces that C. B. Merrell, who has been for a number of years in the general offices of the company, has been appointed district sales manager of the Philadelphia office, 523 Widener Building, vice E. J. Watson, resigned.

The Mascn Regulator Company, Dorchester Center, Boston, Mass., has recently made a \$150,000 addition to its pressure regulator factory, permitting the permanent housing of machinery which has been operated in wooden buildings during and since the war.

The Conveyors Corporation of America, Chicago, Ill., formerly the American Steam Conveyor Corporation, has appointed the J. B. Engineering Sales Company its Connecticut sales agent. The latter is also sales agent for the Terry Steam Turbine Company and the Griscom-Russell Company in Connecticut.

The Moloch Company, Kaukauna, Wis., recently incorporated with a capi-

tal stock of \$750,000 to take over the plant and holdings of the Moloch Automatic Stoker Company, has awarded contracts for the first unit of its machine shop and erecting floor 60 ft. x 120 ft. Considerable new equipment will be installed.

Fairbanks, Morse & Company, Chicago, Ill., have purchased the entire business, consisting of all stock on hand, goodwill and liabilities, of the Luster Machine Shop & Railway Equipment Company, 917 Arch Street, Philadelphia. The Fairbanks-Morse company has opened a new branch at this address under the management of D. W. Dunn and will sell its complete line of engines, motors, pumps, etc. The entire personnel of the Luster Machinery Company has been retained by the new company.

E. T. Chapin Company, Spokane, Wash., announces the appointment of J. E. Slimp as manager of sales of the district including all of the United States and Canada east of the Dakotas and Winnipeg. Mr. Slimp's headquarters will be at 127 North Dearborn Street, Chicago. The Chapin Company is a large manufacturer of Western red cedar poles, piling and posts. Mr. Slimp has been selling supplies and equipment to power and electric railway companies for the last twenty years and is well known in the district to be covered by his office. He was connected with the Ohio Brass Company for a number of years.

Clifford F. Messinger has been appointed general sales manager of the Chain Belt Company, Milwaukee, to succeed L. C. Wilson, who has resigned to become secretary of the Federal Malleable Company. Other promotions announced are: C. E. Stone, assistant to the vice-president, and J. A. Monahan, purchasing agent. Mr. Messinger, for the last two years assistant to the vice-president, is a graduate of Yale and has been connected with the Chain Belt Company since 1911. Recently he was elected chairman of a group of nationally known construction machinery manufacturers associated for the purpose of developing export business.

New Advertising Literature

Commutation.—Bulletin No. 516 on "Commutator Troubles and Their Elimination," has just been issued by the Baylis Company, Bloomfield, N. J.

Gas Engines.—The C. & G. Cooper Company, Mount Vernon, Ohio, has issued a forty-page bulletin on its horizontal double-acting, four-cycle, single and twin tandem types of gas engines.

Oil Engines.—The De La Vergne Machine Company, foot of East 138th Street, New York City, has recently issued bulletins Nos. 176, 177-5, M-5-19, 178 and 153-No. 40, describing and illustrating its different types of oil engines for power plants, etc.