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NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office by 10 a. m. Monday preceding the date of publication, except the first issue of the month, for which changes of copy should be received two weeks prior to publication date. New advertisements for any issue will be accepted up to noon of Tuesday for the paper dated the following Saturday.

Of this issue of the Street Railway Journal 8000 *copies are printed. Total circulation for* 1905 *to date,* 384,150 *copies, an average of* 8173 *copies per week.*

The Indiana Convention

The November meeting of the Indiana Electric Railway Association marks another epoch in the history of that organization. The interchangeable coupon ticket question took up a large percentage of its attention during the first few months it was organized. While no official action on the part of the association has resulted from the extensive work done upon that matter, the long consideration of it has brought the different companies to realize the situation and a number have adopted the Ohio mileage plan. At the convention of last week a move was made toward securing uniformity of rates and practice in freight and express. It was shown that there was much need for such uniformity and for provisions for the interchange of freight which would put electric roads more on the same basis in dealing with the public. This movement to have a conference of freight traffic managers of the roads of the State bears about the same relation to the freight business as the movement to establish uniform mileage rates had to the passenger business. There are not so many obstacles in the way of uniform freight practice, however, as were in the way of uniform rates for passenger mileage.

The free baggage question came up again for discussion, and Mr. Norveil, in his paper, brought up some evidence as to the effect of free baggage in increasing passenger business that is worth more than a great deal of theorizing on this subject. Mr. Norveil's figures seem to show beyond question that the handling of baggage free results in a considerable gain in the net revenue because of the additional passenger traffic attracted. These conditions would probably not exist in some places.

The Arnold Report

In this issue we publish the full text of the report just rendered on the street railway system in Chicago to the local transportation committee of the Chicago City Council by B. J. Arnold, consulting electrical engineer of the city. This report is in a sense a continuation of the report made by Mr. Arnold in 1902, and which was published in extenso in our issues of that time. It analyses the probable returns to the city and to the Chicago City Railway Company during the next twenty years if the graduated percentage of gross receipts suggested by the company on the proposed twenty-year basis should be adopted. The result of this calculation is that during this period the company will earn, net, $96,044,000, or with the cost of renewals deducted, $69,043,000. Of this amount the city would receive in taxes, or their equivalent, $34,643,000. On the other hand, the company, after deducting interest on the cost of necessary reconstruction and payments for twenty years to a sinking fund to cover the estimated value of its franchise, would be able to pay $10,923,000 in dividends, or at the rate of 1.437 per cent for twenty years. The sinking fund payments are based on a franchise value of $25,000,000, which is the difference between the price paid for the stock and the value of the physical property. A similar estimate for the Union Traction Company, of Chicago, is not given, as it was impossible to prepare a complete statement in the limited time available, but Mr. Arnold believes that it is not probable that a close analysis of the properties of this company would show a more favorable condition, as it offers to pay the city the same rate of compensation as that proposed by the Chicago City Railway Company. The report is a most interesting and valuable one as an analysis of the future conditions of a large city proper. It is difficult to see how the city could benefit more largely than it would under the proposed plan, by which it will receive nearly three and one-half times as much as the company without a dollar of investment, whereas the returns to the company on its investment is less than 1½ per cent.

Inducing Pleasure Traffic in Winter

The past few years have brought about a noteworthy development in ways and means of creating increased traffic in the summer months by providing artificial attractions of one sort and another at parks and pleasure resorts. Progress in this direction, both as regards attractions and amusement novelties, as well as in the methods of conducting pleasure resorts, has been frequently recorded in the columns of this paper. As a direct sequence to the success achieved by intelligent efforts toward artificially creating pleasure travel in summer, electric railway managers are this year turning their attention more than ever before to continuing similar efforts through the winter months, with the idea of building up traffic on light traffic lines. As a matter of fact, experiment in this direction offers an exceedingly attractive field for originality, especially as it gives promise of attractive possibilities in the way of increasing revenue at a season of the year when operating expenses usually go up and receipts go down.

As a single example of one of the little things that can be done on suburban lines for inducing travel in winter may be cited the experiment described in a recent issue, whereby the Rochester & Eastern Rapid Railway has built up a profitable theater travel by undertaking to act as agent in securing reservations of theater tickets for people living outside the limits of the city terminal.

In line with this same policy of creating winter traffic, announcement is made that the Boston & Northern and Old Colony Street Railway companies, operating 880 miles north and south of Boston, are planning ways and means for making the several park resorts which they serve as popular in winter as in summer. The efforts in this direction include the building of toboggan chutes, artificial skating rinks and other attractions for winter sports. Facilities for ice games, such as hockey, curling, etc., will be offered, and it is believed various athletic organizations as well as individuals will be glad to avail themselves of these opportunities for enjoying the winter sports. It is the idea to arrange special events in the nature of fancy skating contests, skating races and masquerade carnivals. The same methods of advertising, by means of newspapers, notices in the cars, hand bills, etc., as are used in the summer time will be applied to giving publicity to these winter attractions, and there seems to be no reason why the induced travel cannot be made as large in winter as it is in summer. At all the skating ponds rustic shelters and cabins are being erected and will be kept well heated for the comfort of skaters and coasters. These shelters will be made self-sustaining by the sale of hot drinks and lunches. At certain places where the companies have no ponds suitable for skating purpose, the management is co-operating with outside individuals who are erecting winter attractions of different types and descriptions on private grounds.

From various parts of the country come reports of successful attempts to revive interest in roller skating rinks, bowling alleys and similar resorts, and it would appear that under proper conditions many of these pastimes can be made as popular in winter as in summer.

The results achieved from these and similar efforts toward building up pleasure riding during the colder months will be watched with interest, and any suggestions whereby the large investments tied up in parks and pleasure resorts, as well as in idle rolling stock and equipment, can be made to produce revenue during the hitherto non-productive season of the year will be eagerly sought by electric railway managers.

Fire Extinguishers on Cars

A great deal of attention is being paid at present to the proper protection of car houses by automatic sprinklers, chemical extinguishers and other improved methods, and there is no doubt that the subject is well worth the consideration of every railway company. In perhaps no other department of railway work has there been such a great advance during the last two or three years as in the ideas of the proper construction of car houses with a view to protection against fire. We have discussed this subject and the value of sprinklers on other occasions, and expect to refer to them again, but wish also to call attention to the importance of protecting the cars on the road, especially interurban cars on long runs where there is no fire department to call upon for assistance. The modern 40-ft. to 60-ft. interurban car, with its electrical equipment, represents an investment of a good many thousand dollars; in fact, more than the average suburban residence. Nevertheless, the fire risk is high, and statistics show that even in a single State like New York, each day an average of more than a car is burned up while on the road.

The contributing factors to danger from fire are many. Foremost is probably that makeshift method of wiring to which we have often referred, and which is in evidence not only under the car, but throughout other parts of the car body. Other prevalent causes of fires are controllers and resistances which are inadequate for the service demanded or have deteriorated through lack of care, poor connections and a vast number of other reasons, some of which are avoidable and some inevitable, even with the best of management. All of these have been causes for fires in cars both in and out of the car house. But there is this difference, that when in the car house modern methods of fire protection are available, but on the road the chances are that the car will be destroyed before protection is secured, unless it is carried on the car in the form of some kind of extinguisher. Extinguishers are now made in a variety of types and are extremely compact, so that they can be stored in the motorman's compartment, locker or elsewhere on the car. They have proved very satisfactory additions to the equipment of power stations and car houses, and have been approved by the underwriters. They should be equally useful for protecting rolling stock when on the road, and their cost is certainly trifling compared with the risk involved.

Automatic Alarm for Cars in Car Houses

The chief danger from fire in cars when they are located in a car house is that the fire usually originates underneath or inside the car, where it is screened from observation. It may start from defective wiring, live coals left in the heater, or from any one of a variety of causes. As it gains in intensity it burns upward and into the car, where it not only remains unseen until the car is practically enveloped, but being confined within the car the heat is retained, so that the fire gains rapidly in intensity. The inflammable nature of the material of which the body is constructed assists in the work of destruction and, when the entire car is on fire, in spreading the flames to adjoining cars or to the house itself.

We believe that if some form of automatic signal device or alarm were provided within the car by which the presence of a small fire should be made known promptly to the night watchman, it would not be a difficult thing to put the fire out before much damage should be done. Even if this device consisted of several thermostats connected in a local circuit, which would ring an annunciator or buzzer in the office of the night watch-

man, a great deal would be accomplished. Such thermostats could be located under the seats, in the monitor or elsewhere in the car. One side of the circuit would be through the wheels and the other through the trolley pole on to the dead wire which parallels the trolley wire in the car house, and on which the pole should always rest instead of against the overhead wire itself. The dead wire in each aisle would then be connected to an indicating device which would announce that a fire had started in one of the cars in that aisle. If more accurate knowledge was desirable, the dead wire could be divided into insulated sections, each connected with an annunciator of the usual form, so that the exact car in which the fire existed would be designated. The local car circuit could be cut off by a switch during the daytime.

With a watchman whose somnolent tendencies were prevented by a time clock, an annunciator alarm of this kind, a few extinguishers and a sprinkler system to protect against a more general conflagration, there would be practically no danger of loss of cars by fire.

Multiple-Unit Equipments in Interurban Service

During the past two or three years the advantages of the multiple-unit system have become thoroughly appreciated in urban rapid transit circles, and the experience gained in New York, Chicago and Boston has demonstrated beyond question that the basic principles of automatic train control are sound and capable of meeting the most exacting conditions of city transportation. Multiple-unit equipment has undergone considerable evolution in detailed design since the first trains fitted with it began commercial operation, and the apparatus of today is both electrically and mechanically superior to that of even three years ago. The depreciation and maintenance bugbear has not materialized as the opponents of multiple-unit control expected; the removal of heavy currents from the platform controller has proved a great advantage, and in point of flexibility, the equipment has certainly made good the claims of its sponsors.

The interurban road has also offered an attractive field for multiple-unit operation of late, particularly in cases where a considerable suburban traffic is handled. The facility and safety of double-header operation, the reduction of useless mileage and the ability to maintain fast schedules in rush hours because of uniform acceleration characteristics, regardless of the number of cars in a train unit, all contribute to the usefulness of automatic control in handling variable traffic. The cost of a car equipped with multiple-unit control need be no greater than that of a car fitted with ordinary platform controllers. In some cases it is actually less, so well standardized are the contactors, relays, reversers, etc., which make up the systems now on the market. There is little objection consequently to the use of train control on individual motor cars, and in propositions where the traffic is irregular in volume, it is of great value to be able to operate car units grouped in trains without doubling the motorman expense per train-mile.

The use of trailers, however, is always a matter worth consideration before purchasing a large number of motor cars for interurban service. It must not be forgotten that the operation of a multiple-unit train made up entirely of motor cars throws a heavy burden of power fluctuations upon the generating, transmission and distributing system. The like motor characteristics which prove so useful in holding to the schedule under varying conditions of traffic exact their price through the enormous rush of current drawn from the line, as the motors all accelerate simultaneously. A two-car multiple-unit train in which each car is driven by four 50-hp motors will often consume 1000 amps. to 1200 amps. in attaining full speed from a standstill, and a demand of this size is no ordinary drain upon the equipment of the average interurban sub-station and feeder system. It has often been shown that the first cost of electrical equipment upon an interurban road depends very definitely upon the acceleration employed on the cars, and it is a question if the fluctuations caused by operating all multiple-unit cars on a long line where the headway is not less than half an hour are not sometimes too large to permit either economy in first cost or in running expenses. It would seem advisable to provide for the use of trailers in such cases, even at the sacrifice of the fastest schedule time in the busy hours. Interurban and suburban service are two very different things, and when the volume of traffic will not bear heavy power plant, line and sub-station investment, it is better to economize in power equipment by securing the lower energy consumption per train-mile of motor-trailer trains, dropping the schedule a few per cent, at the most, below the fastest time made in the hours of lighter traffic. There is no reason why the running time of all trains on an interurban road should be the same any more than on steam roads, and although one would not advocate slowing down the schedules to any serious degree, there is no doubt that the practice of using trailers instead of all-motor multiple-unit trains is well worth while on many of the longer and sparsely settled interurban systems.

The Reliability of the Telephone in Despatching

For years it has been urged by men brought up in the steam railroad business and by telegraph operators that the telegraph is a much safer and more reliable method of transmitting train orders than the telephone. This has kept the telephone from being used by steam railroads more extensively, and has also cast some disparagement on despatching methods on interurban electric railways as compared to those of steam railroads. We have never been able to see why the telephone, in its present state of perfection and with proper safeguards thrown around the sending and receiving of orders, should involve any larger percentage of mistakes in transmission than might occur with the telegraph. Our conviction in this matter is strengthened by the experience of the Indiana Union Traction Company with its telephone despatching system, which is described elsewhere in this issue. As this is the largest interurban system in the country, and as a regular despatching system using the telephone for the transmission of orders has been in operation since 1901, this experience should throw much light on this matter. This experience, as stated elsewhere, is that since the despatching system was started, not a single accident has been traced to faulty transmission of orders. On account of the alleged weakness of the telephone in this respect, the management of the company has always been sharply on the lookout for mistakes in the transmission of orders whenever accidents ocurred, but no such mistakes have been found. What accidents have occurred in connection with the despatching system have not been due to the faulty transmission of orders. While it would not be reasonable to suppose that mistakes will never occur in transmitting orders by telephone, such a long record as this without mistakes goes to show that the telephone is by no means the imperfect tool that our telegraphic and steam railroad friends would have us believe.

NEW WHEEL-SHOP OF THE NEW YORK CITY RAILWAY COMPANY

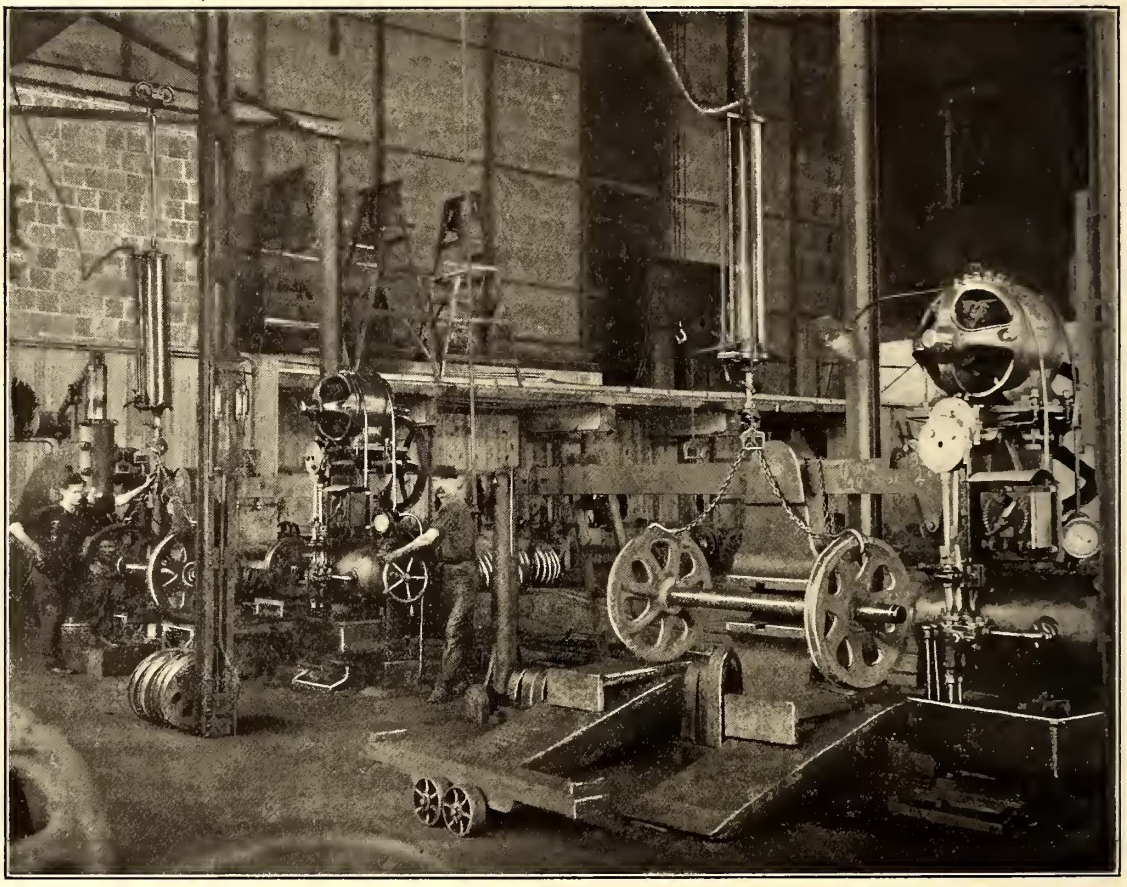
The wheel problem is one of the most difficult of those encountered in the mechanical department of the New York City Railway Company, and is of more than ordinary interest, owing to the peculiar conditions of operation encountered in this city. In perhaps no other city than New York can similar conditions of enormously heavy traffic with frequent stops, as well as such enormous amounts of special work, be found. As a result of recent changes of management of the traction properties in New York City, all the surface lines in both Manhattan Borough and the Bronx are operated by the New York City Railway Company, which now embraces a total of over 650 miles of track. Of this trackage, 478 miles of track are in Manhattan Borough, and for this portion of the system the company has an equipment of 3663 cars, of which over 2000 are normally required in daily operation. The lines operated by the company in the borough of the Bronx and vicinity embrace a total mileage of 180 miles and an equipment of 580 cars.

A development of the shop equipment, consistent with the rapid growth of the transit facilities, has not been possible in Manhattan Borough until recently, on account of the varied character of motive powers which were in use up to a short time ago. These motive powers included horses, cable, storage battery and the present underground conduit electric system. Another disadvantage under which the company has always labored, so far as its shop equipment is concerned, is the very high cost of real estate in Manhattan Borough, which has made it impossible to lay out large and commodious shops. At the same time, the enormous distance between the center of gravity of the system and the outskirts of the city has precluded the possibility of doing much work in large shops erected far from the operating car houses. The first difficulty, that of different motive powers, was removed when the underground conduit, the present standard system, was definitely settled upon for the lines of heavy traffic, and an opportunity was given to the mechanical department of the company for developing and settling upon the details of established practice.

The principal repair shop of the company is located at the Fiftieth Street and Sixth Avenue car house. The facilities here include a machine shop, blacksmith shop, new wheel shop, paint shop and plow shop, thus providing for work of all classes except electrical repairs of a very extensive nature. The latter are handled at the 146th Street and Lenox Avenue shop, where all armatures and other coil winding is done, together with controller and other extensive electrical repairs. At this shop are also located a machine shop, truck shop and paint shop. At the Sixty-Fifth Street and Third Avenue shop a large woodworking shop equipment is in operation, together with a machine and blacksmith shop.

The latest and most important of the shop improvements has been the installation of the new wheel shop at the Fifty-First Street and Sixth Avenue car house, which embraces an installation of more than ordinary interest. It differs in many particulars from other shops for wheel work, particularly in that grinding is resorted to for mounted wheels, thus insuring their accurate centering in relation to the journals. This is a feature often overlooked, but is of great importance for securing satisfactory results to both wheels and the car equipments. Another feature of the shop is the extensive use of pneumatic hoists.

The machine tools here include three car-wheel borers, three wheel-grinding machines, one axle lathe, one engine lathe and two wheel presses, which together provide for the wheel work of the total equipment of nearly 4300 cars. Their arrangement in the shop, as well as the hoist facilities provided, are shown in the accompanying illustrations. The wheel borers are located at one side of the room, and the axle lathes at the other, and the wheel presses between them, so that the finished wheels and axles are merely brought toward the middle of the room for assembling. Overhead runway air hoists are provided in all sections where needed, so that the handling of pieces into and out of the machines is accomplished mechanically for economy of time. In another part of the room a space larger than that occupied by the machine equipment is devoted to the storage of finished work and wheels returned for overhauling.



THE TWO 200-TON WHEEL PRESSES AND THEIR PNEUMATIC HOISTS

The wheel-boring machines are of the horizontal revolving table type of the Niles-Bement-Pond Company (Pond design), and have each a capacity of boring hubs of wheels up to 42 ins. in diameter on the tread. The tables are provided with five chuck jaws, each of which may be operated simultaneously or independently, as desired. The boring is accomplished by a

vertically traveling spindle, counterweighted and provided with several rates of feed, while the hub facing is handled by a horizontal spindle projecting from the rear housing. An important feature of this tool is the power crane for lifting wheels onto and off the table, which consists of a swinging arm at the side of the machine with a friction clutch operated hoist, easily controlled from a lever above the arm. This feature is effective in doing away with a helper, as one man with the hoist can easily take care of the entire operation of the tool. Each of these machines is operated individually by a 7½-hp General Electric variable-speed motor, with controller near the table for convenience of manipulation of the motor speeds by the operator.

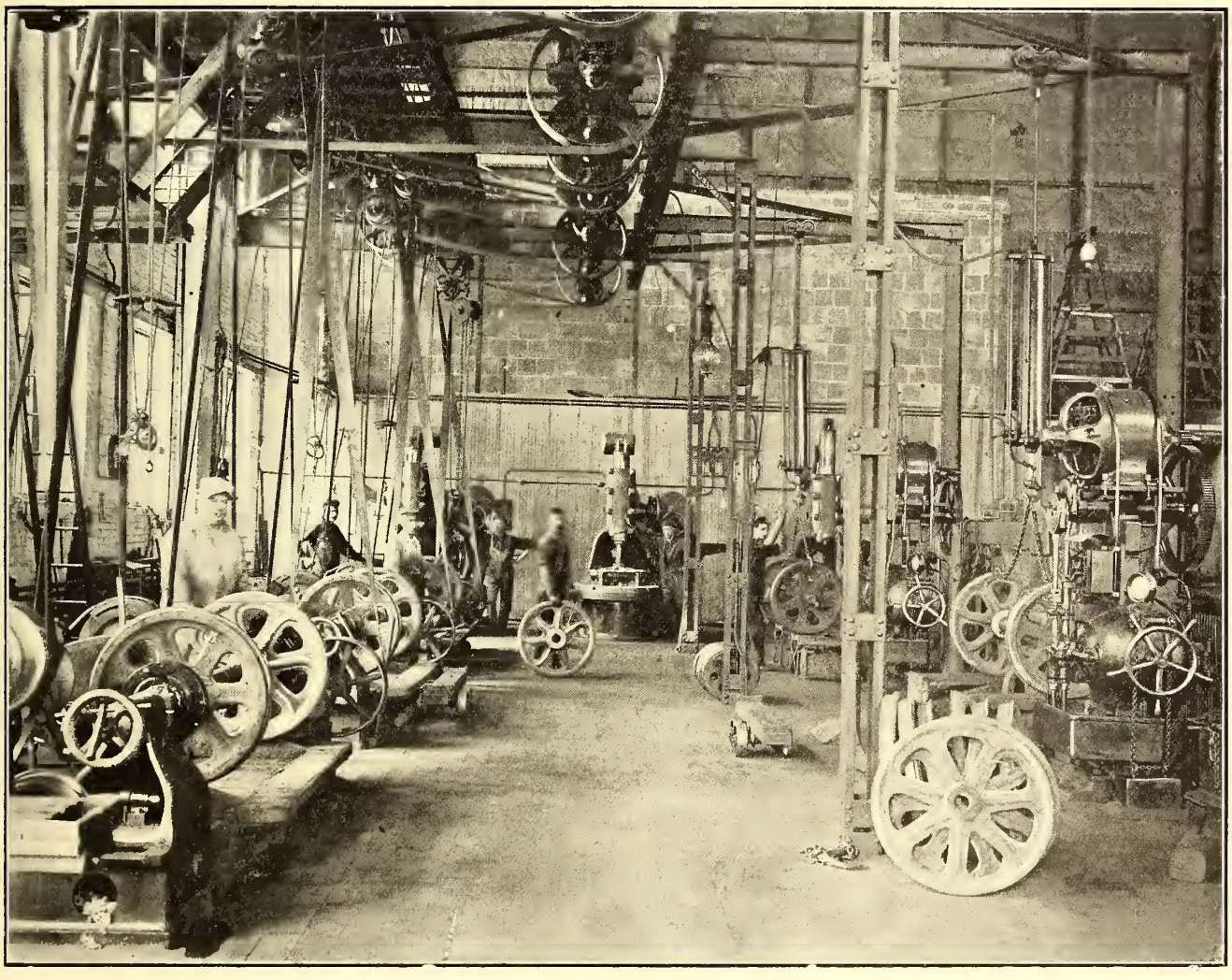
The axle lathes consist of a center-head double Niles lathe and a 24-in. LeBlond lathe, with the usual type of headstock. The former has a 12½-in. hole in the center head, with a double equalizing driver, and has a capacity between centers of 8 ft. Automatic feed release attachments on the apron provide for throwing out at desired points for convenience in the cutting of wheel and gear seats. This tool has a convenient hoisting crane mounted upon the rear of the bed, by which axles are lifted into and out of the machine. The crane is a cast-iron swiveling jib with about 5 ft. overhang, so as to cover the driving head. This tool is driven by a 10-hp General Electric variable-speed motor.

The single axle lathe has a swing over the carriage of 14 ins. and a capacity between centers of 8 ft. 2 ins., thus providing for an extensive range of work of other classes, if desired. This tool is supplied with only a single carriage, with a steady rest, providing especially for cutting to special sizes. This tool is individually driven by a 2-hp General Electric motor mounted upon the headstock of the lathe, from which it drives directly through gearing and gear changes to the headstock.

The wheel presses are of the Niles hydraulic pattern, each of 200-ton capacity, and have individual motor-driven pressure pumps, the motors being mounted above the ram cylinders. The presses are designed for wheels up to 44 ins. in diameter on the tread, and will accommodate long work, as the maximum distance between the ram plunger and the resistance head is 8 ft. 4 ins. The motors operating the pumps are 7½-hp General Electric constant-speed motors and drive through gearing reduction to the pump shaft.

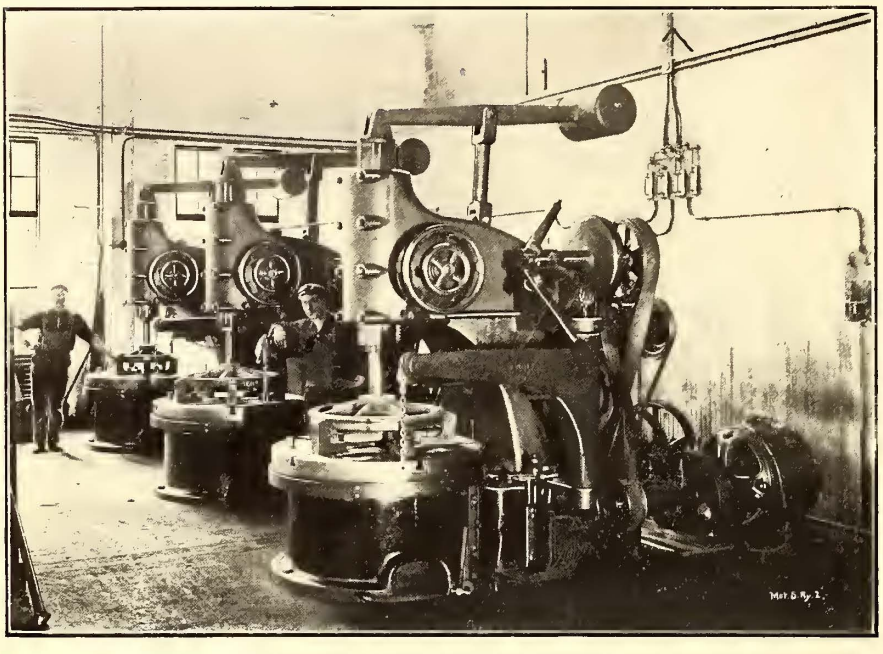
For the handling of wheels and axles into and out of the presses and onto cars, a system of air hoists has been installed which is effective in greatly facilitating the handling. Runways of I-beams are carried over the various machines and over the shipping track, upon which the hoists have considerable travel; the runways are supported by a structural steel framework, as shown. Over the shipping track at one corner of the room there is an air hoist suspended upon a runway swinging as a jib crane, which is used for loading and unloading the wheel cars, as shown in one of the illustrations. These hoists are all the air-balanced pneumatic hoists built by the Chicago Pneumatic Tool Company, and are supplied with air by a Franklin air compressor, driven by a 25-hp General Electric motor.

The wheel-grinding machines are of a special type of grinding lathe, built by the Springfield Manufacturing Company, Bridgeport, Conn., for the grinding of wheels mounted upon their axles. They are designed with exceptionally accurate and rigid centering devices at both head and tailstock, for revolving the wheels, and two grinder heads, one for the tread of each



GENERAL VIEW OF WHEEL SHOP, SHOWING WHEEL GRINDERS AT LEFT

wheel. These grinder heads are each driven separately by belt from a countershaft above, and have independent adjustments to their wheels. The centering devices are no doubt the most important features of these machines, as instead of making use of the original end centering holes of the axles, the faces of



THE THREE 42-IN. NILES WHEEL-BORING MACHINES

journals are relied upon to determine the centering of the mounted wheels. The wisdom of this will be at once apparent when the tendency of journals to wear unevenly is considered. Thus if an axle should wear off a few thousandths of an inch more on one side than the other and a new wheel be pressed upon it, the result will be an uncentered unit, with troublesome results. But by centering the newly-mounted wheels relative to the journals of their axles, with which they should be concentric, and then grinding them down to true, a perfect result will be obtained. It is often found that mounted wheels are obtained which are several hundredths of an inch out of center with the journal surfaces.

The practice in the operation of the shop is to turn out the work in advance for shipment to the various division repair departments at car houses where running repairs are made. Damaged, broken and discarded wheels are returned to the wheel shop and their wheels pressed off to be replaced by new ones. Very few new axles are required, however, one axle outlasting many pairs of wheels. The practice of pressing wheels on and off is in accordance with usual railroad shop standards, press fits being used with wheel seats turned up from two-thousandths to three-thousandths of an inch larger than the bore of the wheel. After pressing on, all wheels go to the grinding lathes for their final truing prior to going into stock for delivery.

The shop work is directly under the charge of Thomas Millen, general master mechanic of the company.

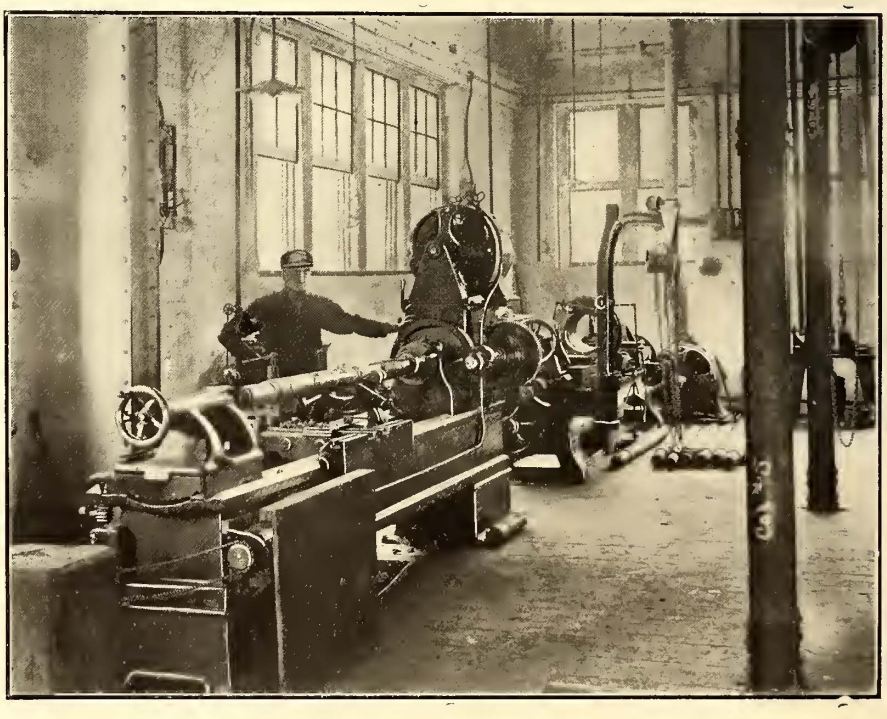
The Secretary of State of Ohio reports that during the year ending Nov. 15, 44 street and electric railway companies, with a total capitalization of $23,768,500, were incorporated in Ohio. The increase in capitalization amounted to $13,122,000.

DESPATCHING ON THE INDIANA UNION TRACTION SYSTEM

The Indiana Union Traction Company, which operates the largest system of interurban railways in the United States, was one of the first to go thoroughly into the matter of train despatching, and the system which it has in force to-day for this purpose is probably the most completely worked out of any that is in use on interurban roads of the country. In response to requests from readers of the Journal for a full account of this despatching system, which has been briefly mentioned in previous articles, the following description has been prepared:

The telephone is used entirely for transmitting train orders. Although it had been claimed by steam railroad men that the telephone is not as reliable as the telegraph for transmitting train orders, the experience of the Indiana Union Traction Company has been that since the despatching system was put in force Oct. 13, 1901, not a single accident had ever been traced to a faulty transmission of orders, although diligent investigation has been made after each accident. Accidents have all been due to some other cause.

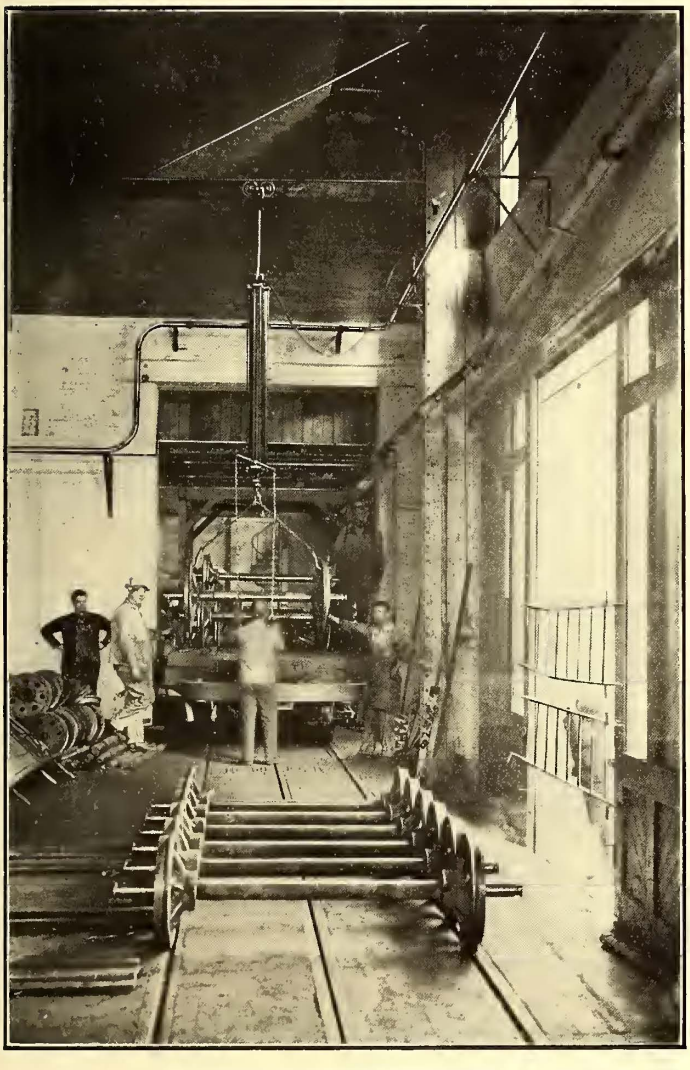
The company keeps its despatching system of telephones entirely independent of those used for transacting the general business of the road instead of making the same pair of wires serve both purposes, as is very common. One pair of wires over the entire system is set aside to despatching purposes only, and another pair of wires is used for general business. In case



THE TWO AXLE LATHES

the despatching wires are out of order on any section of the road, the general business wires are temporarily made despatch wires. The despatching wires are provided with connection boxes at every switch or turn-out, by which any train crew can obtain connection with the despatcher. Each car carries a telephone with a sufficient length of flexible cord so that connection can usually be made by reaching out of the vestibule window to a connection box. If for any reason it is necessary to take this telephone from the motorman's cab, it

can be done, as it is a portable instrument. Ordinarily there is no ringing in the regular operation of the despatching system. The despatcher keeps his receiver constantly at his ear, having the usual telephone outfit used by telephone operators. When a train crew wishes to talk with the despatcher, the car telephone is hooked into circuit and conversation begun at once without ringing. As the only instruments on the line are the despatcher's, and whatever car telephones may be in use, it is possible to keep long lengths of despatching line in circuit without interfering with the talking over the line. The despatcher's switchboard is arranged, however, so that he can separate the lines going in different directions from the office.



PNEUMATIC CAR-LOADING HOIST, SHIPPING TRACK AND SPECIAL ELECTRIC WHEEL CAR. THE LATTER HAS A LONGITUDINAL CONTROLLER TO ALLOW WHEELS TO BE ROLLED OFF OVER BUFFER, NEW YORK CITY SHOPS

When this is done it is necessary for the train crews to ring in order to call the despatcher, each circuit being provided with drops on the switchboard for this purpose.

On the telephone lines devoted to general business there is a connection box every half mile along the entire line for use by construction train crews and in case of accident. Telephone instruments are rented from the Bell Company. The line and instruments are maintained by the railway. The repairing of the telephone instruments is done by the sub-station attendants to utilize their spare time.

Semaphores are provided at the sub-stations, which are about 10 miles apart, by which a despatcher can telephone to a sub-station and stop any train for orders in case it is necessary to do so between regular reporting points.

The Indiana Union Traction system is too large to be handled by one despatcher, not only on account of the number of trains, but because of the difficulty of telephoning with certainty under all conditions of weather over so large a system. One despatcher located at Anderson has 101 miles of road under his charge, and another despatcher at Tipton has 119 miles.

To add still further to the reliability of the system, the company will soon put telephones in booths at all regular meeting points for use in despatching. The portable telephones on the

Form 317 100m 12-05

Indiana Union Traction Company.

TRAIN ORDER BLANK, FORM A.

Order No...... *Date*..... *190*.....

To Conductor and Motorman,

Train No...... *Motor No.*..... *at Siding No.*.....

Meet Train No...... *Motor No.*..... *at Siding No.*.....

Meet Train No...... *Motor No.*..... *at Siding No.*.....

and report at Siding No......

.....

.....

.....

.....

.....

Complete..... *M*.....

Dispatcher.

Form 348-1m 5 03

Union Traction Company of Indiana.

HOLDING ORDER.

No...... *Date*..... *1903.*

To Substation Operator at Siding No......

Hold Train No...... *Motor No.*.....

Hold Train No...... *Motor No.*.....

Hold Train No...... *Motor No.*.....

Block Set At..... *M.*

Dispatcher..... *Operator*.....

FORMS USED IN DESPATCHING CARS

car will still be retained. This will call for seven booth telephones on the 101 miles operated from the Anderson despatching office.

The company has a continuous record of train movements since October 13, 1901, when the first time-table, written orders and train sheets were put in force. To give an idea of the amount of business done, the following figures are given, which apply to the 101 miles operated from the Anderson office. On this part of the road there are 288 trains in twenty-four hours. The regular time-table calls for sixteen trains operating at once. Besides this there are, of course, whatever extras and work trains are needed. The despatchers work in three shifts: the first from 8 a. m. to 4 p. m.; the second from 4 p. m. to midnight, and the third from midnight to 8 a. m. The man on the last shift checks over train orders during the quiet hours.

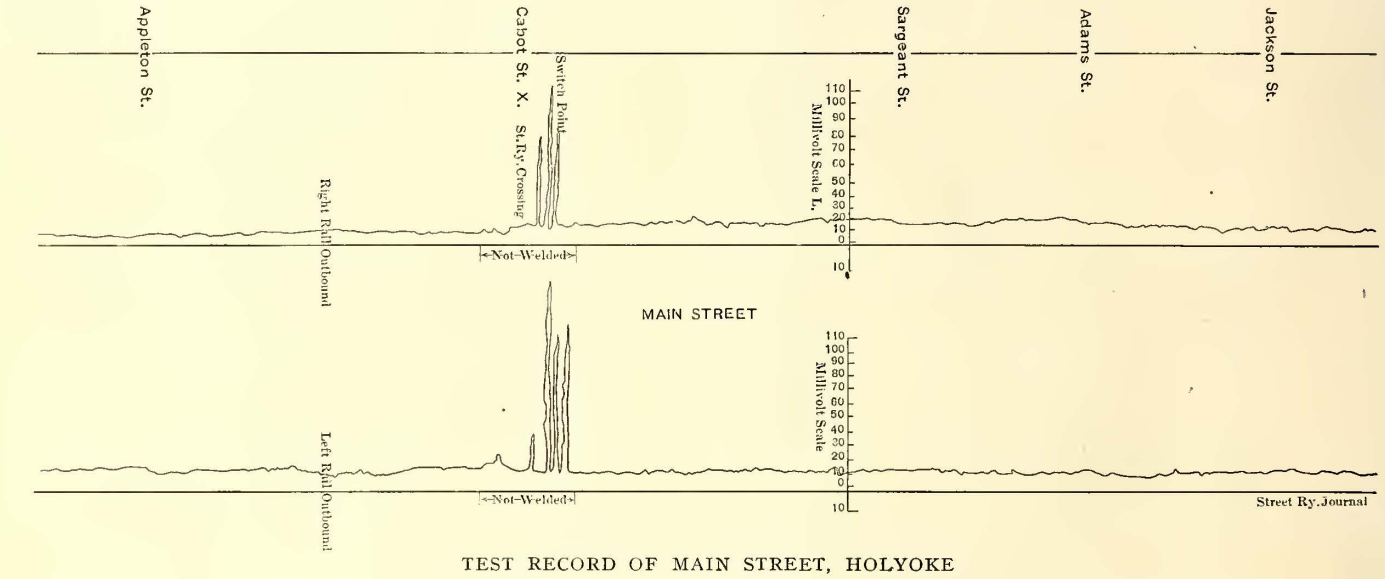
The company makes use of trailers to increase its carrying capacity when the traffic is heavy rather than to increase its capacity by running trains oftener than once an hour. In order to maintain schedule time with trailers, the plan is adopted of having a motor car with a trailer form the first section of a train and make the town stops only. The second section consists of a single motor car, making the country stops. In this way the whole service is maintained without serious loss of time.

Only two forms of order blank are used, one of which, Form A, reproduced herewith, is carried by the train crew, and the other (which is a holding order) is kept at sub-stations. The despatcher keeps duplicates of these orders, writing them down as he transmits them over the telephone. The orders are received by the motorman and read to the conductor. Time-tables for the entire system are issued in book form, these time-

tables giving meeting points in bold faced type. In addition to the time-tables, this book contains lists of the company's surgeons in different towns on the system, and a set of rules governing the movement of trains. This is the only rule book as yet published by the company. In addition to this, bulletins are posted with special or temporary regulations. A meeting, at which the rules and bulletins are gone over by an officer of the company with the train men, is held once a month at different places, so that all men get the benefit of the meetings.

RECENT THERMIT WELDING IN HOLYOKE

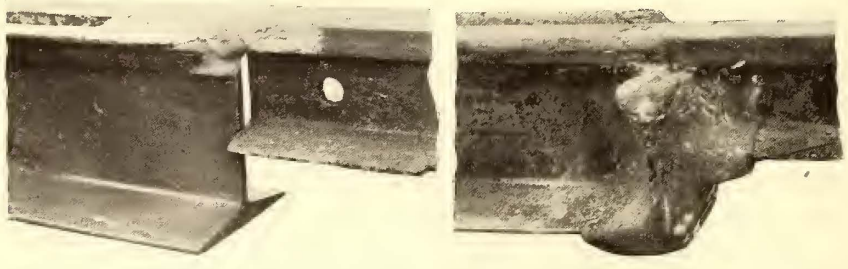
An account was published in the Street Railway Journal for Feb. 18, 1905, of the welding of 1 mile of track on Main Street, Holyoke, Mass., by the thermit process. The welding was commenced Aug. 8, 1904, and was one of the first pieces of track welded with thermit in the United States. A year later, or in August, 1905, the track was tested by the Herrick autographic test car. A copy of the record is presented herewith: The distance scale of this record is 480 ft. of track to 1 in. of record. The voltage scale is 160 millivolts for 1 in. The resistance of any bond bears the proportion of the height of the spark line to the height of the line adjacent rail. If the spark line be four times the height of the current line adjacent to the joint, the resistance of the joint is equal to that of 16 ft. of solid rail. When a joint exceeds 60 ft. of rail an open bond mark is shown on the side of the record, but none appears in this record, and this is noted as an open bond. Joints beyond 12 ft. of solid rail are marked as defectives. Street intersections are given by raising the record pen of the top line from one curb to the other as the car passes this street.



TEST RECORD OF MAIN STREET, HOLYOKE

In addition to its track welding by thermit, the Holyoke Street Railway Company has just completed welding 1300 ft. of 56-lb. T-rail to be used merely as conductor for the return current. Main Street runs by the power station about 1300 ft. from it, and through this street the return current from the entire system flows, amounting at times to 4000 amps. The conductor which connected the Main Street rails with the negative bus-bars formerly consisted of the two rails of a spur track extending from Main Street to the power station and three No. 0000 supplementary ground wires. The spur track is bonded with two No. 000 bonds. On testing this piece of track the bonds were found to be in bad condition and it was decided to supplement the conductor already there with a double line of 56-lb. T-rail, which was laid in the following manner:

A trench 3 ft. deep was dug from the street to the power station. Across this trench old ties were laid two to a 30-ft. rail. Two lines of rail were then laid upon these ties and welded by thermit, the collar of metal extending clear around the section of rail. The two lines of rail were then bolted together about every 20 ft., the joints being staggered, and the whole lowered into the trench. Connections with the rails in the street were made by inverting the conductor rails and bolting the flanges to the traffic rails. After this was done the flanges were welded together, suitable molds having been made. At the power station the ends of the conductor rails were allowed to project about 6 ins. through the walls. Copper lugs were then soldered to the ends of the rails, from which a 2,000,000 circ. mil connected each rail to the negative bus-bar. The cost of the entire work was about $700, including the value of the old rails.



COMPROMISE JOINTS BEFORE AND AFTER WELDING WITH THERMIT

The accompanying photographs illustrate some compromise joints which were made by the thermit process and have been in service under heavy traffic since June of this year.

R. S. Masson, consulting electrical engineer, and G. B. McLean, mechanical and electrical expert, of the Pacific Electric Railway Company, have installed in the main corridors and in the women's waiting room of the great Huntington depot at Sixth and Main Streets, Los Angeles, a system of enunciators that will henceforth do away with the harsh voice of the train crier. These enunciators are in the form of huge automatic signs, which respond to the work of the starter beside the tracks on the outside. When the coaches for the various stations are prepared to start, the operator has merely to press a button, whereupon will ring a loud gong, and then will appear the announcement of the destination of the waiting car upon big signs in white letters across a black background.

RESULTS AT PLEASURE PARKS IN EASTERN MASSACHUSETTS AND PLANS FOR WINTER SPORTS

The Boston & Northern and Old Colony Street Railway companies, operating 880 miles of track north and south of Boston, in addition to the natural advantages for pleasure travel during the summer months offered by the seashore resorts, historical towns, lakes and rivers for which Eastern Massachusetts is noted, own several pleasure parks scattered in various sections over the systems.

Five of these parks, namely, Lakeview Park, located outside of the city of Lowell; Glen Forest, near Lawrence; The Pines, a short distance from Haverhill; Highland Park, convenient to the city of Brockton, and Sabbatia Park, on Sabbatia Lake, near Taunton, are under the direct management of the companies, and are all within a 5-cent fare limit from their respective centers. These parks have beautiful groves, and every care has been taken to preserve the natural beauties. Glen Forest and The Pines are delightfully situated on the banks of the Merrimac River. Lakeview and Sabbatia Parks border on the shores of a large lake, affording good opportunities for boating, etc., while Highland, the most beautiful of them all, has no water privileges. In addition to these, the companies have two other parks, which are sub-let.

These parks have been running for many years, with vaudeville performances at the chief attraction, but the patronage from season to season did not increase sufficiently to justify the heavy investments that had been made at the various resorts. During the latter part of the season of 1904 the "Jack and the Beanstalk Company," a musical comedy, made a circuit of the parks, with such success as to thoroughly convince the officials of the companies that high-class entertainments, such as operas, operettas, farce and musical comedies, with an occasional vaudeville show, would bring an increased popularity to the parks. This plan was inaugurated and carried out. It is worth noting, however, that at one of the parks the demand for vaudeville predominated, and the companies were obliged to cut out other shows at this place.

CHILDREN'S HUNT, HIGHLAND PARK, BROCKTON

The seating capacity of the theaters at all the resorts was enlarged, but reserved seats were graded in three classes—5 cents, 10 cents and 15 cents, which more than offset the additional cost of the performances over previous years. The official opening of the parks took place on June 29, with fireworks, band concerts and performance. The attendance far exceeded the expectations of the management, and had the weather been favorable for the opening, set for June 26, the crowd would have been much larger. From the opening to the closing of the season, the efforts of the companies in keeping the parks on a higher plane were well rewarded. At Highland Park the attendance was fully 75 per cent greater than any previous year; at Glen Forest it was over 100 per cent; The Pines, which had been on the decline, was restored to its former popularity, while Lakeview Park and Sabbatia Park showed a very satisfactory increase. After the closing season of the parks, the managements gave band concerts and fireworks on certain days, which brought out good attendances.

CHILDREN'S HUNT, HIGHLAND PARK, BROCKTON

On Sept. 23 an "animal hunt" was held in the parks for school children. These were open to all primary and grammar school scholars. Tags were hidden in various places, bearing the name of some animal, the finder receiving whatever pet was named thereon. A second hunt for prizes, such as toys, watches, etc., was held on Sept. 30. The attendance was about 26,000 at each hunt, both of which proved most successful in every way.

The methods of the companies for advertising this year consisted of five advertising cars (see illustration), which were kept on the lines every afternoon and evening. Straight advertisements, advance notices and reviews in the various newspapers also did their full share in popularizing these resorts.

The season just closed has demonstrated to the management the necessity of giving to the public entertainments of a high class in order to receive the good will and patronage of the people.

The electric companies have plans under way for making their pleasure resorts as popular in winter as in summer, and are now at work constructing toboggan chutes, artificial skating rinks and other attractions for winter sports. Various ice games, such as hockey, curling, etc., will be provided, and it is believed that athletic clubs and schools will take advantage of the excellent opportunities which will be offered for hockey

matches and other sports. At different times during the season the companies will offer prizes for fancy skating, also for costumes, it being the intention to hold masquerade carnivals on the ice.

In some sections where the companies have no parks, they will co-operate with private individuals who are erecting similar attractions on private grounds. Some of these will contain only an artificial skating rink, while others will have the toboggan slide also.

A rustic shelter or cabin will be erected in the parks, and will be kept well heated for the convenience of skaters and coasters. Hot drinks and light lunches will be served also.

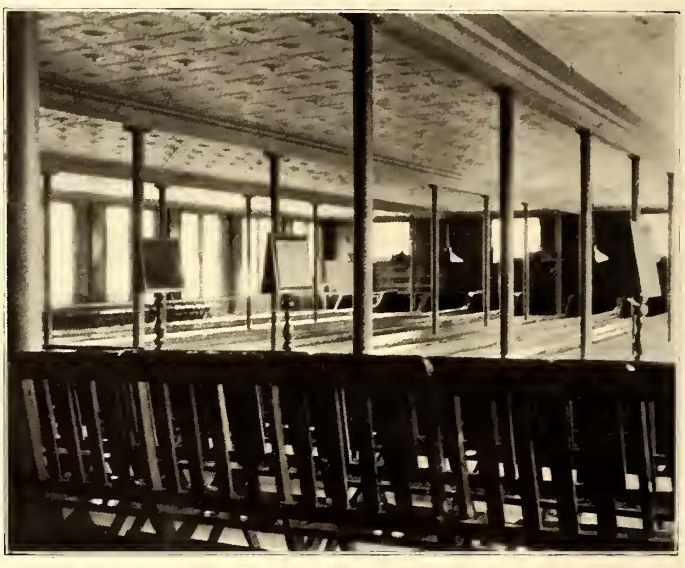
ADVERTISING CAR

Toboggan sleds owned by private parties will be kept at the parks without any charge, while those who do not have sleds of their own may hire them at a very nominal sum.

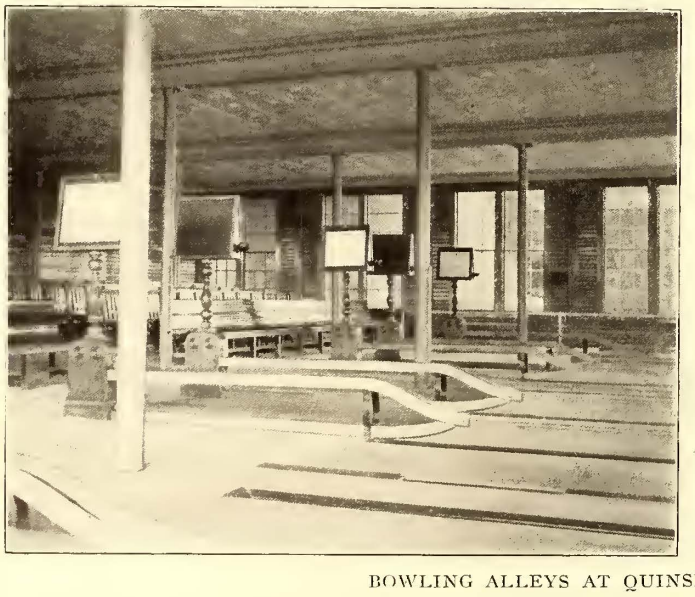
The evolution of the street car as exemplified by the various types of car in use in Rochester was strikingly illustrated in a recent article in the Rochester "Herald." No less than ten different styles of cars were shown, from the horse car to the 500 type, the latest adopted for use in Rochester. To illustrate the trend in interurban car building, a car in regular use on the Fonda, Johnstown & Gloversville Railway was shown. The writer says that the system in Rochester has grown from one of one horse car and three drivers to one of 300 cars and a working force of 1000 men.

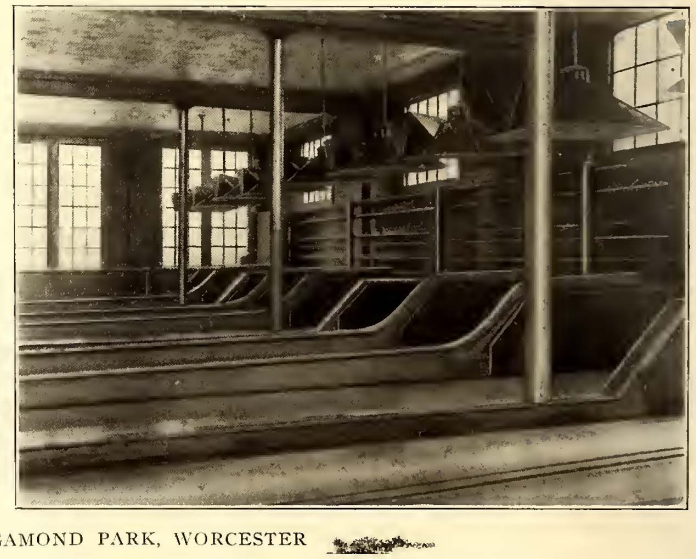
A COMBINED ROLLER-SKATING RINK AND BOWLING ALLEY

The Worcester Consolidated Street Railway Company early last summer decided to add to the attraction features at Quinsigamond Park, which it controls, and developed the idea of erecting a building that would combine facilities for a bowling alley in the basement and a roller-skating rink in the upper part of the building. The scheme was carried out, and although the building was not ready for use until the season had well progressed, leaving but seventy days during which the attractions were in commission, the venture has demonstrated not only the return to popularity of old-fashioned roller skating, but also the possibilities of well-conducted bowling alleys as drawing cards for pleasure parks. In view of the financial results achieved at Worcester, it is worth the while of those having electric railway parks in charge to note that these two forms of amusement—i. e., roller skating and bowling—which several years ago were very popular, but gradually fell into disfavor, can now be revived, and if maintained with proper surroundings will prove exceedingly popular with the best class of park patrons. The decline in both of these sports was undoubtedly due to the fact that proper care was not exercised in maintaining a good refined tone about them, so that the better class of patrons gradually refused to participate in these forms of amusement in public places. The reports not only from Worcester, but from other points during the past season



GENERAL VIEW OF ALLEYS



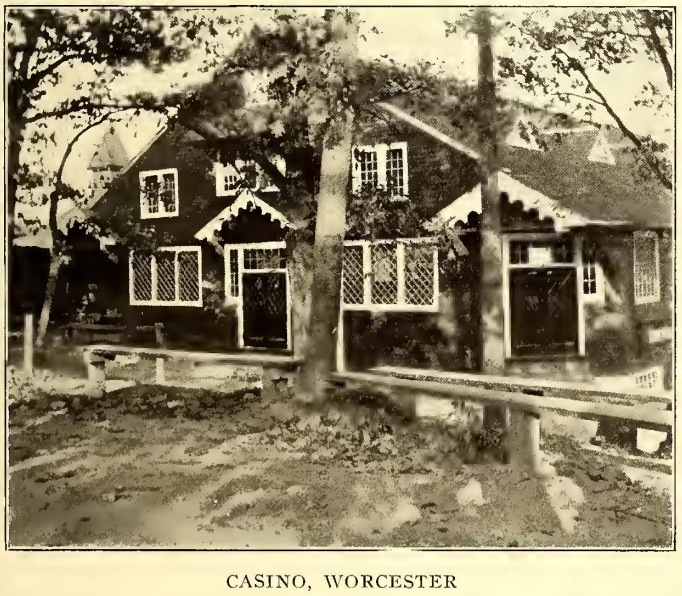


BOWLING ALLEYS AT QUINSIGAMOND PARK, WORCESTER

seem to demonstrate beyond doubt that if these sports are provided in pleasant and refined surroundings, and any suggestion of rowdyism or commonness is excluded, the better sort of people will patronize them with considerable enthusiasm.

At Quinsigamond Park a wooden structure was erected especially for these two attractions. The building was constructed upon the side of a hill, so that the bowling alleys located in the basement are reached from a side door on the lower level. The main floor, which is devoted to roller skating, is reached from the ground level at the top of the hill. The accompanying views give a good idea of the design and construction of the rink and alleys. The roof over the rink is supported on light steel trusses, and the outside of the building, including the side walls and roof, is finished in green shingles. Between the skating floor and the ceiling of the bowling alley room were laid layers of deadening felt, and an air space of about 1 ft. was left so as to do away with vibration and noise in the lower room when people were skating in the room above. The ceiling of the bowling alley was formed of pressed sheet metal, painted a dead black color, but brilliantly illuminated with incandescent lights.

There were installed in the basement ten exceptionally fine standard alleys made by the Narragansett Machine Company. These were equipped with all modern devices for making this game thoroughly enjoyable. In order to make the alleys permanent, they were laid upon a foundation consisting first of 4 ins. of tar and gravel concrete, upon which were laid cross-ties running clear across the width of the ten alleys. On the cross-ties were placed the longitudinal timbers, upon which rest the polished floor of the alleys. The construction with cross-ties and longitudinal members in this way gives about 7 ins. of air space under the alleys, and this insures freedom from moisture and any tendency of the hardwood floors to shrink or warp. Each alley is fitted with a pedestal for holding the score sheets, and back of the bowling space were arranged a



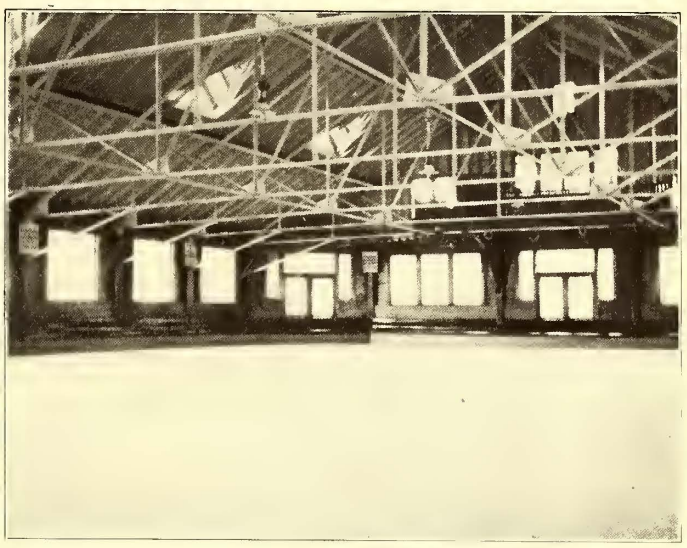
CASINO, WORCESTER

number of seats for spectators. Back of these seats were placed a line of lockers in which the players may keep their hats and coats.

During the past summer while the alleys were open a uniform charge of 10 cents a string was made for the use of any alley and there was hardly an hour during the afternoons or evenings when the alleys were not in commission, and on many of the days there was a long line of people waiting their chance to play.

The skating rink was stocked with 335 pairs of Winslow steel roller skates, and on several occasions the demand exceeded the supply. Five skating sessions, averaging two hours each, were held each day and a charge of 20 cents for each man and 10 cents for each woman was made for each session. This charge will be increased next season to 25 cents and 15 cents, respectively. Good music was provided afternoons and evenings for the skaters.

As to the financial results, J. W. Lester, treasurer of the Worcester Consolidated Street Railway Company, who had full charge of the company's park during the past year, states



SKATING RINK, WORCESTER

that the cost of erecting and equipping the building complete was $14,700, of which $8,500 was charged to the bowling alley and $6,200 to the skating rink. At the close of the season, after seventy days' running, the net receipts, after paying all expenses, in the case of the skating rink amounted to $1,309, or 15.4 per cent return on the investment of $8,500, and in the case of the skating rink the net receipts amounted to $1,550, or a return of 25 per cent on the investment of $6,200. With the full season of 145 days, the management is confident that the net receipts can be more than doubled.

NEW CLUB HOUSE IN GRAND RAPIDS

The Grand Rapids Railway has fitted up a club room for the motormen and conductors employed on its lines at its Wesley Avenue car houses, and according to an official of the company, the men are taking advantage of the social features offered thereby so enthusiastically that in all probability every car house in the city will be equipped with a club room. The main room contains a pool table, which is always in commission. Checkers and other games also furnish amusement for the men. The furniture is of the mission kind, and the soft leather seat which extends around the room lends the charm of the den. Pictures are arranged artistically on the walls, and toilet rooms with baths are accessible from the main room. A large electric sign hangs in front of the building bearing the words: "Conductors and Motormen's Club Rooms." A pool tournament is being held and the company will give a handsome cue as a prize to the winner.

The promoters of the proposed Tiffin & Fremont Railway recently carried out a rather novel plan of demonstrating to farmers and property owners along the proposed line the advantages resulting from a modern interurban road. They took a large party in a special car over the Lake Shore Electric Railway to Toledo, thence over the Toledo & Western Railway to Pioneer and return. The growth and development of the country districts and towns along these lines were plainly demonstrated.

NOVEMBER MEETING OF THE INDIANA ELECTRIC RAILWAY ASSOCIATION

One of the most important, interesting and enjoyable meetings of the Indiana Electric Railway Association that has yet been held was that of Nov. 9 at Rushville. About sixty members of the association from all parts of the State were present. The selection of Rushville for the November meeting was at the invitation of Charles L. Henry, president of the association and president of the Indianapolis & Cincinnati Traction Company, who entertained the convention.

The party left Indianapolis at 9 a. m. on special trains, each member being provided with a round-trip ticket, including a dinner coupon at the Windsor and Scanlan Hotels. Members of the association have expressed the desire ever since the Rushville division of the line has been placed in operation to inspect it, as it was the first road in the West to operate under the single-phase system. An opportunity for such inspection was afforded the members by this trip over the 40 miles of double track. This road has been fully described in previous issues. En route to Rushville the party visited three transformer stations situated about 12 miles apart. These stations require no attendants, being simply closed buildings. The power station, car shops and general offices at Rushville were all inspected, and there was the most generous praise of the admirable construction from start to finish.

The members were next taken to dinner—thirty dining at the Windsor and thirty at the Scanlan Hotel—as the guests of the Indianapolis & Cincinnati Traction Company.

The meeting of the association was called to order by the president, C. L. Henry, in the Rushville Club rooms. After the reading of the minutes and attending to some routine business, President Henry called for nominations for vice-president to succeed the late John W. Chipman. The name of A. W. Brady, of Anderson, president of the Indiana Union Traction Company, was presented, and Mr. Brady was unanimously chosen. The first paper on the programme was presented by N. E. Graston, superintendent of the freight and express traffic of the Indiana Union Traction Company. Mr. Graston's subject was "Interurban Express and Freight Traffic." He said in part:

INTERURBAN EXPRESS AND FREIGHT TRAFFIC

I will try to give you briefly a few of the most important items, as I see them, that are necessary to have in conducting the freight and express traffic of interurban lines. It is only within the last few years that some managers have come to look on the transportation of freight and express by interurbans with favor, and I think those that have inaugurated this class of service find that it is profitable and does not interfere with their passenger traffic. The freight and express business, as you know, is still in its infancy, yet it has shown that it can be operated at a profit even with a small volume of traffic.

At the present time every company is confining its traffic to its own line. This business could be increased very materially if the traffic managers of the different interurbans would get together and arrange for a system of through rates between their respective lines on the same rate basis as steam lines have between like points. Until this is done we cannot hope to increase our through traffic, as the sum of the two local rates amounts to so much that shippers will not favor us with the business. Every company has a certain amount of fixed charges connected with the operation of the freight and express department, such as salaries of agents, rent of stations, etc. Through traffic could be handled without any noticeable increase in expenses, and at the same time it would bring in quite a nice revenue. We can handle it if we will only organize and get through rates into effect.

Our inability at this time to interchange freight traffic with steam lines is working a great hardship on us all, and I hope the time is not far distant when they can see their way clear to arrange for connections and working arrangements with us whereby we can interchange traffic with them. When we can do this our traffic and revenue will show a nice increase. Until then we will be handicapped, and it is costing us loss of considerable traffic which we should have for local points on our own lines, as well as traffic to points on connecting lines, because heavy shippers of merchandise refuse to give us any business, as their doing so would entail additional expense to them. They claim that they can send all their output to steam lines with one cost of transfer. We should arrange for interchange with all lines as quickly as possible, as I believe this will be best for all concerned.

The traction lines of Indiana were very fortunate in getting their lines so located that they traverse not only the most thickly inhabited portion of the State, but the very best agricultural districts as well, especially adapted for dairy purposes, vegetable raising and fruit growing, and I believe we should give the development of these commodities special attention along our respective lines. No class of traffic is more profitable to traction lines than these commodities. We should assist the farmer in every way possible to find a market for his product, as it will encourage him to increase his shipments, and by so doing we also increase our revenue.

It should at all times be the policy of electric lines to put in good side-track facilities at each station on their lines, and at such other points where the business will justify the expense, as good track facilities is a very important item to the traffic department, since it helps the company to secure business and enables it to take care of the same in a satisfactory manner after it is secured. Then we should have good side-track facilities to enable us to get our trains over the road with the least delays possible, thereby enabling us to keep the operating expense down to a minimum.

Take a walk through the yards of steam lines and you will find that they have the very best facilities to handle their traffic, and we must do likewise if we expect our proportion.

I think the official classification should be adopted on interurban lines as to the mode of classifying freight, but it has some few articles classed other than they should be. One article I call to your attention is household goods. I think they are classified too low for profitable business to interurban lines, and it would be well if the traffic managers of electric lines would get together, go over the classification carefully and get out an exception sheet to those articles named in the official classification which they think are not properly classified for interurban traffic, to be uniform on all lines.

We should at all times hold our rates to the highest possible point and see that our agents apply them properly to get the most revenue out of every shipment. Our rates should be made up on the same basis as steam lines. You will find that the latter are figured on a profitable basis. Before we publish a new rate sheet and have not the figures of steam lines at hand, we take the matter up with the traffic department of lines in the territory for which we are arranging a tariff by asking them for their class rates to and from same points, and in this way we are enabled to get out our tariffs on the same basis and avoid any conflict in rates. To secure our share of the traffic, it is necessary to make the same rates between the same points as the steam lines.

In billing freight we are using a way-bill which consists of four sheets, the original and three copies. This is so folded that forwarding agents make all the copies at one writing by use of carbons. The way-bill shows station from, destination, date, car number, name of consignee, consignor, description of articles, weights, rate and amount of freight. After the forwarding agent makes the way-bill, he delivers the original and one copy to the conductor, who checks his freight to and

from the car with it. When he gets the freight to destination, he delivers the original and copy to the agent. When the agent makes delivery of the freight, he signs the original and delivers it to the consignee with the goods, which is his expense bill, and he has the consignee sign the copy, which he retains for his receipt of delivery. The forwarding agent sends one of the two remaining copies he has to the auditor and keeps the other for his files. You see, the forwarding agent makes the expense bill at the same time that he makes the way-bill.

Each company should be provided with sufficient equipment so that it can handle and move all the business offered to it daily without delay to the traffic, for my experience has taught me that failure to move your traffic promptly diverts it very quickly, and once taken from you it is a very hard matter to regain it. For this reason we should be prepared to move it without delay. To overcome this complaint it is necessary to keep a few extra cars ready for immediate use at all times to care properly for any traffic that might be secured. The cars for use in handling freight should be good, large cars (45 ft. to 50 ft. in length). The motor cars should be equipped so that they could handle trailers without difficulty. Every company should have several good box-car trailers to take care of carload business, in addition to the handling of local traffic. I think there should be as much business handled with trailers as possible, since it serves to keep down the operating expenses.

Too much care cannot be given to the erection of freight stations and platforms. These should be so erected that the floors will be on a level with the floors of the freight cars. This will not only enable trainmen to handle their freight more quickly and carefully, but leaves freight where it will be convenient for transfer men to load on their drays. I find at stations where we are not equipped with high platforms that we are losing considerable traffic. The merchants at these points tell us that they would gladly give us their business if our facilities were equal to those of the steam lines.

We should be very careful in the selection of our agents, especially at our most important stations. They must be good, intelligent, sober and industrious men, as they come in daily contact with the business public in general, and on them depends to a large degree the success of the company in their respective cities. Each representative should put forth every effort to please the transfer men at his station as well as his patrons, as my experience has taught me that the transfer men practically control a very large per cent of the less than carload business in their respective cities, and we should let them know by word and action that anything they do for our company will be appreciated. When this is done you will find them a great help to us in securing local traffic for our lines in their cities.

One of the greatest difficulties that we are experiencing at present is to get our patrons to understand that we are prepared to handle all kinds of freight traffic. Most of them have the idea that we cannot handle any class of freight but small packages.

I think that it is very essential to have a good solicitor to go out to see each merchant and shipper, keep after them for more of their business and bring our line before them. Our competitors have solicitors on the road all the time, and they have special instructions to give the territory paralleled by interurbans their attention first of all. One of these representatives, in conversation with me, stated that he had special instructions to do everything possible to divert business from interurbans. The steam roads are strong rivals, hence it is necessary to have a good man out to keep the territory well canvassed and hold the patrons in line.

To increase the volume of business requires watchfulness, care and solicitation to foster trade and to handle it in a way that is sure to give general satisfaction. Industries must be served to the best advantage. The ideas of shippers, merchants and business community must be given consideration. The business public and a common carrier are of mutual value, and therefore all patrons are entitled to courtesy. The business must be developed, and small shippers should be accorded the same liberal treatment that is given to shippers of large tonnage. It is quite easy to secure business by cut rates or other inducements that mean a loss of revenue to the company, but this must be guarded against at all times. It should be our endeavor to improve the service on our lines and establish a standard for them of quick despatch and careful handling, free from loss and damage—a service that will commend itself to the business public in general, and one that is far superior to any like transportation offered by steam lines. To do this it is necessary that each and every employee should give the handling of the business his careful attention, and know that the same is properly cared for while in his charge.

DISCUSSION

Mr. Graston's paper was well received and elicited a vigorous discussion. A. M. Fletcher, superintendent of the freight department of the Indianapolis & Eastern Traction Company, said that it had brought out some excellent points, especially on that of classifying freight products; that the paper had been of great benefit to him, and that he was now more than ever convinced that the freight traffic men of the interurban lines should get together and agree upon a rate that would be equitable to the shipper as well as profitable to the road. He said it was not fair that household goods, by reason of their bulky nature, should be transported at the same rate as less bulky freight. The paper brought out the necessity for a more commodious equipment if all classes of bulky freight were to be solicited for carriage. He claimed that speedy transportation was a point in favor of the interurban lines. If a merchant is once disappointed in the shipment of goods, it necessitates going back to him and talking very nicely in order to get him to continue to send goods over the same line. He thought that the freight business was becoming more important every day, and in order to cultivate it properly, we must do as much for it as we do for the passenger business.

Frank D. Norveil, of the Indianapolis & Northwestern, said that the freight business was a hobby of his. It is necessary to look beyond the passenger business for an increase of earnings. We are not handling more than 5 per cent of the freight business. It is now largely confined to packages, and it costs as much to handle this almost as it would to handle more bulky freight. Carload lots of freight should be gone after more than has been done in the past. The business is confined too much to vegetables, groceries and a few high-class freight products. Mr. Norveil said that at first they attempted to conduct a freight business from the street, as many other interurban lines had done. They then built freight stations at Crawfordsville and Lebanon and equipped them for business, and from practically nothing they had secured all the freight they can handle with present facilities. There is more business coming to them every day with the increase of population and the industries, and in his judgment the interurban freight traffic is susceptible to cultivation and the companies will have to provide for its growth. We cannot expect the people that pay out their money to feel any better toward the traction lines than they do the steam lines, and especially if it does not cost them any more one way than it does the other. In 1904 the freight cars of Mr. Norveil's company made 8500 miles in October and earned $2,091.30, and in October, 1905, 9000 miles and earned $3,194.74, an increase of 35.5 per cent. Mr. Norveil advocated a freight bureau, freight sheets, etc., and a more uniform system among the interurban lines.

Mr. White, superintendent of the traffic department of the Indianapolis & Martinsville line, said he desired to speak in

reference to the classification of freight as brought out in the paper. Mr. White thought it was difficult to classify such a mixed class of freight as is usually offered to interurban lines. He thought a classification would complicate the business.

Mr. Fletcher said that Greenfield was 21 miles from Indianapolis, and the steam line rate on freight was 15 cents, against 7 cents charged by the interurbans. He thought the difference entirely too great.

Mr. Norveil said that he agreed with Mr. White and Mr. Fletcher that there was no money in a 7-cent rate classification lower than for first-class freight. He thought that interurban lines were not in a position to go into too great a classification. It is a hard proposition to keep the accounts of the business. He thought it inequitable to carry a barrel of sugar on a 10-cent rate and a box of goods, occupying the same space, on a 15-cent rate. He finds it more advisable to take the 16-cent rate and the 9-cent rate and make one classification at 11 cents.

F. M. Fauvre, president of the Indianapolis & Eastern Traction Company, said it was a question that would have to be settled by the heads of departments. He thought it would be well for them to get together. Be careful not to make the mistake made by the steam lines. Take into consideration the facilities and promptness of the service. Even in case where a traction line has all the business of a certain wholesale house because of low rate and prompt service, the rate should not be placed lower than a profitable rate simply to hold the business of the house, nor should it be placed so high as to be a detriment to the shipper.

Mr. Graston, Mr. Norveil, Mr. Nichol, Mr. Henry and others spoke on the subject and cited examples and instances of inequitable classification of rates concerning the freight business as now conducted by the interurban lines. In the matter of express or package business, Mr. Norveil said that his road was taking steps to establish a delivery system in the better class of towns along their line; that their express cars were now averaging from $15 to $25 a day, which would be increased to $40 a day during the holidays. He said he thought it advisable for the interurban lines to take up the subject of establishing a system of delivery of packages in the various cities and towns along their lines.

Mr. Henry said that the author of the paper claimed that he was anxious for the time to come when interurban and steam lines should be compelled to exchange freight business. As for himself, he was in no hurry for it to come. The electric lines have about all they can do at present without exchanging with the steam lines. The electric freight business will grow of itself, and in order that the expense account thereof does not grow out of reason, it would be better to cultivate what opportunities exist rather than enter into a traffic arrangement with the steam line.

Mr. Norveil called attention to the fact that in order to enter into a traffic arrangement with steam lines it would require considerable readjustment of equipment, and he did not think the electric lines were quite ready or willing to take on that additional expense. The discussion closed with a motion that each interurban line appoint a representative from the head of its freight department to form a committee to compile a freight schedule and classification of a scale of prices for the interurban freight business.

The next paper was presented by F. D. Norveil, superintendent of the freight and baggage department of the Indianapolis & Northwestern Traction Company, on the subject: "Shall Baggage Be Carried Free?" On this subject, Mr. Norveil said:

SHALL BAGGAGE BE CARRIED FREE?

The subject of this paper is one that has been discussed informally at almost every meeting of this association, and is one that I believe can better be handled in open discussion than in a lengthy paper that, in the end, is only a theory.

Early in the current year the Northwestern, under the belief that better results and more revenue would be derived by so doing, put into effect a system of free baggage. One hundred and fifty pounds was to be carried free on tickets, the minimum price of which tickets was 25 cents. Excess baggage was to be charged for at the rate of 25 cents per 100 lbs., or fraction thereof, over the 150 lbs. allowed free. This rule, slightly modified, is still in force, but on account of the lack of weighing facilities at most places, we usually check one piece of baggage free and charge 25 cents for each additional trunk or large suit case, depending much on the judgment of the agent or employee doing the work to do justice to the company and be fair with the passenger as well. Acting on the theory that only about 4 per cent to 6 per cent of the passengers carried have baggage that required checking, I have compiled a report of the number of pieces of baggage handled in September and October of 1904, with revenue derived therefrom, and for the same months of the current year:

	Number Pieces	Amount Collected
September, 1904	1,591	$397.75
October, 1904	1,757	439.25
September, 1905	2,534	243.50
October, 1905	2,210	278.00

Taking the month of October, which shows the least odds, having 453 pieces of baggage more than the year previous, and estimating only five passengers to each trunk, we carried 2265 more passengers at an average of 50 cents per passenger, or $1,117.50, as against a loss on baggage of $161.75. We have no means of getting at the exact figures as to the increase in number of passengers carried, but as the general average is about sixteen or twenty to one piece of baggage, it would seem fair to place the increase about five to one; this low per cent I base on the idea that the increase on pieces of baggage does not come from the masses that travel, but from individuals and families who are taking advantage of this free feature, and, all things being equal, travel by electric in preference to steam.

I would here ask your permission to read an extract from the Street Railway Journal, Feb. 4, 1905, page 205, part of an article on interurban baggage, and on pages 271-272, Feb. 11, 1905, part of an editorial, and a paper by F. W. Coen, of the Lake Shore Electric line, read at the meeting of the Ohio Interurban Railway Association, Feb. 11, 1905.

The mere fact that nearly all Ohio roads have adopted free baggage in some form seems to the writer as the best argument that can be advanced in its favor, and I venture an assertion that twelve months hence every electric road in the State will be handling baggage under certain conditions free. Whatever my former ideas were on the subject, I do not now believe that it was ever necessary for interurbans to make the low rates now in effect, and fully believe that, with the ordinary volume of traffic, the interurban, all things being equal, can get more than an even divide as against their steam competitor, but with good train service on the steam lines, their fast time and free baggage accommodations offered, it is business suicide to expect the public to patronize the electric line whose fare is higher and every other accommodation which is free with your competitor be charged for by you. I have heard this remark made: "I would prefer the steam line because the time is faster, seats larger, and one can put his feet on the cushion and rest, and I don't have to pay for my baggage." The more frequent train service on the electric line has its effect, of course, but where the steam road has from four to six trains in each direction daily, the additional service is only a small factor.

The above argument would have no effect with the road not paralleled by a steam road which has met the electric lines'

tariff. We have nearly all adopted free baggage on interline business, and why do not the same reasons hold good for local traffic as well?

We have as yet only a few figures to produce, but they are, to my mind, very conclusive evidence that there is money in free baggage to any company that is up against a competitor who meets it on equal grounds and makes any effort to retain its former local traffic.

DISCUSSION

Mr. Norveil's paper brought out quite an animated discussion upon the general proposition as to whether baggage should be carried free. A. W. Brady said the paper was very interesting to him and treated in a very able manner an important subject. Mr. Henry said it was both an important and a vital question, and that he wished to go on record as not being in favor of carrying baggage free. He referred to the example cited in Ohio, that carried on an average one trunk to every 139 passengers. He said it was not right, in his judgment, to carry the 138 passengers without baggage at the same rate that the 139th passenger is carried, with a large trunk in addition. The companies may be driven to do it, but it is not right. It is not right, because the baggage of the one man takes more time and expense than for all the others. The kind of passengers that walk on and off the cars with no baggage to handle by the employees are the most profitable. He said he had as much respect for traveling men as he ought to have. But they were somewhat exacting and hard to please and not entitled to any more consideration than other passengers, and there was no good reason that their accompanying baggage should be carried free.

Mr. Norveil said that while he did not believe it right to carry baggage free, nevertheless he attributed the increase of business on the Indianapolis & Northwestern line to the free handling of baggage. He said he thought that, as a rule, at least three passengers followed each piece of baggage handled. He cited a case of Mrs. Jones, who telephoned him for the passenger rate to Lafayette. When advised, she asked if her trunk would be carried free. When told that it would cost her 25 cents, she replied that she would go on the steam line, where her trunk would be carried free. She said she would prefer to go on the interurban line, because Mrs. Smith and Mrs. Brown and several children were to accompany her. He said that he quickly volunteered to carry Mrs. Jones' trunk free, and secured nine passengers by so doing.

Mr. Brady said he was not an advocate of handling baggage free; that his system had all the baggage now that it can take care of, and he thought it poor business to increase the amount of baggage and decrease the receipts by an increase of the expenses required to handle free baggage. He said his system was now carrying about 5000 trunks a month, and the revenue derived was worth something, and that no line should carry baggage free unless compelled to do so by reason of competition or otherwise. He said traveling men never complain of paying a reasonable price for the transportation of their heavy baggage.

Mr. Norveil thought that the best thing for electric lines to do is to increase their fare to 2 cents a mile and then carry baggage free. This would enable them to compete successfully with steam lines when compelled to carry baggage free.

A new and important feature of the programme was that of the question box. Unfortunately, the hour for adjournment was at hand and the questions submitted could not be discussed. Mr. White, the secretary of the association, said the questions found in the question box were interesting and important, and asked that they be turned over to him to be included among the subjects treated in the next programme.

Mr. Brady thanked the association for honoring him with the vice-presidency of the association, and promised to do whatever he could to make the meetings a success and the association profitable to all its members.

A vote of thanks was unanimously tendered to Mr. Henry for the liberal and courteous manner in which he had entertained the members of the association, and also to the citizens of Rushville for their generosity and kind treatment.

The return trip to the city was made at the rate of 40 m.p.h., and all agreed that the meeting and the trip had been interesting and enjoyable.

POWER STATION FIGURES FROM THE TOLEDO, BOWLING GREEN & SOUTHERN RAILWAY COMPANY

In the Aug. 12 issue of the STREET RAILWAY JOURNAL an extended account was published of the system and new power station of the Toledo, Bowling Green & Southern Traction Company. The station was put under steam July 20, 1905, and the figures on cost of production are interesting. The station supplies current to the Findlay Street Railway, the Toledo, Bowling Green & Southern Railway Company and the Hancock Light & Power Company, of Findlay. It also supplies hot water from its condensers for public heating.

The total switchboard output for October, 1905, was 575,000 kw-hours. The figures on cost follow:

Coal consumed 1215 tons, at $1.45 (Hocking Valley N. & S. coal)		$1,761.75
Oil—Cylinder, 70 gals., at 57 cents		39.90
Oil—Engine, 110 gals., at 23 cents		25.30
Oil—Grease		4.50
Waste		9.30
City water at 7 cents per M gals		81.30
Repairs (material)		26.75
Miscellaneous supplies		11.50
		$1,960.30
LABOR		
One engineer	$110	
Two engineers—$65	130	
Two oilers and switchboard—$55	110	
Two firemen—$50	100	
Two general help—$50	100	
	$550	
General supervision	150	
	$700	700.00
Total station costs		$2,660.30
Sub-stations—Labor		110.00
Total distribution cost		$2,770.30

$$\text{Cost of power per kw-hour} = \frac{2{,}770.30}{575{,}000} = .0048$$

Cost of fuel per kw-hour = .0030

In 1903 the company's power cost with a much smaller service was in excess of $80,000, so that on its present showing the new power station and its distribution will show a net saving of nearly $50,000 per annum.

Mention of the fact has been made that the Toledo Urban & Interurban Company supplies hot-water heat to customers in Findlay. The revenue from this source pays more than one-half the entire station fuel bill.

Mr. Darrow, the constructing engineer, has also recently built a plant for the Cincinnati & Columbus Traction Company along similar lines, which is doing equally as well. He has also built three other plants during the past few years. They are producing current at the switchboard for $.0075 per kw-hour, or less, although they are all of medium size.

The Havana Central Railway, of which G. F. Greenwood is the general manager, has just secured the concession for an electric railway from Guines to Cienfuegos and from Guines to Batabano.

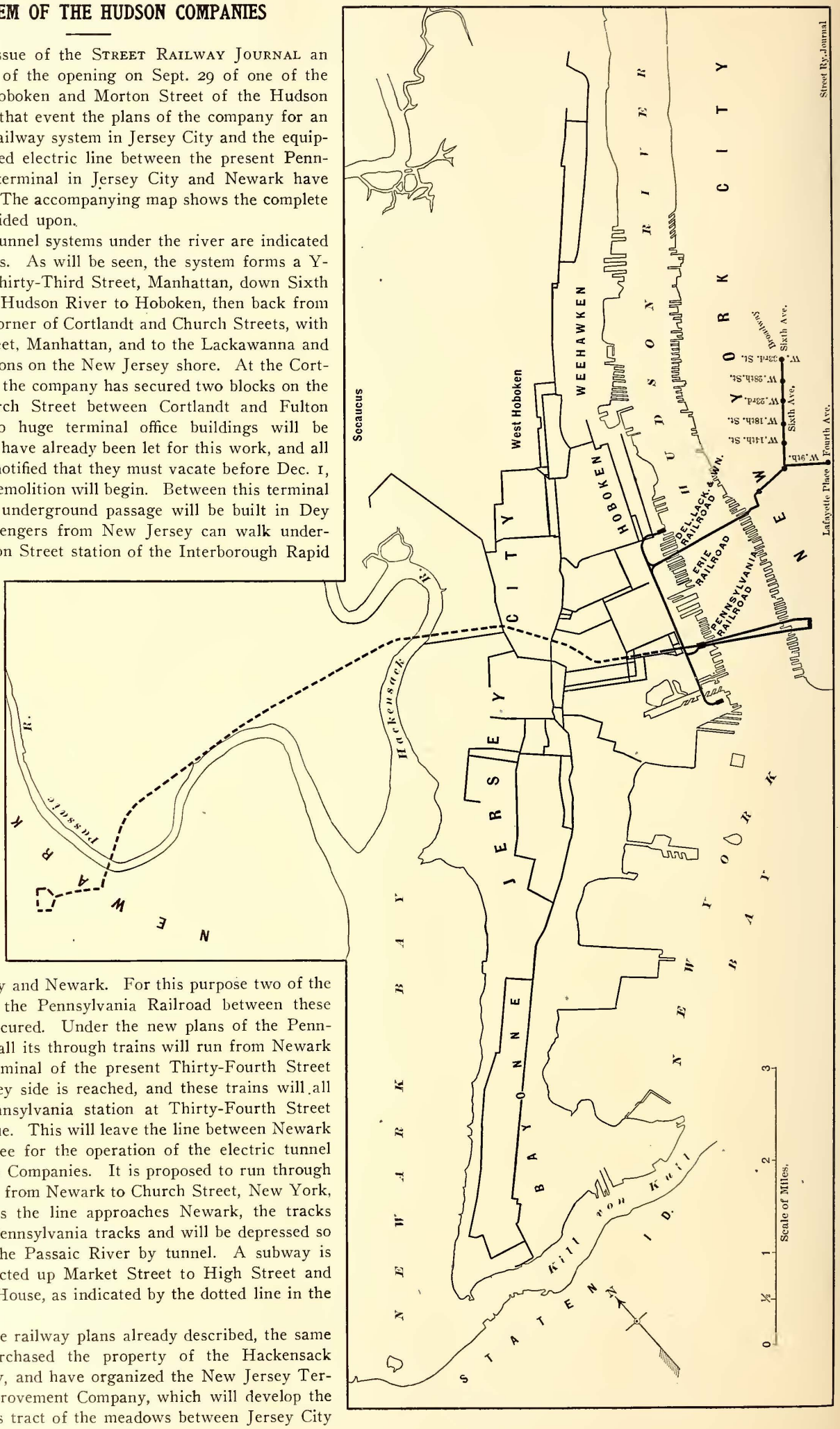
THE SYSTEM OF THE HUDSON COMPANIES

In the Oct. 14 issue of the Street Railway Journal an account was given of the opening on Sept. 29 of one of the tunnels between Hoboken and Morton Street of the Hudson Companies. Since that event the plans of the company for an extensive surface railway system in Jersey City and the equipment of a high-speed electric line between the present Pennsylvania Railroad terminal in Jersey City and Newark have been made public. The accompanying map shows the complete system as now decided upon.

In this map the tunnel systems under the river are indicated by heavy black lines. As will be seen, the system forms a Y-shaped line from Thirty-Third Street, Manhattan, down Sixth Avenue, across the Hudson River to Hoboken, then back from Jersey City to the corner of Cortlandt and Church Streets, with spurs on Ninth Street, Manhattan, and to the Lackawanna and Jersey Central stations on the New Jersey shore. At the Cortlandt Street station the company has secured two blocks on the west side of Church Street between Cortlandt and Fulton Streets, where two huge terminal office buildings will be erected. Contracts have already been let for this work, and all tenants have been notified that they must vacate before Dec. 1, when the work of demolition will begin. Between this terminal and Broadway, an underground passage will be built in Dey Street so that passengers from New Jersey can walk underground to the Fulton Street station of the Interborough Rapid Transit Company. The stations for the subway in New York on Sixth Avenue will all be located underneath the stations of the elevated railway.

In addition to the surface system in Hudson County, which is shown by light lines on the map, and which comprises 52 miles of track, the company will equip a high-speed line between Jersey City and Newark. For this purpose two of the existing tracks of the Pennsylvania Railroad between these cities have been secured. Under the new plans of the Pennsylvania Railroad, all its through trains will run from Newark north until the terminal of the present Thirty-Fourth Street tunnel on the Jersey side is reached, and these trains will all enter the new Pennsylvania station at Thirty-Fourth Street and Seventh Avenue. This will leave the line between Newark and Jersey City free for the operation of the electric tunnel cars of the Hudson Companies. It is proposed to run through trains by this route from Newark to Church Street, New York, in 20 minutes. As the line approaches Newark, the tracks diverge from the Pennsylvania tracks and will be depressed so as to pass under the Passaic River by tunnel. A subway is then to be constructed up Market Street to High Street and around the Court House, as indicated by the dotted line in the map.

In addition to the railway plans already described, the same interests have purchased the property of the Hackensack Meadows Company, and have organized the New Jersey Terminal Dock & Improvement Company, which will develop the now largely useless tract of the meadows between Jersey City



and Newark. Here the company is planning to build a large power station to supply current to all of its railway system.

The company which is building the four tunnels is the Hudson Companies, a New York corporation with a capital of $16,000,000 preferred and $5,000,000 common. After the tunnels are completed they will be operated by the following companies:

The Hudson & Manhattan Railroad Company will operate the tunnels in New York State between the center of the river and Church Street. The Hudson & Manhattan Railway Company will operate the tunnels from the center of the river in New Jersey to the Erie Railroad station. The Hoboken & Manhattan Railway Company will operate the tunnels from the Erie station to the Delaware, Lackawanna & Western station and to the center of the river at the foot of Fifteenth Street, Jersey City. The New York & Jersey Railroad Company will operate the tunnels from the center of the river up to Thirty-Third Street, New York, and Astor Place, New York. The Hudson Street Railroad Company is the company which will build and operate the street railway system in Hudson County.

It is expected that the subway in New York and the tunnel lines will be ready for operation on Jan. 1, 1907, and that the trolley system in Jersey City and Hoboken will be completed within the following year.

As already announced, the consulting electrical engineer in charge of this work is L. B. Stillwell, who is being assisted by Hugh Hazleton.

AN EFFECTIVE STOP-GATE USED BY THE ROCKLAND, THOMASTON & CAMDEN STREET RAILWAY COMPANY

The Rockland, Thomaston & Camden Street Railway Company, of Rockland, Maine, has recently installed at steam railroad crossings on its line an electric railway stop-gate, invented by Valentin Chisholm, the superintendent of this company. This stop-gate takes the place of the derailing switch at steam

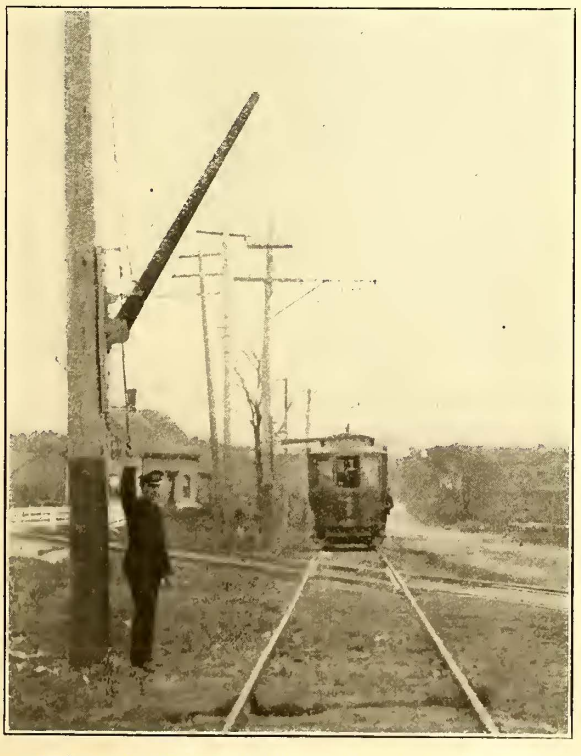


FIG. 1.—CONDUCTOR RAISING THE STOP-GATE

railroad crossings, which is not a success where there is much ice and snow. The application of this device is well shown in the two accompanying illustrations.

Fig. 1 shows the conductor in position to raise the gate in front of the car. In order to do this, he pulls downward on a spring bar, which action raises the gate. The conductor continues to hold the gate in this position until the car has crossed the track and cleared the gate under which he is standing. He then releases the spring rod, which releases and drops the gate under which he stands, leaving it in position to stop any car

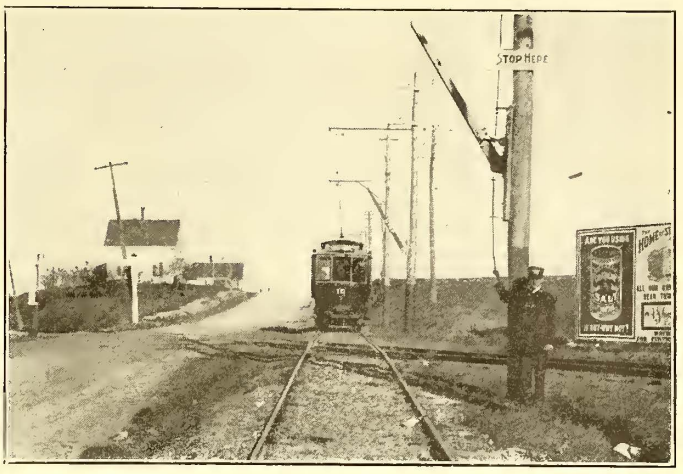


FIG. 2.—CONDUCTOR HOLDING THE STOP-GATE UP

going in the opposite direction. Fig. 2 shows the gate raised. The conductor keeps the gate in this position until the car has crossed.

The company has found that these gates will absolutely prevent a car from running over a steam railroad crossing until the conductor first has crossed the track and seen that it is clear to let his car cross.

GRAND RAPIDS, HOLLAND & CHICAGO RAILWAY RAISES FARES AND DROPS MILEAGE SYSTEM

The Grand Rapids, Holland & Chicago Railway has raised its rates of fare and will not issue mileage books. The Ohio interchangeable mileage books will also be withdrawn. The new schedule does away with fares of odd amounts and makes all multiples of five. The company gives as a reason for the change of rates that the extra work required in making change under the old system and the issuing of receipts so overburdened the conductors that they were unable to attend to their other duties properly. Tickets may be purchased at the company's offices, however, at the old rates. All fares collected on the cars will be registered.

NEW SCHEDULE ON BOSTON & WORCESTER

The Boston & Worcester Street Railway has just issued a winter schedule, made up on the same lines as those of steam roads, and containing the time of arrival and departure of all east and westbound cars at the various points reached by its lines. It also has a time schedule of the Hudson, Marlboro & Southboro branches, as well as distances, fares and running time between points on the line. On pleasant Saturday afternoons, Sundays and holidays throughout the winter a 15-minute service will be maintained from Chestnut Hill, Brookline, west to South Framingham and Worcester. During the rush hours extras will always be sent out from Chestnut Hill.

The Toledo, Bowling Green & Southern Traction Company has inaugurated limited service between Toledo and Findlay. It will have three special cars each way daily, making the 50 miles in 1 hour and 50 minutes, as compared with 2 hours and 30 minutes for regular local cars. This was made possible by the opening of the new power station, which was described in a recent issue of the STREET RAILWAY JOURNAL.

REPORT ON PROBABLE GROSS EARNINGS AND DIVISION OF PROFITS BETWEEN THE CHICAGO STREET RAILWAY COMPANIES AND THE CITY OF CHICAGO

The following report on the probable gross earnings and division of profits between the Chicago street railway companies and the city of Chicago has just been submitted to the committee on local transportation of the Chicago City Council by Bion J. Arnold. Mr. Arnold is the expert of the committee on local transportation of the City Council of the city of Chicago, which consists of Charles Werno, chairman; Robert R. McCormick, William E. Dever, Nicholas R. Finn, Thomas Carey, Michael Zimmer, William T. Maypole, Walter J. Raymer, John J. Bradley, Milton J. Foreman, Frank I. Bennett, Thomas M. Hunter and Linn H. Young.

REPORT

Chicago, Nov. 8, 1905.

Gentlemen.—Complying with your request to confer with the engineers of the traction companies and submit for your consideration a report showing the probable earnings, from 1906 to 1925, both inclusive, of the Chicago City Railway Company, the North Chicago Street Railroad Company and the West Chicago Street Railroad Company, the two latter comprised in the Chicago Union Traction Company, together with statements and analyses thereof, showing the financial plan upon which the companies base their offer of compensation to the city in the ordinance now pending before you, I have the honor to submit the following:

In arriving at the conclusions herein contained, many conferences between the companies' engineers and myself have been held, with the result that the following premises have been agreed to and accepted by all:

1. That curve "L," plate 14, of the Arnold report of 1902,* represents the probable gross earnings of all the surface and elevated railways of Chicago during the above-mentioned period.

2. That operating expenses, including maintenance, may fairly be taken at 60 per cent of the gross earnings during the same period.

3. That the valuation of the physical property of the companies as given in column "B" of the Arnold report of 1902 are fairly made and accepted for present valuations after making due allowances for additions and depreciation since the values in that report were determined.

4. That the cost of rehabilitating the property of the Chicago City Railway Company was fairly stated in my letter of June 25, 1903, to the transportation committee, and that the amount therein stated of $16,560,077 shall now be taken, assuming that the amount of underground conduit construction therein specified will be built within five years from date; also that $10,000,000 additional will be expended by the company for extensions and additional equipment between 1911 and 1925.

5. That the average depreciation of all physical property of the companies after rehabilitation will be 5 per cent per annum.

6. That the interest rate on new money for rehabilitation purposes may be fairly taken at 5 per cent per annum.

Assuming these premises to be correct, and applying them to the property of the Chicago City Railway Company, we have the following analysis:

CHICAGO CITY RAILWAY COMPANY

ANALYSIS OF INCOME AND EXPENDITURES FROM JAN. 1, 1906, TO DEC. 31, 1925

Gross Earnings—		
As derived from Curve "L," Plate 14, of Arnold Report, November, 1902..	$240,111,000	
Operating Expenses—		
Including maintenance, but not renewals, 60 per cent of gross earnings....	144,067,000	
Net earnings, 40 per cent gross earnings		$96,044,000
Deduct Depreciation Renewals—		
Based upon an annual depreciation of 5 per cent, and the assumption that 4 per cent of the value of the physical property (after rehabilitation), part of which is spent as renewals as required, and the balance put aside each year and compounded, will amount to 100 per cent, or the value of the physical property, at the end of the depreciation period:		
Previous valuation of Nov. 1, 1902, as given on page 204 of Arnold Report of 1902	11,747,818	
Reconstruction and equipment added since Nov. 1, 1902	3,282,314	
Total	$15,030,132	
To determine the physical value of the property on Nov. 1, 1905, deduct depreciation for the three-year period from Nov. 1, 1902, as follows:		
Valuation of 1902	$11,747,818	
Less value of land	628,059	
	$11,119,759	
$11,119,759, at 5 per cent per annum for three years	$1,667,963	
Installed during 1902, $471,135, at 5 per cent per annum for three years	70,670	
Installed during 1903, $893,539, at 5 per cent per annum for two years	89,354	
Installed during 1904, $198,279, at 5 per cent per annum for one year	9,914	
Installed during 1905, $1,719,361. (No depreciation		
		$1,837,901
Total value of physical property, Nov. 1, 1905		$13,192,231
Cost of reconstruction as per Arnold estimate of June 23, 1903, accompany tentative ordinance, submitted Nov. 14, 1903 (copy hereto attached)		16,560,077
Estimated cost of additional equipment and extensions needed during fifteen years from end of construction period, or from Jan. 1, 1911, to Dec. 31, 1925, amounting to $10,000,000, or an average of $666,667 per year. The cost of the renewals on the additional investment of $10,000,000, at 4 per cent for a period of fifteen years, equals $3,200,000. This amount distributed over twenty years is equivalent to an annual renewal cost of $160,000, which is equal to 4 per cent on		4,000,000
		$33,752,308
4 per cent on $33,752,308 equals $1,350,050, this being the average renewal costs for one year; 80 per cent of $33,752,308, equals the total renewal cost for the twenty years		$27,001,000
Net earnings, less renewals		$69,043,000
Deductions—		
Taxes on real and personal property, not including capital stock or franchise tax, estimated for twenty years at an average of 3 per cent of gross earnings (present tax 2 per cent of gross earnings, with physical property of the value of $13,192,231)	$7,203,000	
Interest on cost of reconstruction, 5 per cent for seventeen years on $16,560,077	14,076,000	
Interest on $10,000,000, cost of additional equipment and extensions expended from Jan. 1, 1911, to December 31, 1925, at an average of $666,667 per year, at 5 per cent	4,000,000	

See STREET RAILWAY JOURNAL for January 17, 1903, page 117.

Sinking fund payments to provide for extinguishment by 1925 of value of present franchise and ordinance rights, which is the difference between present total value of the property and the present physical value of $13,192,231. The company claims the present total value to be the market value of its stock at time control was purchased by present owners, plus its then indebtedness, or approximately, $38,000,000. On this basis the present franchise value would be $24,807,769, or, approximately, $25,000,000, which would require for twenty years an annual payment to a sinking fund, compounding annually at 5 per cent, of $750,000, or a total for the twenty-year period of.....		15,005,000
Dividends on present total value of property as claimed by the company at 1.437 per cent for twenty years on $38,000,000, would be.....		10,923,000
Compensation to city of Chicago as proposed by the company:		
3 per cent for three years on $24,165,000 of gross earnings	$725,000	
5 per cent for two years on $18,090,000 of gross earnings	904,000	
7 per cent for ten years on $119,286,000 of gross earnings	8,350,000	
10 per cent for five years on $78,570,000 of gross earnings	7,857,000	17,836,000
Average, 7.428 per cent for twenty years on $240,111,000		$69,043,000
Total deductions		$69,043,000
Balance.....		nil

SUMMARY

From the above it will be seen that the company, on the basis set forth, would earn a sufficient amount during the twenty-year period to retire its present assumed franchise value of $25,000,000, and in addition pay an annual dividend of 1.437 per cent on the combined value of this franchise and the value of the present physical property.

If it be assumed that the above franchise value is correct and that the rates of compensation to the city are fixed as above, and that the amounts above stipulated to be put into the property are put into the property, it will be seen that there are but three ways in which the above dividend of 1.437 per cent per annum can be increased, namely:

1. By the increase of the gross earnings;
2. By decreasing the operating expenses;
3. By borrowing reconstruction, extension and new equipment money at a lower rate than 5 per cent.

For each 1 per cent of decrease in operating expenses, the above interest rate on a valuation of the total property of $38,000,000 would be increased by 0.31593 per cent. To produce an annual income of 4 per cent on the $38,000,000 would necessitate operating for 51.8375 per cent of the gross receipts, a figure not probably attainable.

By borrowing reconstruction, extension and new equipment money at 4 per cent instead of 5 per cent, the annual dividend rate on the $38,000,000 would be increased by 0.4757 per cent, or from 1.437 per cent to 1.9127 per cent.

On the other hand, if the company should fail to realize 5 per cent on its sinking fund payments, then for each successive 1 per cent decrease below 5 per cent, the annual dividend rate on the $38,000,000 would decrease by 0.21799 per cent, 0.2372 per cent and 0.2573 per cent, respectively; if 4 per cent only were realized on the sinking fund payments instead of the 5 per cent taken in the above statement, the annual dividend rate would be decreased by 0.21799 per cent, or from 1.437 per cent to 1.219 per cent; if 3 per cent only were realized, the annual dividend rate would be further decreased by 0.2372 per cent, or to 0.9818 per cent.

If the gross earnings of $240,111,000 for the twenty-year period should not be realized and the operating expenses remained at 60 per cent, then for each 1 per cent those earnings fell below the $240,111,000, the annual dividend rate on the $38,000,000 would fall by 0.126 per cent. A decrease of 11.4 per cent in the gross earnings—that is, a decrease from $240,111,000 to $212,738,000—would reduce this dividend rate to zero.

TOTAL REVENUE REALIZED BY THE PUBLIC FROM THE CHICAGO CITY RAILWAY COMPANY

Those parts of the expenditures in the above statement, composing a direct return by the company to the public in cash or its equivalent, during the twenty years covered by the proposed ordinance, are as follows:

1. Taxes, not including capital stock tax, 3 per cent of gross earnings	$7,203,000
2. Compensation to city of Chicago, 0.7428 per cent of gross earnings	17,836,000
3. Street sprinkling, street cleaning, track elevation and viaducts (these items amounted in the years 1895 to 1904 to $622,856, or 1.1 per cent of gross earnings for that period) 1.1 per cent of gross earnings....	2,641,000
4. Paving and renewals of paving included in reconstruction and renewals (these items amounted in the years 1895 to 1904 to $1,622,950, or 2.9 per cent of the gross earnings for that period), 2.9 per cent of gross earnings.....	6,963,000
Total direct revenue to public, 14.428 per cent of gross earnings	$34,643,000

If the above assumed franchise value of $25,000,000 be reduced, then for each million reduction the amount of annual sinking fund necessary to retire the franchise value will be reduced by $30,242, and this sum applied to the dividend earnings on the new total value of the property would increase the annual dividend to the rates shown in Table I., which are obtained by adding $30,242 for each million deducted, to the original annual dividend of $546,150 and dividing the sum by the original valuation of $38,000,000, less the number of dollars deducted from the original assumed franchise value of $25,000,000. The resulting annual dividend rates would be as follows:

TABLE I.

Franchise Value	Corresponding Value of Entire Property	Resulting Annual Dividend Rate, %
$25,000,000	$38,000,000	1.437
24,000,000	37,000,000	1.557
23,000,000	36,000,000	1.685
22,000,000	35,000,000	1.819
21,000,000	34,000,000	1.962
20,000,000	33,000,000	2.113
19,000,000	32,000,000	2.274
18,000,000	31,000,000	2.444
17,000,000	30,000,000	2.627
16,000,000	29,000,000	2.822
15,000,000	28,000,000	3.030
14,000,000	27,000,000	3.255
13,000,000	26,000,000	3.496
12,000,000	25,000,000	3.757
11,000,000	24,000,000	4.040
10,000,000	23,000,000	4.347
9,000,000	22,000,000	4.682
8,000,000	21,000,000	5.049
7,000,000	20,000,000	5.452
6,000,000	19,000,000	5.898
5,000,000	18,000,000	6.394
4,000,000	17,000,000	6.948
3,000,000	16,000,000	7.571
2,000,000	15,000,000	8.278
1,000,000	14,000,000	9.085
nil	13,000,000	10.016

TABLE II.

Year	Total Gross Receipts of all Surface and Elevated Railroads of Chicago Taken from Curve "L"	Curve "V" Gross Receipts C. C. Ry. Co. 27% of Curve "L"	Curve "W" Gross Receipts W.C.S.R.R.Co. 22.23% of Curve "L"	Curve "X" Gross Receipts N.C.S.R.R.Co. 12.24% of Curve "L"
1906 ...	$28,500,000	$7,695,000	$6,342,000	$3,490,000
1907 ...	29,800,000	8,046,000	6,631,000	3,650,000
1908 ...	31,200,000	8,424,000	6,943,000	3,821,000
1909 ...	32,700,000	8,829,000	7,277,000	4,005,000
1910 ...	34,300,000	9,261,000	7,633,000	4,201,000
1911 ...	36,000,000	9,720,000	8,011,000	4,409,000
1912 ...	37,800,000	10,260,000	8,411,000	4,630,000
1913 ...	39,600,000	10,692,000	8,812,000	4,850,000
1914 ...	41,400,000	11,178,000	9,213,000	5,070,000
1915 ...	43,200,000	11,664,000	9,613,000	5,291,000
1916 ...	45,000,000	12,150,000	10,014,000	5,511,000
1917 ...	46,800,000	12,635,000	10,414,000	5,732,000
1918 ...	48,700,000	13,149,000	10,837,000	5,965,000
1919 ...	50,600,000	13,662,000	11,260,000	6,197,000
1920 ...	52,500,000	14,175,000	11,682,000	6,430,000
1921 ...	54,400,000	14,688,000	12,105,000	6,663,000
1922 ...	56,300,000	15,201,000	12,528,000	6,896,000
1923 ...	58,200,000	15,714,000	12,951,000	7,128,000
1924 ...	60,100,000	16,227,000	13,373,000	7,361,000
1925 ...	62,000,000	16,740,000	13,797,000	7,593,000
Totals .	$869,100,000	$240,111,000	$197,847,000	$108,893,000

Owing to the large amount of detail work required to check the estimates given me by the companies on the cost of rehabilitating the properties of the North Chicago and West Chicago Street Railroad companies, it has been impossible for me to prepart complete statements regarding them in the limited time that has elapsed since being requested by you to report upon this subject. I am able to fully report upon the Chicago City Railway because of the fact that the cost of rehabilitating its property was established by me two years ago when the first tentative ordinance was under consideration.

Since it is not probable that a close analysis of the properties of the North and West Side companies, comprised in the Union Traction Company, would show a more favorable condition, and as these companies offer to pay to the city the same rate of compensation offered by the Chicago City Railway Company, in case franchises are granted, it would not seem necessary to prepare fuller detailed statements unless other questions arise.

In order, however, to show the total gross receipts the companies will probably earn and the resulting revenue to the city therefrom, I have prepared "plate 16," showing gross passenger earnings of all the roads, and Table II. shows the results obtained by reading the curves on the plate. From Table II. has been deduced the results shown in Table III. The results of the analysis of the properties of the Chicago City Railway Company are shown in Table IV.

TABLE III.

Year	Total Yearly Gross Receipts C. C. Ry. Co. N. C. S. R. R. Co. W. C. S. R. R. Co.	Per Cent. Gross Receipts to City	Yearly Compensation to City Including Franchise Tax and License Fees Mentioned in Ordinance	Amount of Compensation to City at end of any Year if Yearly Compensation is Paid into a Fund and Compounded Annually at 4%
1906....	$17,527,000	3	$525,810	$525,810
1907....	18,327,000	3	549,810	1,096,652
1908....	19,188,000	3	575,640	1,716,158
1909....	20,111,000	5	1,005,550	2,790,354
1910....	21,095,000	5	1,054,750	3,956,718
1911....	22,140,000	7	1,549,800	5,664,787
1912....	23,301,000	7	1,631,070	7,522,448
1913....	24,354,000	7	1,704,780	9,528,126
1914....	26,461,000	7	1,782,270	11,691,521
1915....	26,675,000	7	1,859,760	14,018,942
1916....	27,675,000	7	1,937,250	16,516,950
1917....	28,782,000	7	2,014,740	19,192,368
1918....	29,951,000	7	2,096,570	22,056,633
1919....	31,119,000	7	2,178,330	25,117,228
1920....	32,287,000	7	2,260,090	28,382,007
1921....	33,456,000	10	3,345,600	32,862,887
1922....	34,625,000	10	3,462,500	37,639,903
1923....	35,793,000	10	3,579,300	42,724,799
1924....	36,961,000	10	3,696,100	48,129,891
1925....	36,130,000	10	3,813,000	53,868,087
Total..	$546,851,000	Av. 7.428%	$40,622,720	

The last column shows the amounts of money which the city will derive from the railway properties, provided the assumed gross earnings are realized, and the money is applied to a sinking fund and compounded annually at 4 per cent. This money could be applied at any time to the purchase of the railway properties.

I desire to call attention to the fact that I do not understand it to be a part of my duty to express an opinion upon the correctness or incorrectness of the assumed franchise value or rates of compensation to the city given in this report, for it has been necessary for me to assume these, as stated, as conditions precedent to my analysis. I have, however, endeavored to discuss the effect upon the results in case other assumed quantities which I have been instrumental in establishing should vary, and also to show how a reduction in franchise value would affect them.

In concluding, I also wish to direct your attention to the necessity of formulating, before final conclusions are reached, some practicable plan for insuring the city that whatever amount of money is finally agreed upon, to be put into properties for rehabilitation and renewals by the companies, will actually be expended upon the properties in the manner agreed upon, in order to insure the quality of service and maintain the properties at the high standard of efficiency which it is assumed such investment will give.

COPY OF LETTER ACCOMPANYING TENTATIVE ORDINANCE SUBMITTED BY SUB-COMMITTEE NOV. 14, 1903

Chicago, June 25, 1903.

Frank I. Bennett, Esq., Chairman, Committee on Local Transportation, Chicago City Council, Chicago.

Dear Sir.—Answering the question asked by your committee this morning of me relating to the comparative costs submitted by the Chicago City Railway Company for the reconstruction of certain portions of its lines, to comply, as far as quality of construction is concerned, with the general recommendations made in my report submitted to you Nov. 19, 1902, I reply as follows:

The basis outlined by you for the comparison of figures was that the tracks of the Chicago City Railway Company would be equipped with underground conduit construction on the following streets:

1. Double track on Clark Street from Twelfth Street north to Madison Street; then single-track construction north on Clark Street to Washington Street; thence east on Washington Street to State Street; south on State Street to Madison Street; thence west on Madison Street to Clark Street, where it joins the double-track construction. This total is equivalent to 2.45 miles of single track.

2. Double-track construction on State Street from Twenty-Second Street to Madison Street; then single track north to Lake Street; thence east on Lake to Wabash Avenue; thence south on Wabash Avenue to Madison Street; thence west on Madison Street to State Street, where it joins the double track previously mentioned, consisting of the equivalent of 4.73 miles of single track.

3. Double-track construction on Wabash Avenue from Twenty-Second Street north to Madison Street; thence single track north on Wabash Avenue to Randolph Street; thence east on Randolph Street to Michigan Avenue; thence south on Michigan Avenue to Madison Street; thence west on Madison Street to Wabash Avenue, where it joins the double track previously mentioned, consisting of the equivalent of 4.58 miles of single track.

It will be noticed that this practically makes double-track construction between Madison Street and Randolph Street on Wabash Avenue, and between Madison Street and Washington Street on State Street, owing to the tracks of the various loop systems paralleling each other on these streets, and that the total underground conduit work amounts to 11.76 miles.

I understand that you desire to know what the total cost

would be to the Chicago City Railway Company to reconstruct and improve its present system to such an extent that it would comply with the character of construction stipulated in my report, so that the lines thus equipped would be capable of giving the quality of service called for by my report, so far as such service could be given on the above described lines, when not operated as a part of a combined or unified system as originally outlined by me.

In order to arrive at this figure I have made a careful comparison of figures submitted to me by the Chicago City Railway's engineers and my own, and submit them herewith, as follows, in parallel columns:

ESTIMATE OF CHICAGO CITY RAILROAD

Track—	C. C.	B. J. A.
11.76 miles underground single-track construction—		
$113,416. C. C.	$1,333,701.60	
$100,000. B. J. A. estimate J*		$1,176,000.00
11.76 miles paving at $18,400, as per estimate H	216,384.00	210,384.00
24.96 miles of single-track cable track to be rebuilt as electric track, and paved with dressed granite, as per estimate I,* at $42,365.01	1,057,430.55	1,057,430.55
12.48 miles of double-track overhead construction at $8,100 for above, as per estimate G*	101,088.37	101,088.37
1.5 miles of single track (¾ mile of double track) on Clark Street, from Archer Avenue to Twelfth Street, to be rebuilt and paved at once, at $42,365.01	63,547.51	63,547.51
Total track	$2,722,152.03	$2,614,450.43
Power House—		
40,000 kw at $110	$4,440,000.00	$4,440,000.00
Power house site	135,585.00	135,585.00
Sub-station—		
80,000 kw at $40	3,200,000.00	3,200,000.00
Sub-station sites	125,000.00	25,000.00
Feeders and Conduits—		
210 miles at $9,524. C. C.	2,000,000.00	
210 miles at $5,500. B. J. A.		1,155,000.00
Total power house, etc.	$9,900,585.00	$8,955,585.00
Car Shops and Machinery—		
Including sites	$450,000.00	$458,245.00
Car houses and sites	750,000.00	960,000.00
Office building	160,000.00	133,333.00
Total buildings, etc.	$1,360,000.00	$1,551,578.00
Cars—		
682 47-ft. double-truck 4-motor cars, complete, at $6,000	4,009,200.00	4,009,200.00
Other rolling stock, snow plows and sweepers	150,000.00	171,600.00
	$4,159,200.00	$4,180,800.00

From the above figures should be deducted the market value of the obsolete property which the company could sell or dispose of, as follows:

From sale of old cable track material—		
9.31 miles single track in conduit district at $3,000 per mile per estimate J of original report	$27,300.00	
24.96 miles of single track outside of conduit district at $3,000 per mile, per estimate J	74,880.00	
2.45 miles of old rail to be taken up on Clark Street between Twelfth Street and Archer Avenue—200 tons at $11 per ton	2,200.00	
		$104,380.00
From utilization of old cable plants and sale of machinery and equipment now contained therein, as per valuation estimate No. 1, original report—		

* These estimates were in the original report. See STREET RAILWAY JOURNAL, Jan. 21, 1903.

TABLE IV.—SPECIAL ANALYSIS COVERING THE PROPOSITION OF THE CHICAGO CITY RAILWAY COMPANY

(Col. 1) YEAR	(Col. 2) Yearly Gross Receipts Chicago City Ry. Co.	(Col. 3) Per Cent Gross Receipts to City	DISTRIBUTION OF YEARLY EXPENSE (Col. 4) Operating Expense including Maintenance, but not Taxes, Depreciation or Renewals—60%	(Col. 5) Depreciation put into Property or Paid into Fund.	(Col. 6) Taxes on Real and Personal Property, not Including Corporation or Franchise Tax.	(Col. 7) Total Expenses (Cols. 4+5+6)	(Col. 8) Net Balance (Col. 2—Col. 7)	(Col. 9) Compensation to City including Franchise Tax and License Fees Mentioned in Ordinance.	(Col. 10) Balance to Company for Interest on Present Physica Value and Cost of Reconstruction, Extension and Additional Equipment (Col. 8—Col. 9)
1906....	$7,695,000	3	$4,617,000	$1,190,092	$230,850	$6,037,942	$1,657,058	$230,850	$1,426,208
1907....	8,046,000	3	4,827,600	1,190,092	241,380	6,259,072	1,786,928	241,380	1,545,548
1908....	8,424,000	3	5,054,400	1,190,093	252,720	6,497,213	1,926,787	252,720	1,674,067
1909....	8,829,000	5	5,297,400	1,190,092	264,870	6,752,362	2,076,638	441,450	1,635,188
1910....	9,261,000	5	5,556,600	1,190,092	277,830	7,024,522	2,236,478	463,050	1,773,428
1911....	9,720,000	7	5,832,000	1,216,759	291,600	7,340,359	2,379,641	680,400	1,699,241
1912....	10,260,000	7	6,156,000	1,243,426	307,800	7,707,226	2,552,774	718,200	1,834,574
1913....	10,692,000	7	6,415,200	1,270,092	320,760	8,006,052	2,685,948	748,440	1,937,508
1914....	11,178,000	7	6,706,800	1,296,759	335,340	8,338,899	2,839,101	782,460	2 056,641
1915....	11,664,000	7	6,998,400	1,323,426	349,920	8,671,746	2,992,254	816,480	2,175,774
1916....	12,150,000	7	7,290,000	1,350,092	364,500	9,004,592	3,145,408	850,500	2,294,908
1917....	12,636,000	7	7,581,600	1,376,759	379,080	9,337,439	3,298,561	884,520	2,414,041
1918....	13,149,000	7	7,889,400	1,403,426	394,470	9,687,296	3,461,704	920,430	2,541,274
1919....	13,662,000	7	8,197,200	1,430,092	409,860	10,037,152	3,624,848	956,340	2,668,508
1920....	14,175,000	7	8,505,000	1,456,759	425,250	10,387,009	3,787,991	992,250	2,795,741
1921....	14,688,000	10	8,812,800	1,483,426	440,640	10,736,866	3,951,134	1,468,800	2,482,334
1922....	15,201,000	10	9,120,600	1,510,092	456,030	11,086,722	4,114,278	1,520,100	2,594,178
1923....	15,714,000	10	9,428,400	1,536,759	471,420	11,436,579	4,277,421	1,571,400	2,706,021
1924....	16,227,000	10	9,736,200	1,563,426	486,810	11,786,436	4,440,564	1,622,700	2,817,864
1925....	16,740,000	10	10.044,000	1,590,092	502,200	12,136,292	4,603,708	1,674,000	2,929,708
Total	$240,111,000		$144,066,600	$27,001,846	$7,203,330	$178,271,776	$61,839,224	$17,836,470	$44,002,754
Even figures used in analysis	$240,111,000		$144,067,000	$27,001,000	$7,203,000	$178,271,000	$61,840,000	$17,836,000	$44,004,000

NOTE—By dividing the amount given in Column 10, for any year, by the total cash investment at that time (as outlined in the analysis on Page 5) the exact interest upon the money then invested in physical property can be obtained. The average interest upon the actual cash investment, during the 20-year period is, by this method, found to be approximately 6.92% per annum. In this calculation no franchise value has been allowed.

Buildings, etc.	$70,274.00	
Machinery, etc.	97,362.00	
		167,636.00
From sale of such portions of the equipment of the present electric power plant as would be obsolete...		316,050.00
From sale of rolling stock—		
Electric	$84,920.00	
Cable	26,900.00	
		111,820.00
From sale of such material now in Twenty-First Street power plant as would not be required		42,450.00
Total salvage		$742,336.00

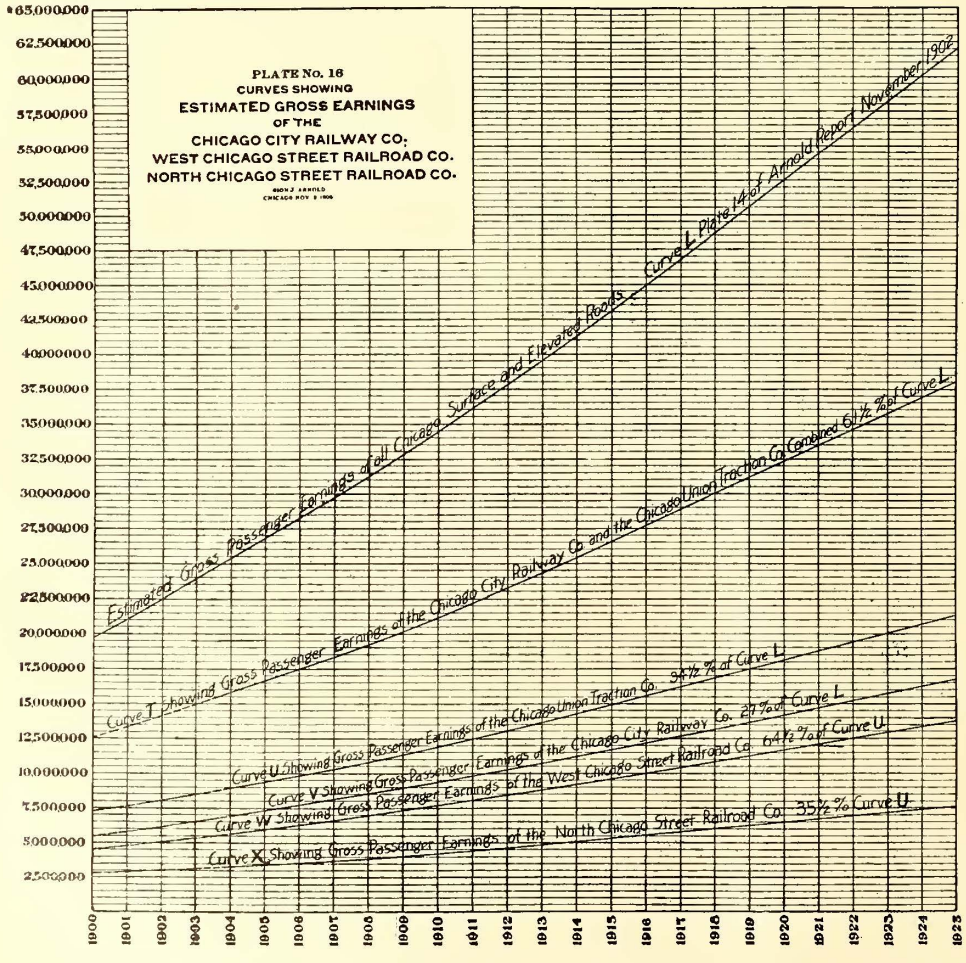
RECAPITULATION

	C. C. Ry.	B. J. A.
Track	$2,772,152.03	$2,614,450.43
Power house, sub-stations, etc., feeders and conduits	9,900,585.00	8,955,585.00
Buildings, barns, etc.	1,360,000.00	1,551,578.00
Rolling stock	4,159,200.00	4,180,800.00
	$18,191,937.03	$17,302,413.43
Less salvage	742,336.00	742,336.00
	$17,449,601.03	$16,560,077.43

From these figures it will be seen that the estimate of the railway company is about 6 per cent higher than mine, and this is largely due to the fact that the distribution system, when designed to fit the specific case of the Chicago City Railway Company, and operated from its power house, located as contemplated, becomes more expensive than the proportionate amount of this distribution system would be for a complete unified system, and from the further fact that this company has figured upon placing its entire feeder system in underground conduits. Furthermore, the Chicago City Railway Company contemplates in some instances, such as for the underground conduit construction in the downtown district, somewhat better construction than called for by my report, and also contemplates constructing additional buildings, etc., which were not required by me, but which the officials of this company believe necessary owing to their having to reconstruct and operate their property as an independent property, the proportionate expense of which need not be so great if the entire surface railway properties of the city were combined under one ownership.

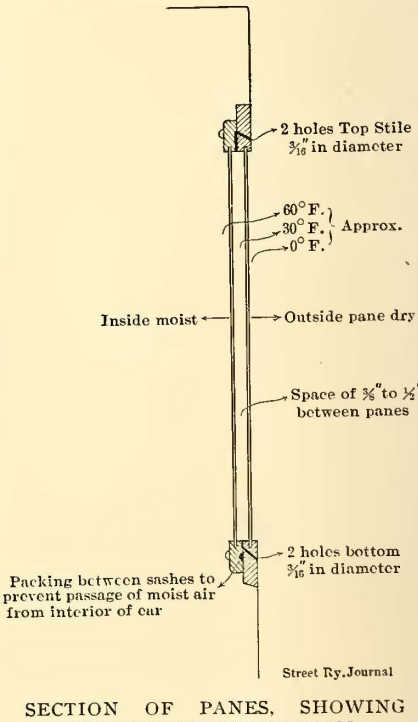
While the cost of the underground conduit construction in the downtown district and the feeder and outside conduit system as planned by the Chicago City Railway Company might equal the cost figured by them, I am of the opinion that the entire installation as herein outlined can be installed for the net figure given by me, viz., $16,560,077.43, for I believe that when the railroad company gets to actually purchasing its apparatus it can save sufficiently on some things to make up the additional cost of such parts as they have figured higher than I have. Respectfully submitted,

(Signed) Bion J. Arnold,
Consulting Electrical Engineer.



MONTREAL STREET RAILWAY COMPANY'S METHOD TO PREVENT VESTIBULE WINDOWS FROM FREEZING OVER

The Montreal Street Railway has adopted an ingenious arrangement of double glass for the front vestibule windows in all its cars operated during the winter months in order to prevent the window from becoming coated with frost or ice and thus obstructing the motorman's view. The scheme, which is the suggestion of D. E. Blair, superintendent of rolling stock, consists of putting two panes of glass in each window with an air space of from ⅜ in. to ½ in. between the two. The inner pane is set in rubber weather strips, so that it is air tight all around the sash. The air space between the two glasses is connected with the outside air by two small holes bored through the sashes, top and bottom, as shown in the sketch, and the cold air from the outside is free to circulate through these holes between the two surfaces of glass.



SECTION OF PANES, SHOWING METHOD OF PREVENTING FROSTING

With this arrangement of windows it has been found that no ice or frosting will form on either pane, no matter what the temperature outside or inside the car may be, except possibly a little frost may sometimes accumulate at the top or bottom of the glass near the ventilation holes, where it does not obstruct the view and does no harm. The explanation is that the warm, moist air from the inside of the car cannot penetrate into the air space between the two panes, and by reason of the ventilating holes, the cold dry air from the inside will fill up this air space, but at considerably reduced temperature. From tests that have been made it has been found that with the inside of the car at 60 degs. F. and zero temperature outside, the air between the two panes will remain at about 30 degs. F., so that neither pane will freeze.

FIREPROOF OIL FOR BEARINGS

An effort is now being made to introduce an oil among electric railway companies which has been fairly well known among steam railroads for the past nine years, and which has certain remarkable qualities which make it non-volatilizing under the high temperature of heated journal bearings. The Champion Oil Company, of Chicago, which makes this "hot-box oil," has the testimony of dozens of steam railroad men as to its efficiency in cooling down journals which have already become hot, no water being used on the journal, but the box being simply filled with the fireproof oil and the waste stirred up. The manufacturing company believes that an oil which has made such excellent record on steam railroads will prove valuable to electric railways on all classes of car and motor journals. While it is a cure for hot boxes, it is preferably used as the regular lubricant without waiting for journals to become hot. It is a rather thick oil, although it does not gum, and consequently does not escape out of a bearing as readily as thin oils. It seems to have the quality of tenacity to the bearing surfaces, although a film of it between the journal and bearing forms an excellent lubrication, as is proven by its performance in cooling down boxes which have already began to run hot.

The municipality of Berlin has voted to build an underground railroad from the north to the south of the city.

RAPID TRACK LAYING ON THE FORT WAYNE & WABASH VALLEY

The L. E. Myers Company, of Chicago, has a contract for the construction of the line of the Fort Wayne & Wabash Valley Traction Company between Fort Wayne and Bluffton, Ind., and some very rapid track laying work is being performed there with the aid of improved machinery. The company has a large amount of such machinery for rapid construction work. Construction work is also being pushed between Lima and Toledo. Fig. 1 shows one of the first stages of grading. This is a Port Huron steam grader. A traction engine is attached to the grader. The grader plows and elevates the dirt into a wagon driving along the side. As soon as one wagon is full,

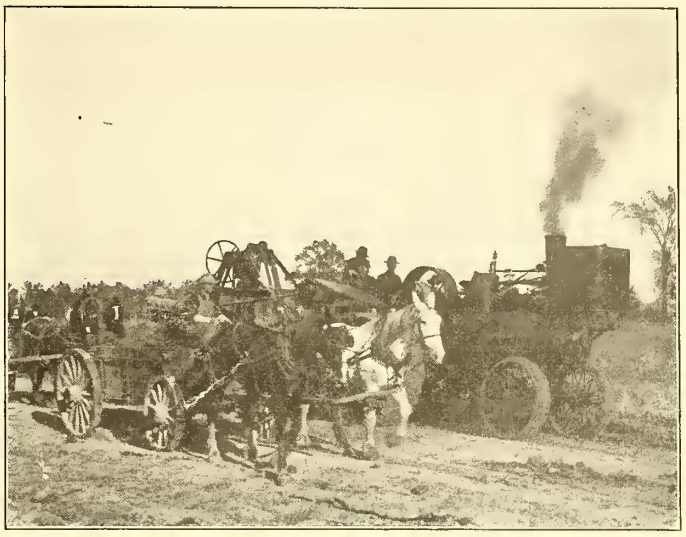


FIG. 1.—SHOWING THE GRADER PLOWING AND THEN ELEVATING THE DIRT INTO THE WAGON ALONGSIDE

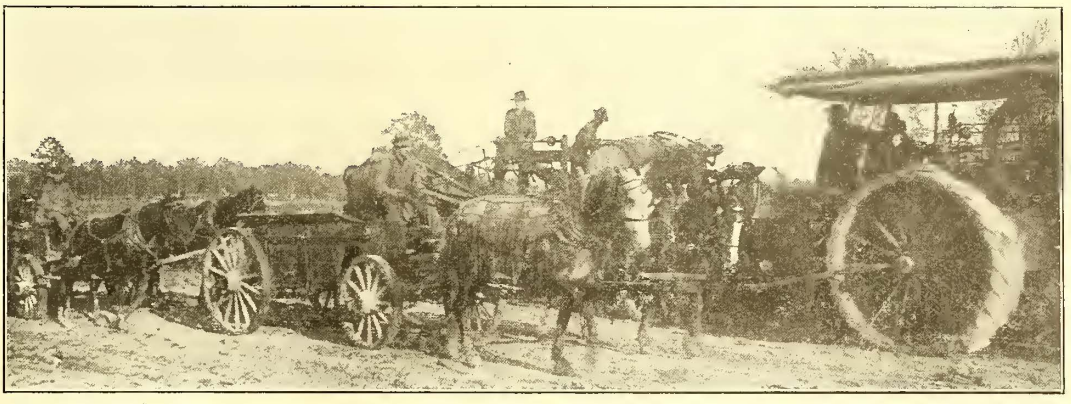


FIG. 2.—STEAM GRADER AT WORK ON THE LINE OF THE FORT WAYNE & WABASH VALLEY TRACTION COMPANY

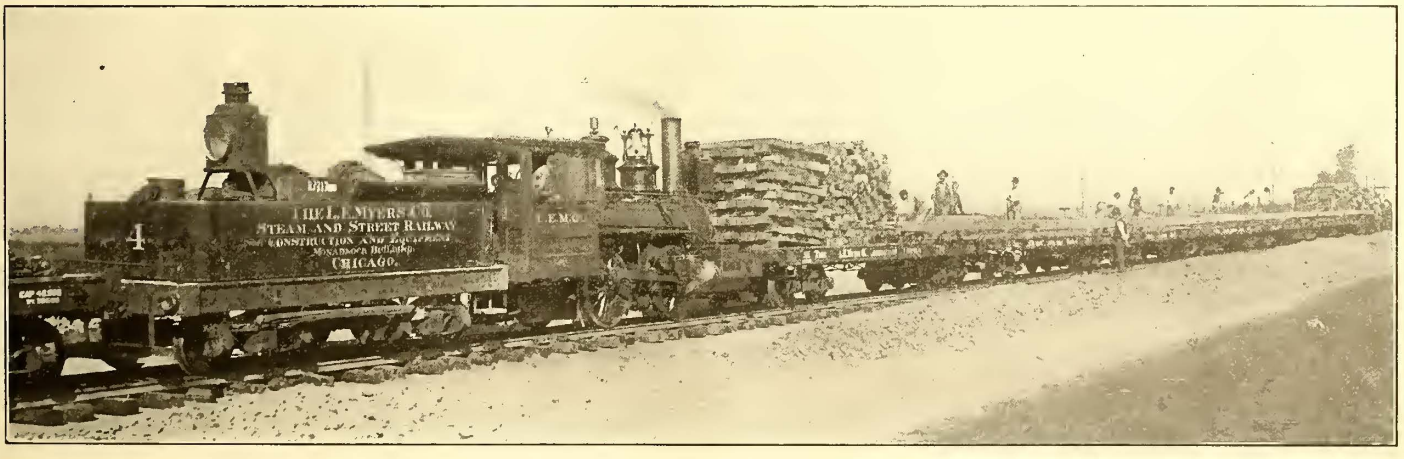


FIG. 3.—TRAIN OF CARS USED FOR THE TRACK-LAYING OPERATIONS ON THE FORT WAYNE & WABASH VALLEY TRACTION COMPANY

the following wagon comes up to take the discharge. Another steam grader designed by the company is shown at work in Fig. 2.

The next stage in construction is shown in Figs. 3 and 4. This is a Holman track-laying machine in operation. With this machine about 6000 ft. of track are being laid per day. The best record for a short time was 3000 ft. of track in three

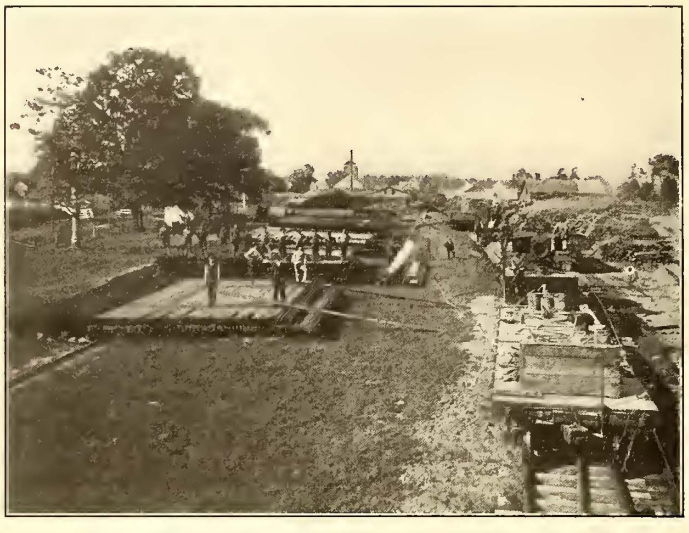


FIG. 5.—STORAGE YARD FOR TIES AND RAILS, USED IN THE BUILDING OF THE FORT WAYNE & WABASH VALLEY RY.

hours. The track-laying outfit has two troughs running the full length of the train of flat cars; these cars being loaded with rails and tiles. Each trough is provided with an endless chain conveyor. In one trough ties are conveyed and deposited at the end of the train, Fig. 4. These ties are deposited at right angles to the track and have only to be slipped backward or forward to proper position by the workmen. For every fifteen ties discharged by the machine, the endless chain on the other side discharges a rail, which is immediately slipped in place.

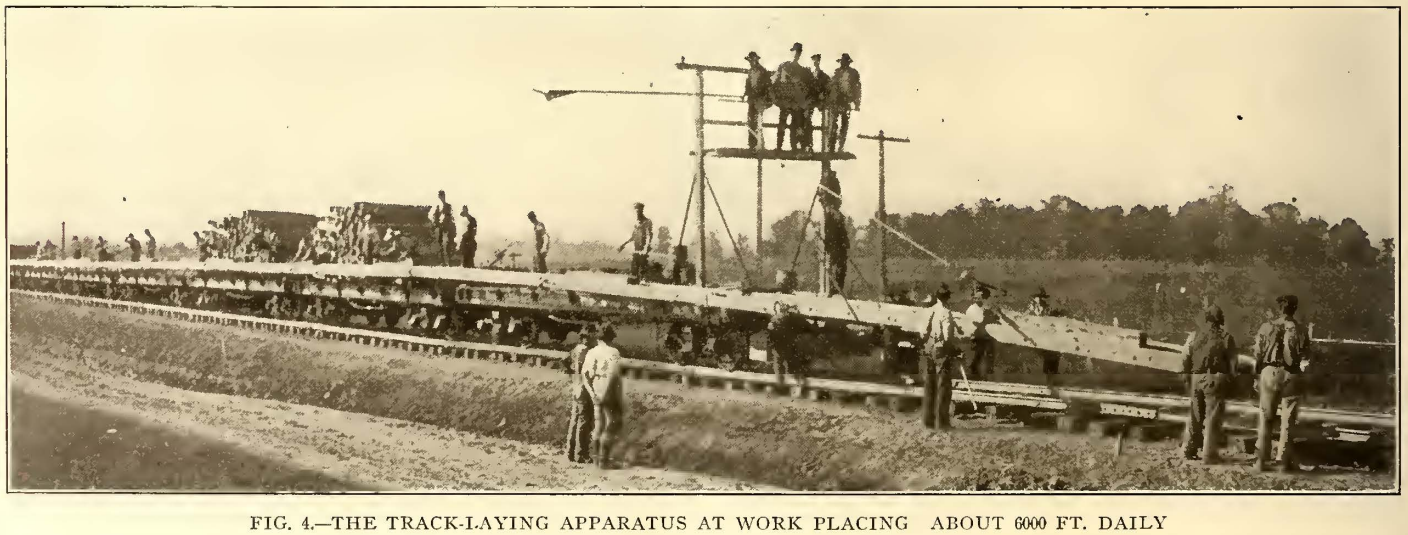


FIG. 4.—THE TRACK-LAYING APPARATUS AT WORK PLACING ABOUT 6000 FT. DAILY

Each rail has a pair of angle bars bolted on one end loosely, so that the next rail can be slipped between the angle bars and a single bolt put in to hold the joint temporarily. As fast as the rail is down, the train advances without waiting for the rails to be spiked. The wheels of the train spread the rails to proper gage, and they are prevented from spreading beyond the gage by track bars, which are removed after the spikes are driven.

Fig. 5 shows one of the storage yards used by the company for storing track material. When required in the work, the ties and rails are loaded on to the track-laying trains, which have just been described.

EQUIPMENT FOR NEW LINK OF ILLINOIS TRACTION SYSTEM

The Illinois Traction System has recently received from the American Car Company six large motor semi-convertible cars

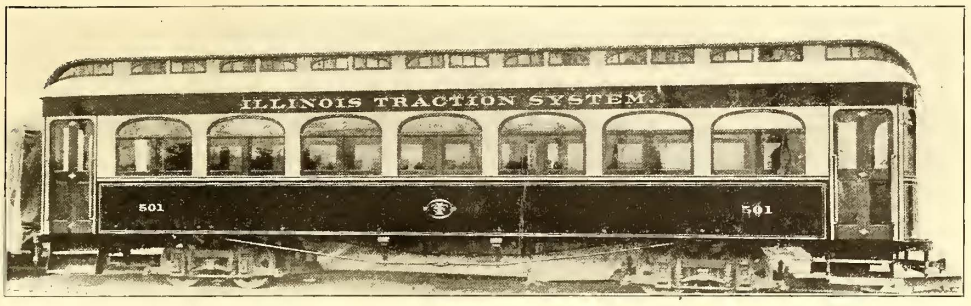
INTERIOR OF THE TRAILER CAR FOR THE ILLINOIS TRACTION SYSTEM

of the Brill type as shown in the accompanying view, which was taken just as the cars were leaving the works for Springfield on their own wheels. There were also two large trailer cars, one of which is illustrated. The picture shows the car on a pair of short base trucks on which it was temporarily mounted to be photographed. The trucks on which the cars were shipped were the Brill No. 420 type. The American Car Company has furnished a large number of cars to the Illinois Traction System during the last three years, both for city and interurban service, articles on which have been published by the Street Railway Journal from time to time. The cars are for operation on the new link of the system between Riverton, 30 miles east of Springfield, and Auburn, 40 miles south. When completed the line will cross the center of the State in a southwesterly direction from Danville to St. Louis, and the entire system will embrace about 250 miles.

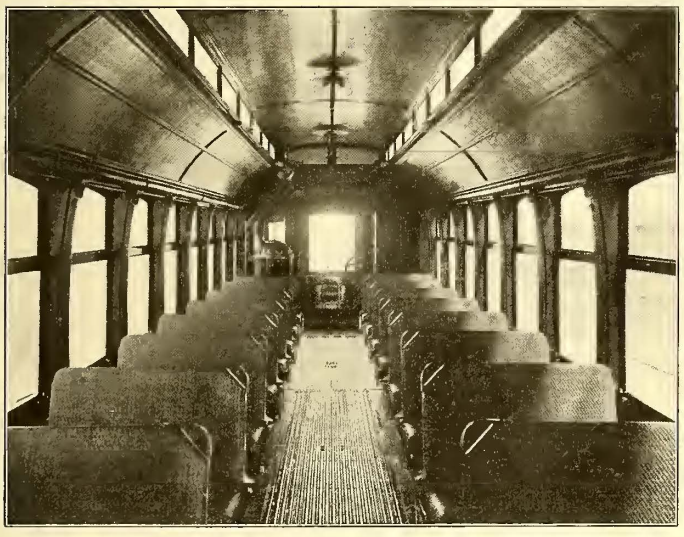
The semi-convertible cars measure 39 ft. 8 ins. over the bodies and 49 ft. 8 ins. over the vestibules. The cars are divided into two compartments, the main compartment occupying the space of ten windows and the smoking compartment four windows. The total seating capacity is fifty-two. The

seats in both compartments are of the Brill manufacture, with tilting cushions and push-over backs. A saloon of standard character is located at the end next the vestibule door of the main compartment. The interiors are finished in golden oak, with ceilings of the same. The window sashes are double and arranged to slide into pockets in the roof; the lower sash automatically engages the upper in being raised, and both are pushed up into the pocket with one operation. The bottom framing includes I-beam center sills and 4¾-in. x 7¾-in. yellow pine side sills, plated on the inside with 12-in. x ⅜-in. steel; the white oak end sills are 4 ins. x 7¾ ins. The corner posts are 3¾ ins. thick, and the side posts, 3¼ ins. All three sashes of the vestibules are arranged to drop into pockets, and the folding doors have automatic controllers.

The trailer cars are 38 ft. 8 ins. over the bodies and 48 ft. 1 in. over the vestibules; width over the side sheathing, 8 ft. 10 ins. They are generally similar to those built by the American Car Company for the Champaign division of the Illinois Traction System, except that they are without the baggage compartment. The interiors are handsomely finished, as the illustration shows, in semi-empire style, with the lights placed on the deck rafters, the woodwork consisting of mahogany neatly inlaid. There are seven double Pullman style windows on each side of the cars, the upper parts of which are glazed with opalescent glass, and the lower sashes are arranged to raise about 22 ins. above the arm-rail. The bottom framing consists of six sills, the side sills being of long leaf yellow pine, 5 ins. x 7¾ ins. and 2 ins. x 6 ins., with a 7-in. x ⅝-in. plate bolted between, bent at the ends at right angles and securely bolted at the end sills. The cars are seated for fifty-two passengers.



THE STANDARD TYPE OF CAR USED BY THE ILLINOIS TRACTION SYSTEM FOR INTERURBAN SERVICE



INTERIOR OF THE SEMI-CONVERTIBLE MOTOR CAR FOR THE ILLINOIS TRACTION SYSTEM, SHOWING THE RATTAN CROSS SEATS, POSITION OF THE HEATER, ETC.

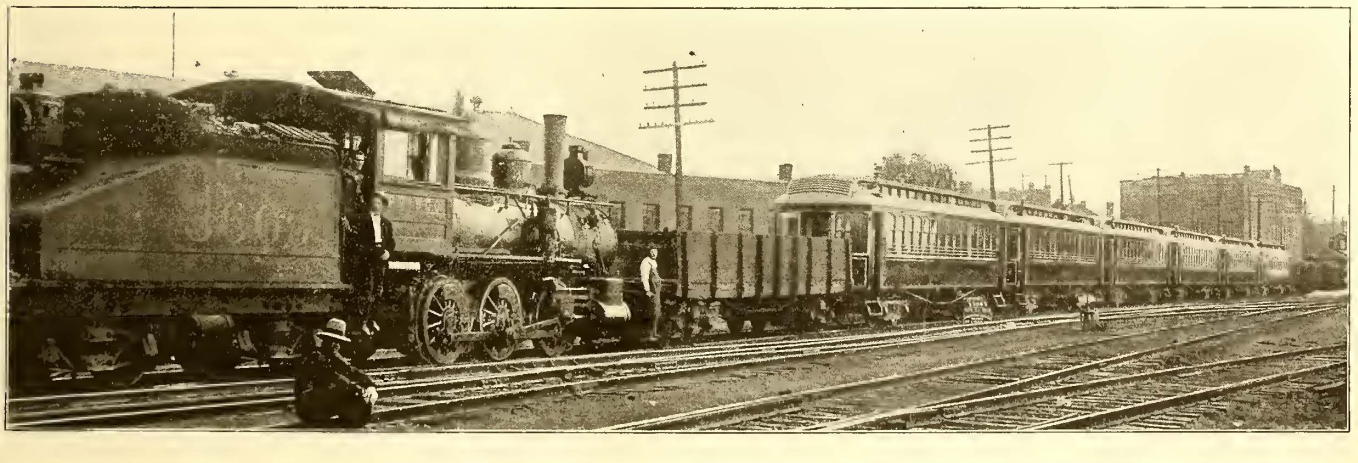
The seats are 37 ins. in length and are upholstered in leather; the backs of the seats are stationary.

INDIANA ELECTRIC TRACTION MILEAGE

According to statistics recently compiled there is now in operation in Indiana 913 miles of traction lines. Of this amount the United Gas Improvement Company, of Philadelphia, controls 512 miles. Besides the 913 miles already in operation, 213 miles are now building, and of this amount the larger part is probably controlled by the company named.

SUSPENSION OF ELECTRIC RAILWAY MAIL SERVICE CAUSES COMPLAINT IN PENNSYLVANIA

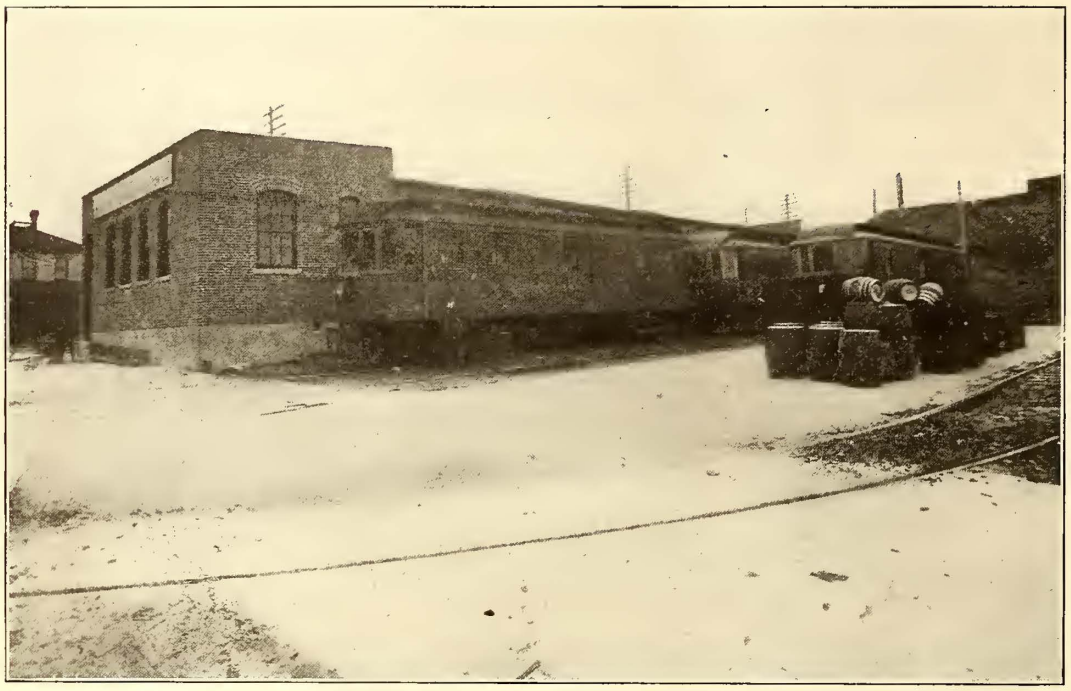
The people living along the line of the Newtown Electric Street Railway, between Doylestown and Bristol, Pa., 28 miles, are complaining in no uncertain tones about the mail service, which is no longer served by the railway, but by a star route carrier. Instead of receiving and despatching four Philadelphia mails per day, but half that number are now handled, and the city papers, which formerly arrived along about breakfast time, jog in somewhere around supper time. The electric railway received $2,100 per year for two round trips, or 112 miles daily. To care for the service a mail compartment was provided in one of the regular cars, the clerk, of course, being furnished by the government. It now costs $1,525 to carry one-half as many mails one-half the distance by wagon. It is said that the electric railway company was willing to put on a special mail car for $3,100 per year.



A TRAIN OF NEW CARS FOR THE ILLINOIS TRACTION SYSTEM LEAVING THE CAR WORKS ON THEIR OWN TRUCKS

NEW FREIGHT HOUSE BUILT IN GRAND RAPIDS BY THE GRAND RAPIDS, GRAND HAVEN & MUSKEGON RAILWAY

The Grand Rapids, Grand Haven & Muskegon Railway has completed and is now occupying a new freight house in Grand Rapids, Mich., erected at a cost of $30,000. Until the completion of the new house the freight business of the company was handled from a building in the heart of the city. The company has a pro rate agreement with the Goodrich Transportation Company, operating a line of boats between Chicago and Grand Haven and Muskegon. The Goodrich Company has had a similar agreement with the Grand Trunk and the G. R. & I. Railway Companies, but last spring the railroad companies notified the Goodrich Company that its arrangements with the interurban must be canceled or they would not renew their agreement for the handling of through business. The boat company renewed its agreement with the interurban, and since then the railroads have not accepted any of its through business. This has resulted in an increase in the through business of the Muskegon line of more than 50 per cent, and made necessary the building of the new freight house.



THE FREIGHT YARD, SHOWING METHOD OF LOOPING CARS AND THE STORAGE TRACKS

The building is one story, 40 ft. x 100 ft., constructed of red brick with a cement outside wall 24 ins. thick. The foundation wall goes 3 ft. below the surface of the ground. Running the length of the building beneath the floor are three 18-in. brick walls, 10 ft. apart. The floor is double, of matched pine planks. The lower floor is of 1-in. lumber, and the upper of 2½-in. planks. The building has a gravel and tar roof. The office is 12 ft. x 40 ft., in the front of the building, and has ample light from four windows in the front. It is finished in oak. In the freight house are four receiving doors, level with the bottom of a wagon.

In the yards are storage roof for six cars, two of which can be loaded from a team track and four through the freight house, three tracks being provided. The entire site is 115 ft. square and is paved with brick. The team-way to the receiving doors is 40 ft. wide, allowing teams to back up to the door ahead of those which are unloading. The team-way is separated from the sidewalk by an iron railing and a cement retaining wall. The ground is well drained.

In the freight house are two pairs of Fairbank's standard scales.

The building is lighted by 42 incandescent lights.

Since the building of the new freight house, giving better facilities for handling business, the local business of the road has increased one-third.

General Manager Morley has placed an order for four new freight cars for delivery in the spring. Each of these cars will be 38 ft. long, with a capacity of 30,000 lbs., and will be equipped with two 150-hp motors and air brakes.

THE SEPARATE TRAMWAY TO FACILITATE UNLOADING

The Lake Shore & Michigan Southern Railway (steam) has issued a new form of transportation throughout Northern Ohio between points where there is electric competition. It is a 25-ride book, good for bearer between certain points for one year, and it makes a rate of 1½ cents a mile. Any number of people can ride on the book.

FINANCIAL INTELLIGENCE

WALL STREET, NOV. 22, 1905.

The Money Market

There was a further relaxation in the monetary situation during the week, rates for all classes of accommodations receding quite sharply from the recent high levels. From 11 per cent, the extreme high figure for the week, call money declined to 4 per cent, while the interest charges on loans for all fixed periods ruled about ¾ per cent below those prevailing at the close of last week. Sixty and ninety-day funds were obtainable in quantities at 6 per cent, while six months' maturities were liberally offered at 5¼ per cent. The comparative ease in the situation was due largely to the restoration of the surplus reserve by the clearing house institutions and to the more reassuring conditions in the foreign markets, especially at Paris and Berlin. Another important factor was the decline in rates of exchange in New York at interior points, indicating that the demand for money at those centers for crop moving and general trade purposes has been about satisfied and that an early return movement in funds to this city may be expected. In fact, the return movement has already started, several of the larger institutions reporting receipts of moderate amounts on balance from the interior for the first time in several months. It is not expected, however, that any decided ease will develop in the local situation until after the turn of the year. The January disbursements are expected to break all previous records, which, together with the enormous volume of business being transacted in all branches of trade, will be sufficient to prevent any material decline in money rates. In addition, preparations must be made to finance the $12,500,000 loans to be floated by the city of New York this week, and later in the month the new Japanese loan must be taken care of. The total authorized amount of the Japanese loan is £50,000,000 sterling, bearing 4 per cent interest and maturing in twenty-five years, optional after fifteen years. Only £25,000,000 will be issued at present, the balance being reserved to provide for the conversion of existing 6 per cent sterling loans. Of the amount to be issued now, £12,000,000 will be placed in Paris, £6,500,000 in England and the remaining £6,500,000 in Germany and the United States. Foreign exchange has been active and erratic. At the close a week ago demand sterling ruled at a point that foreshadowed a resumption of gold imports from Europe, but later decided strength developed and the price rose to near the gold export point. Shipments of the yellow metal were averted, however, by the freer offerings of bills against cotton and grain shipments, and by the offerings of bankers' loan bills. Silver bullion continued strong, prices here and at London reaching the highest points attained in several years. Government finances show a decided improvement. Receipts are considerably larger than last year, and present indications point to a surplus for the month of November of $5,000,000. Government bonds refunded to date amount to $34,964,350. The Secretary of the Treasury announces that the refunding of the 3 per cent bonds of 1908 and 1918 and the 4 per cent loan of 1907 will be discontinued on Nov. 29 next. The foreign markets have ruled somewhat easier as a result of the improved situation in Russia, but rates for money and discounts have underwent no material change. The bank statement published last Saturday made a gratifying exhibit. Loans decreased $27,204,200. The decrease in cash of $1,968,500 was considerably less than expected. Deposits decreased $29,849,800. The reserve required was $7.312,450 less than the previous week, and deducting from this the loss in cash of $1,968,500, the surplus was increased by $5,343,950. The surplus now is $2,915,150, as compared with a deficit of $2,428,800 in the preceding week, a surplus of $9,589,700 in the corresponding week of 1904, $3,911,350 in 1903, $19,529,975 in 1902, $14,486,925 in 1901, and $12,278,275 in 1900.

The Stock Market

Following the recent stringency in the money market with its attendant adverse influence on the general share speculation, there was a decided relaxation in monetary conditions during the past week, which naturally had a favorable effect upon values. From the previous low level prices recovered quite sharply, and in not a few instances stocks rose to a new high level; and while very little interest was manifest by the outside public, professional operations assumed somewhat large proportions. The fact that the Treasury Department found it unnecessary to come to the relief of the monetary situation, coupled with the assurance that it stood ready to do so should occasion require, constituted one of the chief factors in bringing about the better tone to the stock market, although the improvement was attributed in no small degree to the much more peaceful aspect which the Russian situation assumed after it had appeared that that country was on the verge of a revolution. London was not very much of a factor in our market, but the improved temper of the foreign securities markets, following the more encouraging developments in Russia, had a good moral influence here. The continued shortage of railroad equipment, thus testifying to the superabundance of traffic now moving, the generally gratifying character of the earnings statements made public, and the declarations of not only regular dividends but also of a higher rate in at least one instance, that of the Atlantic Coast Line, afforded ample ground for the bullish sentiment with reference to railway shares in general, once the money scare was out of the way. A maintenance of the same prosperous conditions in the industrial world, to which reference has frequently been made, created an improved demand for most of the shares of the manufacturing companies, and in this class some stocks reached the highest figures ever attained, the most striking point being American Smelters. The Copper stocks responded to a further advance in the price of the metal to 17¼ cents, at which figure considerable quantities were reported to have been sold by a large producer. The shares of the Southern Coal & Iron Company likewise exhibited pronounced strength, this having been due to revived talk of an impending amalgamation of these various properties. While the volume of trading was on a large scale, dealings were pretty generally specialized and the movement of prices was not such as to attract a very general outside following. However, the presence of such factors as those already set forth, and the possibilities for stockholders in the way of not only increased cash dividends but also of valuable rights, as exemplified in the action of the New York Central in offering shareholders an opportunity to subscribe to nearly $18,000,000 of new stock at par, inspired confidence on the part of both speculators and investors, and with a comfortable working of the money market this will undoubtedly lead to a broader and stronger market generally.

The movements of the local traction shares have not been uniform. On the contrary, Brooklyn Rapid Transit has displayed pronounced buoyancy, while the Metropolitan issues have been heavy and under pressure all week. The principal reason for the sharp rise in the first named to the highest figures in years is the continued expansion in earnings of the property, although pool operations which were assisted by renewed rumors of Pennsylvania Railroad control, etc., were to some extent responsible for the great activity and strength in the stock. The only apparent cause for the weakness in the Metropolitan issues was the fear of an early call of the $50 assessment on the shares of the Metropolitan Securities Company.

Philadelphia

The local traction stocks developed considerable activity this week, and although prices moved with some irregularity, the general trend of values was toward a higher level in sympathy with the improvement in the general stock market. Interest centered largely in the speculative issues, and especially in Philadelphia Rapid Transit, which was the overshadowing feature both as to activity and price movements. Opening at 27½ the stock rose to 32 on heavy buying, but later eased off on sales to realize profits. In the final dealings there was a further advance to 32⅜, the highest price attained in several months. The close was within ⅝ of the highest, showing a net gain of more than 5 points. Transactions in the stock amounted to 40,000 shares. There was no news to explain the movement in this stock. Philadelphia Company continued active, upwards of 25,000 shares changing hands. In the early dealings there was some selling by disappointed holders which carried the price off from 53¼ to 51⅝, but later on the announcement that the United Railways Investment Company of San Francisco was seeking control of the property caused a partial recovery, the final transaction being made at 52¼. The preferred was extremely quiet, a few small lots changing hands at prices ranging from 49¼ to 50. A better

inquiry was noted for the investment issues. Union Traction displayed increased activity, upwards of 1800 shares selling at from 62⅜ to 63, an advance of 2½ points. Philadelphia Rapid Transit sold to the extent of several hundred shares at 100¾ to 101. Railways General rose ½ to 6¼ on the exchange of 300 shares. Other transactions included United Traction of Pittsburg preferred at 50, United Companies of New Jersey at 270¼ and 270, and American Railways at 53¼ to 53.

Baltimore

There was a further falling off in the dealings in Baltimore traction issues, and prices showed very little variation from those ruling at the close of last week. The United Railway issues were extremely dull, $59,000 of the 4 per cent bonds selling at 92 and 92¼, while $18,000 of the free incomes brought 65½ and 66. Fifty shares of deposited stock sold at 16. Other sales included $2,000 Macon Railway & Light 5s at 100; $2,000 Norfolk Railway & Light 5s at 96; $4,000 Virginia Railway & Development 5s at 99¾; $3,000 City & Suburban 5s at 115, and $1,000 Washington City & Suburban 5s at 106.

Other Traction Securities

The feature of the Chicago market was a drop of 2 points in West Chicago to 58 on the exchange of a small block of the stock. Otherwise prices held firm, but trading was very quiet. Chicago Union Traction sold at 11½ and 12½ for 135 shares. Chicago & Oak Park common sold at 6, and the preferred brought 20¼ and 21. Metropolitan Elevated common held firm with sales of small amounts at 27¾ and 28, but the preferred declined from 71 to 70. Northwestern Elevated moved up from 22¼ to 23 on the purchase of 257 shares. South Side Elevated sold at 97 and 96¾ for a few hundred shares. Trading was also quiet in the Boston market, and apart from West End common, which declined from 100 to 98 on light transactions, values generally remained firm. West End preferred sold at 114. Boston Elevated sold at 152 and 152½ for nearly 400 shares. Odd lots of Boston & Worcester common brought 27 and 29, while full lots of the preferred brought 72½ and 73¾. Massachusetts Electric changed hands at 13¼ and 13 and the preferred sold at 56 and 57. West End bonds of 1915 brought 102½ for $5,000. On the New York curb Interborough Rapid Transit has displayed increased activity and strength. From 208½ at the close a week ago, the price ran off further to 204¾, but subsequently there was a sharp advance to 216¾. At the high figure moderate realizing developed, which carried the price off to 213½, which was the closing price. About 9000 shares were dealt in. The strength in Interborough was attributed to the heavy traffic on both the subway and elevated lines of the company. Other sales included 10 shares of American Light & Traction preferred and $4,000 New Orleans Railway 4½s at 91.

Little activity in tractions in Cincinnati. Cincinnati, Newport & Covington common was again the leading feature, with sales of about 1300 shares with a fractional advance from 48⅞ to 49. A small lot of preferred sold at 95½. Detroit United sold at 93¾; Cincinnati, Dayton & Toledo sold at 25½ to 26. The 5 per cent bonds sold at 98, and Southern Ohio 5s, an underlying issue, sold at 98¼.

Northern Ohio Traction and Lake Shore Electric common are having another bull movement in Cleveland. The former moved from 26¼ to 29 on improvement in money conditions, while the Lake Shore advance from 13½ to 16 was undoubtedly due to the announcement of the dissolution of the voting trust and the reversion of the property to its owners, mention of which is made in another column of this issue. The preferred stock advanced from 65 to 68 for the same reason; this is not yet paying dividends, but it has about 20 points' accrued dividends attached, which will doubtless be paid next year. Cleveland Electric advanced from 80½ to 82½. The early part of this week there was considerable activity in all of these issues, with practically stationary prices. A large block of Northern Ohio 5s sold at 90.

Security Quotations

The following table shows the present bid quotations for the leading traction stocks, and the active bonds, as compared with last week:

	Nov. 15	Nov. 22
American Railways	53	53
Boston Elevated	152	152½
Brooklyn Rapid Transit	76¼	87⅛
Chicago City	200	200
Chicago Union Traction (common)	10½	11
Chicago Union Traction (preferred)	—	—
Cleveland Electric	81	82
Consolidated Traction of New Jersey	81	80
Consolidated Traction of New Jersey 5s	109	108
Detroit United	93¾	93⅛
Interborough Rapid Transit	207	212
International Traction (common)	35½	36½
International Traction (preferred) 4s	75⅞	75¾
Manhattan Railway	164	163
Massachusetts Electric Cos. (common)	13¼	13
Massachusetts Electric Cos. (preferred)	56	56
Metropolitan Elevated, Chicago (common)	27½	27
Metropolitan Elevated, Chicago (preferred)	71	70
Metropolitan Street	117½	115¾
Metropolitan Securities	72¾	70¼
New Orleans Railways (common), W. I.	37	37
New Orleans Railways (preferred), W. I.	82¾	82½
New Orleans Railways, 4½s	91	90¾
North American	97¼	100¾
North Jersey Street Railway	27	27
Philadelphia Company (common)	53	52
Philadelphia Rapid Transit	26¼	31¼
Philadelphia Traction	100¾	100½
Public Service Corporation 5 per cent notes	95	94
Public Service Corporation certificates	62	61
South Side Elevated (Chicago)	96	96
Third Avenue	121	120
Twin City, Minneapolis (common)	114¾	116¼
Union Traction (Philadelphia)	62½	62½
West End (common)	a99	98
West End (preferred)	113½	114

a Asked. W. I., when issued.

Iron and Steel

The "Iron Age" says the bookings of finished iron and steel continue exceedingly heavy in all lines, and thus far this month are nearly up to the rate of October. It is quite unprecedented that there should be such a volume of buying at this season of the year, when usually the works are eager for winter work. The strain in all directions is tremendous and prices are kept down by main force. During the week leading interests advanced tin plate 10 cents a box, and the sheet makers put up prices on sheets $2 per ton. In the structural trade the inability to make deliveries is still a conspicuous feature. There is increasing evidence of a shortage of pig iron for steel-making purposes.

R. D. APPERSON PURCHASES ANOTHER SOUTHERN PROPERTY

R. D. Apperson, of Lynchburg, Va., who, with associates, controls the Montgomery Traction Company, has purchased the Montgomery Street Railway and all of its properties, including Electric Park. The purchase promises, according to the word of President Apperson, a line 10 miles to Wetumpka, and there is an understanding that there will be other interurban routes in the future. However, the interesting thing will be the immediate improvement of the tracks and the service of the city of Montgomery. There are 40 miles of track now, with two modern amusement parks, two baseball parks and several minor parks. All these will be given next summer ample facilities as well as fine equipment. The traction company now has two lines right by the historic old Capitol of the Confederacy, and can take the tourists to the place where "Jeff Davis stood to be inaugurated" every few moments.

QUARTERLY REPORT OF THE NEW YORK CITY RAILWAY

The New York City Railway Company, operating all the surface street railway lines in Manhattan and Bronx boroughs, reports as follows for the quarter ended Sept. 30:

	1905	1904
Gross receipts	$4,509,610	$4,360,179
Operating expenses	2,292,258	2,073,361
Net earnings	$2,217,352	$2,286,818
Other income	339,416	331,941
Total income	$2,556,768	$2,618,759
Fixed charges	2,803,050	2,798,234
Deficit	$246,282	$179,475
Cash on hand	4,111,114	.....
Profit and loss deficit	$5,005,825	.....

THE CLEVELAND SITUATION

The Chamber of Commerce of Cleveland has appointed a committee composed of W. H. Canniff, J. G. W. Cowles, S. P. Fenn, John Jennings, George T. McIntosh, M. A. Marks and W. R. Warner, all very prominent business men, to study the street railway problem of Cleveland and make comparisons with, and investigations of, other cities, with a view to settling the long standing controversy over franchise extensions existing between the city administration and the company. The members are men of the highest standing and are acceptable to both the city authorities and the company. Neither the city nor the company is bound to act on the recommendations or findings of the committee, but there is little doubt that its opinions will have great weight in effecting a compromise.

The Cleveland Electric Railway Company has submitted to the Chamber of Commerce and the city authorities, statistics showing the number of transfers issued daily at the public square and at other transfer points in the city. This is in connection with the plans under consideration for building subways through the public square or laying surface loops around the four sections of the square and turning all cars at this point. At present cars are run with through routes across the city, passing through the public square. The company states that an average of 42,367 transfers are collected at the public square daily under the present arrangement, representing 13.6 per cent of the total passengers carried on the system. It is claimed that the plan of looping the cars on surface loops would increase the number of transfers at this point, thereby increasing the congestion. Incidentally, it was noted that the company collected 34,126 transfers daily on the Willson Avenue crosstown line, and 24,726 daily at other points. This indicates that the company carries 311,522 passengers daily, and issues 101,219 transfers, representing 32.5 per cent of the total passengers carried.

The United States Court has rendered a final decision in the controversy between the Cleveland Electric Railway on one side and the city of Cleveland and the Forest City Railway Company on the other, which considerably simplifies the suits over the 3-cent fare situation in Cleveland. The court held that the franchise of the Cleveland Electric Railway Company on Central Avenue expired March 22, 1905, but that the city could not grant a renewal franchise to a new company, and that the Forest City Company could not enjoy the franchise granted it by taking over the property of the Cleveland Electric Railway. The Cleveland Electric Company, under the decision, now has no rights on the street mentioned, but the so-called 3-cent fare company is also restrained from taking possession of the street under the franchise granted a year ago. It seems possible that the city administration will take steps to oust the old company and make a new grant to the new company. The case will be carried to the Supreme Court.

ACCIDENT FAKIRS SENTENCED IN BALTIMORE

Three alleged members of a band who have made a business of swindling street railway companies by means of suits for damages for pretended injuries received in fictitious accidents were sentenced to jail in the Criminal Court, Baltimore, Nov. 16. They are Frank Bobson, alias Frank Wiens, alias Frank Davis; his wife, Martha Wiens, alias Martha Bobson, and Edward Eagan Reilly, alias Edward Moran, alias F. B. Moran. All pleaded guilty to an indictment charging them with conspiring to defraud the United Railways & Electric Company, of Baltimore, by means of a pretended accident on June 5 last. Bobson was sentenced to five years, Reilly to two years and the woman to six months' imprisonment.

After the pleas of guilty had been entered, State's Attorney Owens explained the case to Judge Phelps. In carrying out their scheme, Reilly got employment with the company as a motorman, and when Bobson and his wife got on his car there was an accident. The woman claimed to have been ruptured and otherwise injured in the accident. Investigation showed that it was a "fake" accident and that the woman's rupture was an old one. The trio went from Baltimore to Pittsburg, thence to Cleveland, and thence to Buffalo. They had a well-mapped out scheme and intended to go as far as Los Angeles, Cal. The woman pleaded guilty with the understanding that the State's Attorney would recommend for her imprisonment of not more than four months. She has been in jail since August. The physicians differ as to her health and as to whether or not she is in a precarious condition.

Mr. Owens read to the judge extracts from a diary kept by Bobson containing mention of a pretended accident in Brooklyn, N. Y., in which $2,000 had been obtained, and also containing an account of the travels of the band. Under date of June 5 last, when the accused were in Baltimore, the diary contained the entry "It happened," referring to the pretended accident in Baltimore.

Mr. Owens also read a letter written from Cleveland by Reilly to Bobson. This letter, with the diary, was found among the papers of the accused when they were arrested. In it Reilly asked that $11 be sent him to get a job on the cars in Cleveland, and mentioned the car line which he had selected as best for "our business."

ATTEMPTS TO INCREASE RATES CAUSE TROUBLE

The raising of the fare from Melrose to Boston from 5 to 7½ cents by the Boston & Northern Street Railway Company seems to have stirred up a tempest in a teapot in the suburban city, although the company's action was sanctioned by the Railroad Commissioners after a careful and impartial investigation of the situation. It is natural enough that the citizens of any community should feel dissatisfied with an increase in fares, no matter how legitimate such a course might be on the part of the local street railway, but in attempting to bring the company to terms by boycotting a single line representing probably not over two per cent of its track mileage, the people of Melrose appear to be engaged in a ridiculous and misdirected campaign against conditions which are entirely beyond the control of the street railway people. At a recent meeting of the Melrose Board of Aldermen it was proposed to coerce the company by having the tracks pulled up, revoking the franchise, or reducing the legal speed limit to one mile per hour or thereabouts. These fertile suggestions were nipped in the bud, however, by the city solicitor, who pointed out the legal obstacles in the way of such a course. The facts of the case are plain enough. The Railroad Commissioners, representing the public no less than the transportation company, were convinced that the Boston & Northern was not making enough on its Melrose-Boston line to earn a fair rate of interest on its investment. The figures upon which the decision was based admit of no question, but as the Commission felt that a 10-cent fare would probably be excessive, the expedient of selling ten tickets for seventy-five cents was adopted, and this compromise was generally regarded as a happy solution of a vexatious problem. It is probable that the wrath which is now being so vigorously called down upon the company in Melrose by citizens who are unwilling to acknowledge the justice of the Commission's ruling will largely subside when the people realize that a 7½-cent fare with better service is preferable to a 5-cent fare, which makes first-class service impossible.

The interurban line of the Tuscarawas Traction Company between New Philadelphia and Uhrichsville, Ohio, has been practically at a standstill for two weeks or more. This is a part of the Canton-Akron system, and the tie-up is the result of that company's efforts to raise rates. The rate between these points, a distance of 10 miles, was formerly 10 cents. Recently the company increased it to 20 cents, in line with its policy of charging 2 cents a mile. This is an old road and it is claimed that under the franchise granted the original company it was to charge not more than 10 cents from any point in either of the villages to any point in the other. General Manager Dimmock of the system states his position as follows: "We believe we are acting within the law. The Circuit Court at Massillon, Ohio, on Oct. 11, rendered a decision which is applicable to this situation. It was in regard to the fare over our Canton-New Philadelphia line between Navarre and Massillon. The court found that the town had no jurisdiction over our line outside of its corporation; neither had the County Commissioners any jurisdiction over rates of fare within a town's limit. We are now charging 5 cents in the city limits and 10 cents between the city limits of each city." For several days the company attempted to collect these rates and a large number of people who refused to pay were forcibly ejected from the cars. Damage suits resulted from these tactics and after considerable disorder the company removed its cars, continuing, however, to operate in the two villages and charging 5-cent fare. United States mail cars are also operated between the two cities, but no passengers are carried. The company maintains that it will not move until its rights have been determined in court. Suits have been brought to oust the company from its franchises. This case is being watched with a great deal of interest by Ohio interurban roads, because a number of lines are hampered by annoying local restrictions which were saddled upon them in the early days.

Trouble growing out of the new fare schedule inaugurated recently by the Grand Rapids, Holland & Chicago Railway has manifested itself at Zeeland, Mich. The township board has served notice on Passenger Agent Floyd asking that the rates formally in effect be restored. The board claims the road can collect only a 5-cent fare across the township, while at present a 5-cent fare is collected in the village and another 5-cent fare between the village and the Holland town line. Mr. Floyd refuses to recognize the authority of the Board to legislate concerning the fares in the village.

ANNUAL REPORT OF THE BOSTON & WORCESTER COMPANY

The annual report of the Boston & Worcester Street Railway Company for the year ended Sept. 30, 1905, showed that the company earned 6 per cent upon its capital stock, after allowing liberal charges for taking care of its track, roadway and equipment. The company is planning to complete the double-tracking of its line through Framingham Center in the spring at a cost of approximately $150,000, and then the road will be double-tracked the entire distance between Boston and Worcester. The management of the company anticipates that, with the completion of the double-tracking, the gross earnings for the first full year after such completion will reach $600,000, without taking into consideration any earnings from the express and parcel business. For the fiscal year ended Sept. 30, 1905, the company's lines carried 9,110,000 passengers, as compared with 8,000,000 the previous year, and its cars ran 1,820,575 car miles, as compared with 1,793,163 car miles the previous year. The statement of earnings follows:

Earnings—	
Passenger	$443,098
Miscellaneous	10,807
Gross earnings	$453,905
Operating expenses—	
Maintenance of way	$12,016
Maintenance of equipment	42,031
Conducting transportation	141,483
General expenses	39,665
Total expenses	$235,195
Net income	218,710
Charges and taxes—	
Interest	80,525
Taxes	33,123
Total charges and taxes	$113,648
Surplus for year	105,062
Dividends	103,494
Added to surplus	$1,568
Previous surplus	57,266
Total surplus	$58,834
Old accounts settled	3,712
Carried forward	$55,122

The principal items compare with last year as follows:

Year ended Sept. 30—	1905	1904
Gross earnings	$453,905	$400,027
Operating expenses	235,195	220,532
Net income	$218,710	$179,490
Charges and taxes	113,648	88,192
Surplus after charges	$105,062	$91,298

SANTA CLARA-SAN JOSE RAILWAY DEAL

The San Jose & Santa Clara Street Railroad, which embraces the electric line running from San Jose to Santa Clara and the narrow-gage electric line from San Jose to Alum Rock, is now the property of Lewis E. Hanchett and his associates, who recently purchased and took possession of the Santa Clara Interurban Railroad Company. The deal was forecasted at the time the interurban road was sold. The latter company some months ago obtained an option on the San Jose & Santa Clara Street Railroad. The purchase price is $650,000, of which $400,000 is in bonds. It is stated that John Martin, vice-president of the California Gas & Electric Corporation, has become one of the new stockholders of the two electric properties, although most of the capital behind Hanchett is Eastern capital. It is understood that Edwin Hawley, president of the Minneapolis & St. Louis and the Iowa Central roads, and one of Gould's associates in the Western Pacific, is one of the principal factors in the electric deal, and it is also understood that the deal has been engineered in the interest of the Western Pacific.

The Santa Clara interurban road is now proceeding with plans to build an electric line from Santa Clara to San Mateo, and it is stated that when its rails are laid to the latter place it will not stop there, but will continue on to San Francisco. Thus the interurban company would afford the Western Pacific an entrance into the Santa Clara Valley and much intermediate territory.

The properties acquired by Hanchett and his associates are to be greatly improved while the new line is being built up the peninsula. A corps of engineers has been engaged for some time past making maps, plans and surveys for the reconstruction of the Alum Rock road, which is to be converted into a broad-gage line and made a modern property in all respects. The new board of directors is as follows: President, L. E. Hanchett; vice-president, John Martin; secretary, Carl Kneiss; A. F. Morrison and Henry Malloch. Chief Engineer Southard will act temporarily as manager.

REPORT OF INTERBOROUGH COMPANY

The earnings of the Interborough Rapid Transit Company, of New York, for the quarter ended Sept. 30, 1905, have been made public. As compared with the previous quarter, or that of the three months ended June 30, they show a decline in gross of $643,747 and a decline in surplus of $592,125. The comparison with the previous quarter is made because the subway was not opened until the latter part of September, 1904. The decline in earnings for the quarter ended Sept. 30, 1905, is attributed mainly to conditions in the subway during the summer months, during which riding was unpleasant on account of the heat. The entire Interborough Rapid Transit system (including the subway and the elevated lines) reports as follows for the quarter and the nine months ended Sept. 30, 1905:

Quarter ended Sept. 30, 1905—	
Gross receipts	$3,905,097
Operating expenses	1,967,447
Net earnings	$1,937,650
Other income	159,841
Total income	$2,097,491
Fixed charges	1,987,672
Surplus	$109,819
Nine months ended Sept. 30, 1905—	
Gross receipts	$13,036,662
Operating expenses	6,107,651
Net earnings	$6,929,011
Other income	475,869
Total income	$7,404,880
Fixed charges	5,864,021
Surplus	$1,540,859

The Subway division of Interborough Rapid Transit reports as follows for the quarter ended Sept. 30, 1905, and since the road opened, Oct. 27, 1904, to Sept. 30, 1905:

Gross receipts	$1,101,620
Operating expenses	652,602
Net earnings	$449,018
Other income	88,541
Total income	$537,559
Fixed charges	310,000
Surplus	$227,559
From Oct. 27, 1904, to Sept. 30, 1905—	
Gross receipts	$4,740,607
Operating expenses	2,502,960
Net earnings	$2,237,647
Other income	270,029
Total income	$2,507,676
Fixed charges	949,589
Surplus	$1,558,087

The Manhattan division of Interborough Rapid Transit reports as follows for the quarter ended Sept. 30:

	1905	1904
Gross receipts	$2,803,476	$3,232,949
Operating expenses	1,314,845	1,369,094
Net earnings	$1,488,631	$1,863,855
Other income	71,300	79,000
Total income	$1,559,931	$1,942,855
Fixed charges, etc.	1,677,672	1,531,544
Deficit	$117,741	*$411,311

*Surplus.

WIDENER-ELKINS OPERATIONS

Reports in the West of renewed activities on the part of the Morgan-Dolan-Schoepf syndicate, better known as the Widener-Elkins syndicate, in the development of its plans for a system of through trunk lines across Ohio and Indiana, are somewhat misleading. For instance, it was stated that this syndicate had secured control of the Canton-Akron system, comprising the Canton-Akron Railway, the Canton-New Philadelphia Railway and the Tuscarawas Traction Company, operating a through system from Uhrichsville to Akron, by way of New Philadelphia, Massillon and Canton with city lines in these towns. These properties are owned by Tucker, Anthony & Company, of Boston, who recently sold the interests mentioned, the Columbus, Buckeye Lake & Newark and the Columbus, Newark & Zanesville lines. It is logical that the two systems should go together, because when linked they form a through route from Columbus to Cleveland. Tucker, Anthony & Company, however, say that the Canton-Akron system has not been sold, and negotiations have never been entered into looking to the sale of the roads to the Morgan interests.

There are also reports that the syndicate is negotiating for the Columbus, Delaware & Marion Railway from Columbus to Marion, and soon to be extended to Bucyrus, this being the most desirable route for connection to Cleveland and Toledo from Columbus. It is stated, too, that the syndicate has acquired the Columbus, Urbana & Western, a 12-mile road running northwest from Columbus, and will extend it on to Marysville, Bellefontaine and Lima, connecting with its Ft. Wayne line, giving a through line from Columbus to Ft. Wayne. Still another report has it that the syndicate is negotiating for the Springfield-Xenia line with a view to extending it to Wilmington, Ohio.

It seems practically assured that the syndicate will secure the Appleyard system with its 160 miles of roads when it is put up for sale after the first of the year.

NEW YORK CONNECTING RAILWAY RENEWS APPLICATION FOR A FRANCHISE

The New York Connecting Railway has renewed to the Rapid Transit Commission its application for a franchise. The application previously approved by the Commission was denied by the Board of Aldermen unless the company would agree to certain conditions required by the aldermen. Those conditions included a fare of 5 cents for the 6½ miles of road, the privilege for the city to string telephone, fire and police wires on the structure; accommodation for vehicular and pedestrian traffic, and the use of electricity alone as the motive power. Samuel Rea, president of the company, and Edward M. Shepard, general counsel for the Pennsylvania road, which will control the connecting railroad, told the Commission that it would be impossible to comply with the terms. Mr. Shepard explained that the structure of the road will be 150 ft. high in places, and therefore useless for wires. Taking into consideration the height of the structure, Mr. Shepard said it would not be feasible to provide for vehicular traffic or for pedestrians. Controller Grout thought some accommodation should be made for citizens of Queens who would like to cross from Astoria to Port Morris, but Mr. Rea said the bridge across Hell Gate is to cost $6,000,000, and that it would cost the city nearly as much to build approaches if it was decided to use it for vehicular traffic. The matter was referred to the committee on contracts. Messrs. Rives and Boardman, counsel to the Commission, presented a report on the status of the Steinway tunnel and the authority of the Commission in regard to it. The Commission, after Mr. Rives had declined to express any opinion as to August Belmont's right to operate the tunnel, adopted a resolution requesting the Corporation Counsel to test the matter in the courts.

APPLEYARD AFFAIRS TO BE CLOSED AND THE PROPERTIES SOLD

Myron Wilson, one of the receivers of the Appleyard properties in Ohio, informs the STREET RAILWAY JOURNAL that the United States District Court has ordered the receivers to close up the affairs of the properties preparatory to a sale of the various lines after Jan. 1, 1906. The order in the court covers the Columbus, London & Springfield, the Columbus, Grove City & Southwestern, the Central Market Street Railway, the Dayton, Springfield & Urbana and the Urbana, Bellefontaine & Western. The Dayton, Lebanon & Cincinnati, a steam road, is in the hands of separate receivers and the bondholders of this property are said to have perfected plans for a reorganization.

The various lines will doubtless be offered for sale individually, as there are different circumstances surrounding each. The stockholders of some of the properties have arranged to bid in the lines. It is stated that two different parties are endeavoring to secure options on the securities of the Columbus, London & Springfield, and the Dayton, Springfield & Urbana, $40 per share having been offered for the preferred stock of the latter road. There appears to be little doubt that the Morgan-Dolan-Schoepf interests will acquire these properties in time, as the lines are essential to connect the big system which the syndicate is forming, with which the Appleyard lines now connect.

Notes aggregating $262,000 given by A. E. Appleyard to secure loans obtained from the defunct German bank at Buffalo have been sold at auction to Adams & Company, of Boston, for $52,401. There was no bid for $13,000 of Kenton & Southern bonds, which were also offered; this was a line projected by Appleyard, and on which a small amount of work had been done. Guy M. Walker, of New York, traction expert, acting for the stockholders of the Central Market Street Railway, is working to realize something on this property for the benefit of the stockholders. It is generally believed that the Columbus Railway & Light interests will bid heavily to acquire this property to avoid further competition in that city.

CITY LOSES CASE AGAINST MONTREAL STREET RAILWAY COMPANY

Judgment has been delivered by the Judicial Committee of the Privy Council in the case of the Montreal Street Railway Company and the corporation of Montreal, arising out of the claim of the city for a percentage of earnings on suburban lines owned by the railway company. Judgment was in favor of the railway company. The street railway company appealed from the decision of the the Supreme Court of Canada, and the unanimous decision of the council, just handed down, was that the railway is not liable for a percentage to the city on earnings of suburban lines. The Supreme Court of Canada held that the company was liable. The case was decided on the terms of the agreement with Montreal, and not on the agreement of the railway outlying municipalities. The decision does not apply to Toronto, Winnipeg or other cities. The company stands to gain by the decision approximately $500,000.

STREET RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

UNITED STATES PATENTS ISSUED NOV. 14, 1905

804,281. Wheel Fenders. Louis Vogt, Conneaut, Ohio. App. filed April 13, 1905. The usual fender has a supplemental frame hinged above it which closes down upon a person scooped up by the fender, like the jaw of a clam-shell basket.

804,297. Safety Crossing System for Railways. Walter J. Bell, Los Angeles, Cal. App. filed May 15, 1905. The usual trolley wires of each line have tappets adjacent to the crossing which are engaged by the trolley wheels, and serve to throw off the power from the crossing portion of the other line, so that it is impossible for two cars on the separate lines to proceed simultaneously across the crossing.

804,298. Automatic Safety Crossing System for Railways. Walter J. Bell, Los Angeles, Cal. App. filed June 1, 1905. An improvement on the above patent by which it is impossible for two cars upon the same line to collide when the current is turned on suddenly by the automatic devices actuated by a car on the other line at the crossing.

804,371. Electro-Magnetic Wheel. Hugh Behan, Seattle, Wash. App. filed Jan. 6, 1905. The driving wheel of the car has electromagnets radially disposed around its circumference which are successively energized at the instant when they are in proximity to the track.

804,421. Variable Speed Transmission for Vehicles. George W. Marble and William R. Donaldson, Chicago, Ill. App. filed Dec. 7, 1904. A small track-inspection car has a gasolene motor connected to a longitudinal driving shaft. The power is transmitted

through friction discs longitudinally slidable upon the car axle so as to drive in either direction.

804,587. Car Fender. Stefan Ebenschweller, Allegheny, Pa. App. filed Aug. 3, 1905. The fender is normally held in a raised position by a pair of pivoted links which are brought into alignment with one another for this purpose. When a trigger at the front of the car encounters an object this alignment is destroyed and the fender falls.

804,588. Brake for Railway Vehicles. Josef Egetz, Wama, Austria, Hungary. App. filed Aug. 26, 1904. A three-armed lever is moved in either direction by one or the other of the usual hand brakes. The brake connections to the two brake arms are so arranged that the brakes are tightened whichever direction from the center that they are moved.

804,648. Trolley. Michael Baker, Chicago, Ill. App. filed Aug. 31, 1904. A supplemental spring-pressed wheel with a corrugated tread is arranged to bear against the trolley wire in advance of the usual wheel, so as to break the ice from the wire.

804,745. Electrically-Controlled Fluid Pressure Railway Brake. John S. Lockwood, Kansas City, Mo. App. filed Feb. 5, 1904. For the purpose of insuring greater certainty of operation of the triple valve of an air-brake system, all the emergency valves are magnet controlled and located in an operating circuit from the usual controller.

804,766. Car Replacer. Harry Pratt, Kenilworth, Ill. App. filed March 13, 1905. Comprises a shoe with flaring or divergent side walls and a rib on its bottom face adapted to engage the usual track groove. The wheel is guided on to rails or guides within the shoe previous to the time when it passes on to the track.

PERSONAL MENTION

MR. JOHN H. HAYES, who for the past two years has been foreman of the Lakeside car house of the Old Colony Street Railway Company, has been appointed superintendent of the Hyde Park division of the company to succeed Mr. George W. Smith.

MR. C. O. SCRANTON, for several years auditor of the Stark Electric Railway, of Alliance, Ohio, has resigned to go into other business. He will be succeeded by Mr. F. E. Wilkin, of Toledo, at present traveling auditor of the Cincinnati, Hamilton & Dayton Railway (steam).

MR. HORACE ANDREWS, president of the Cleveland Electric Railway, denies that there is any truth in the newspaper reports that he will retire on Jan. 1 from the presidency of the Cleveland property to devote his full time to the Vanderbilt-Andrews plans in Central New York.

MR. RANDALL MORGAN, of Philadelphia, who is identified with Mr. W. Kelsey Schoepf, of Cincinnati, and numerous other financiers in the building and acquiring of an important system of traction lines in Ohio and Indiana, last week made an inspection of all these properties, it being the first time he had seen some of them. In his party were Mr. Marshall Morgan and Mr. J. York, of Philadelphia; Mr. Hugh McGowan, of Indianapolis; Mr. W. Kelsey Schoepf and Mr. J. B. Foraker, Jr., of Cincinnati.

MR. R. T. GUNN, general manager of the Lexington Street Railway Company, of Lexington, Ky., has been elected general manager of the Blue Grass Traction Company and the Frankfort & Versailles Traction Company. His election is the first step toward the consolidation of the electric railway interests in Lexington, which were purchased a short time ago by Philadelphia capitalists. These interests consist of the Lexington Street Railway, the Blue Grass Traction Company, which controls the interurban lines to Georgetown and Paris, and the Frankfort & Versailles Traction Company

MR. JAMES F. JACKSON and MR. CLINTON WHITE, chairman and commissioner, respectively, of the Massachusetts Railroad Commission, have been making a tour through the large cities of the central and easterly sections of the country inspecting the newest examples of railroad terminals and street railway and interurban development. They left Boston last week and have visited St. Louis, Chicago, Cleveland and Pittsburg, making numerous side trips. Of especial interest to them have been the methods of operation of interurban roads, the most important example of which in Massachusetts is the Boston & Worcester Street Railway. The subject of freight carrying is being given separate study by Mr. Jackson and Mr. White for the reason that the movement to develop this sort of business in Massachusetts, on existing and projected street railways has recently taken a new start. On their way north Mr. Jackson and Mr. White will stop at Philadelphia to study the elevated and the subway lines now under construction in that city.

MR. FRANK S. DRAKE has been appointed to the position of assistant general manager of the Portland Railway Company, of Portland, Ore., which has taken over the Portland Consolidated Railway Company. Mr. Drake is one of the pioneers of the industry, and his experience has covered the duties of both operative and executive. In 1887 Mr. Drake entered the employ of the Thompson-Houston Company, for which he served at Buffalo and Lynn. Shortly thereafter he became master mechanic of the Buffalo Railway and subsequently served in a similar capacity for the Pittsburg & Birmingham Traction Company. In 1892 he became erecting engineer for the Westinghouse Electric & Manufacturing Company, and in 1893 began his connection with the Johnson interests. This included terms of service with the Allentown & Lehigh Valley Traction Company as superintendent, the Nassau Electric Railroad as vice-president and general superintendent and the Brooklyn Rapid Transit Company as superintendent of rolling stock. In 1899 he accepted the position of superintendent of rolling stock of the St. Louis Transit Company, and the following year supervised the erection of cars in England for the St. Louis Car Company. Returning to the United States in 1901 he again entered the service of the Johnson syndicate, this time as manager in charge of the Philadelphia office. Early in 1905 he gave up the general contracting business, which he had entered, to become connected with the Philadelphia Air Brake Company. It was from the latter company that he resigned to accept the position in Portland.

MR. D. G. EDWARDS, formerly of Cincinnati, has been appointed vice-president in charge of traffic on all the electric railways of Indiana and Ohio controlled by the Philadelphia interests, allied with the Randall-Morgan syndicate. Mr. Edwards has been in the employ of the C. H. & D. and C. C. & L. Railroad, as passenger traffic manager for the past six years, and is regarded highly proficient as a business producer. The position to which he has been appointed is one of the most important ever created in the history of traction management. Among the properties which he will have charge of are: The Cincinnati Traction Company, the Cincinnati & Northern Traction Company, the Columbus, Buckeye Lake & Newark, the Columbus, Newark & Zanesville, the Lima & Toledo, the Fort Wayne, Van Wert & Lima, the Fort Wayne & Wabash Valley, the Indiana Union Traction Company, the Indianapolis Traction & Terminal Company, the Indianapolis & Northwestern, the Indianapolis & Eastern, the Richmond Street & Interurban Company, the Indianapolis & Danville, the Indianapolis & Plainfield, and the Indianapolis & Western. Mr. Edwards will thus handle passenger traffic matters over more than 1500 miles of road. It is announced that Mr. Edwards' first move will be to reorganize the passenger department of the big merger company in as careful and thorough manner as any steam road system, and to this end he will marshall his subordinates for an aggressive fight for all kinds of passenger business. It is not fully determined where Mr. Edwards will make his headquarters, but they will probably be in Indianapolis.

MR. STEPHEN SALISBURY, well known throughout New England through his business interests and his public benefactions, died at Worcester, Mass., last week. Mr. Salisbury was born at Worcester March 31, 1835. He received his early training in public and private schools, and in 1852 entered Harvard College. In 1856 he was graduated, and then went abroad, visiting Greece and Turkey, and studying in the Ecole de Droit at Paris and the Frederick William University at Berlin. Upon his return from Europe, in 1858, Mr. Salisbury studied law in the office of Dewey & Williams, and then entered the Harvard law school, from which he was graduated in 1861, in which year he began his business career as a director of the Worcester National Bank, with which he had been associated since, serving as its president since the death of his father in 1884. In 1877 he was elected a member of the board of investment of the Worcester County Institution for Savings, and was its president from 1892 until July 1, 1904, when the new law went into effect, preventing a man from holding two similar offices in a savings and a national bank. In addition to these connections he was a director of the Worcester Trust Company, a director of the State Mutual Life Assurance Company, of the Worcester & Nashua, Boston, Barre & Gardner and Boston & Albany Railroad Companies, the Worcester Electric Light Company, Worcester Consolidated Street Railway Company, the Worcester Railways & Investment Company, the Worcester & Holden Street Railway Company, the New England Telephone & Telegraph Company, the Worcester Cold Storage Company, and the United States Corset Company.