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Of this issue of the Street Railway Journal, 8000 copies are printed. Total circulation for 1906 to date, 90,300 copies, an average of 8209 copies per week.

The Co-operation of Electric Railway Men

Nothing probably has contributed more to the rapid advance in electric railway progress than the general characteristic of all engaged in the work to give the benefit of their experience to others, and to receive from others and test for themselves ideas which promise to be labor-saving. Each one concerned seems to recognize the fact that the other fellow may have an idea better than his own, and he

is always willing to give it a trial. On the other hand, if he has worked out some method which seems better than that used elsewhere he is willing to have others acquainted with it. The fact that almost every street railway system has geographically a field of its own, and that an account of its methods will not lessen its receipts may, of course, be one reason that permits of this free exchange of ideas in street railway work. Whatever the cause, we are glad to record this condition as one of the pleasant features of journalistic effort in the electric railway field.

This tendency, which is so prevalent among street railway men, is in marked contrast to the narrow-minded policy in some other lines of work. In many places of business, it is the custom to keep as secret as possible any new method for cheapening the cost of production. To expose any good idea means that another company will gain an advantage, and will thereby be enabled to undersell. Such lack of co-operation can result in nothing other than a slow general advancement of improved methods.

The readiness to give valuable information is not the only evidence of the esprit du corps among electric railway men. There is a marked fraternal feeling among employees of electric railways. The officers of one system have a warm sentiment for officers of any other line. The same is true among the shop men and train men of different systems, and no doubt it is the sense of fraternalism that is at the foundation of the tendency of railway men to exchange ideas. At any rate, whatever may be the cause, it is a most desirable trait, and should be fostered and encouraged so that the rapid advancement and improvements in street railway management and operating details may continue.

Unnecessary Weight of Cars

The designers of electric cars are often apt to consider themselves free from one restriction usually placed on designers of apparatus in general. This is the question of weight. There is a general tendency among railway men to believe that the heavier the car the stronger it is, and the more able to stand up in case of collision or accident. In consequence, the designer is not usually restricted to a certain weight when laying out a car of a given length. If it were true that the heavy car is always the strongest, we should be justified in giving the designer such license. But it is not. Material may be put in the car at points where it is entirely useless and, again, it may be neglected in places where heavy construction is most needed.

Placing no restriction on the designer does not force him to consider closely the requirements of different portions of the car, and he is more likely to be governed by the prevailing practice rather than by actual needs. In order not to err on the wrong side, he probably makes the separate parts a little heavier than usual, and in this manner

the "prevailing practice" from which he obtains his ideas leads in the direction of heavier cars.

Of course, the first cost of the car increases with the weight, but this is an insignificant item compared with the expense of hauling unnecessary weight around throughout the existence of the car. This expense, if computed in cents per pound per year or in some other definite manner, would no doubt show the importance of excluding every pound of unnecessary weight. It might also show the advisability of adopting more expensive material, and of increasing the cost of the car considerably in order to reduce the weight. There are some places where aluminum could be used instead of iron or brass, and figures might indicate that it would pay to do so. In many places about the car where cast iron is used cast steel could be substituted, and the weight thus reduced considerably. Ornamental fittings throughout the car might be made of simpler design. Probably, if effort was directed toward this end, the electrical equipment could be reduced in weight considerably. This has already been done with the rheostat, as the weight of the new grid type of resistance is less than one-half that of the old style.

A determined effort to reduce the weight of a car without decreasing its strength, would probably show a number of places where reductions could be made. The decrease in weight obtained at each point might be so small as to seem trivial, but the total reduction would most probably result in quite a lessened current consumption during the year, or certainly during the ten years or more at which the life of the car is estimated. There would also be a corresponding reduction in the wear of the track and wheels.

The Catenary in Direct-Current Work

Some months ago we took occasion to suggest that inasmuch as catenary suspension has given so good an account of itself in high-tension trolley construction it was worth trying for direct-current high-speed roads. We are glad to record that in at least two instances this has been done. The Utica & Mohawk Valley Railway Company put up catenary suspension for direct-current operation on the West Shore Cut-off, between Frankfort and Herkimer, and in our last issue some particulars are given of its employment by the New Orleans Railway & Light Company, in an extension to one of the race tracks. In the case of the West Shore Cut-off the choice was made because the line probably will be operated eventually with single-phase motors, but the New Orleans Company deliberately put up the catenary for the sole purpose of seeing what it would do. We are strongly of the impression that this marks the beginning of a decided tendency in the direction of applying the newer construction to ordinary direct-current railroading, especially where speeds above 30 miles an hour are planned.

We have frequently pointed out that progress in electric traction has been so rapid within the past decade that in the general evolution many important phases of the work have seemingly lagged somewhat behind. One can hardly inspect any of the modern electric railway installations without being forcibly impressed with the fact that there are still left many incongruous reminders of the early days of the art. This remark, perhaps, may be applied with especial emphasis to the overhead construction. To be sure, the trolley wire has been

increased in size to accommodate the heavier currents required, and grooved wire has made itself conspicuous, but speaking in general and for the average road, current is still being delivered to the motors in about the same way as it was ten years ago. The only radical development in overhead practice has been the application of the catenary to high-tension installations.

Now that methods of overhead construction are receiving some of the attention which their importance deserves, why not keep up and press this matter to some kind of a conclusion? We understand that catenary construction has proved very satisfactory from an operating standpoint and especially has eliminated troubles caused by trolley wheels leaving the wire and damaging the overhead construction. The remaining questions are those of appearance and cost. As to appearance there might be some objection to the construction in city streets on account of the larger number of wires, although when the reduction in span wires is considered we doubt whether the difference would be considerable. As to cost the testimony from the West Shore Cut-off and from New Orleans is that in these particular instances the catenary was more expensive than ordinary construction. But in neither of these installations has full advantage been taken of the longer spacing between poles that the catenary makes possible. On the West Shore Cut-off the poles were spaced 80 ft. apart, and although the longer spacing of 100 ft. was used on the New Orleans extension there is little doubt that with poles the supports can be placed 150 ft. or 200 ft. apart, and that with supporting bridges spans of 300 ft. can be used. This, in fact, is proposed on the New Haven road and West Shore extensions.

The Dalrymple Report

The famous report on the Chicago situation by Mr. Dalrymple, of Glasgow, which has been so long suppressed by Mayor Dunne, was made public at a meeting of the Chicago City Council on Monday evening, against the protests of the Mayor. The report in full is published elsewhere in this issue. A study of this much-discussed document will show the reasons which led the Mayor to object to its publication. Mr. Dalrymple's views correspond very closely with those expressed in the interview with him soon after his return from Chicago, and published in the *STREET RAILWAY JOURNAL* for Aug. 5, 1905. They are stated in no uncertain language. The following are some significant sentences:

"There would be grave danger in your city attempting to operate without radical change in the methods usually employed in carrying on municipal work by the cities of the United States."

"I should be very sorry, were you forced to take such a step, as, speaking generally, I should say, from my knowledge and experience of what it means to operate a municipal street railway system, that the municipalities of the United States are not yet quite ready to successfully undertake this work."

"The success or failure of the undertaking depends in a very large measure on the manner in which the general manager carries out his duty. You will, no doubt, see that it would be impossible to secure the best man for the position unless he has an agreement over a period of years and is made entirely independent of all changes in the City Council. The City Council should give the general manager complete control of the whole staff. He should be held personally

responsible for the good conduct of those under him. He should be absolutely free to engage and discharge his men."

All will admit the correctness of these statements, but what would be the use of a municipal system to the average politician if it was divorced absolutely from politics? Who is so blind as to believe that a municipality in this country would follow the same methods as a private corporation in the selection of a manager; that it would scour the country to find the "best man for the position," or that, having installed him, would allow him to be absolutely free to engage and discharge his men? Where would the ward bosses come in, if they could not get lucrative jobs for their men, and what encouragement would there be for delivering the goods on election day?

We cannot close our comments upon Mr. Dalrymple's report without congratulating him also upon his remarks on the trolley system as compared with the underground conduit. Independently of whether the roads in Chicago are to be operated by the municipality or by a private company, he says, unhesitatingly, that no other system should be thought of at the present time than the overhead trolley. "If properly constructed it is not unsightly, it is not dangerous, it is the most reliable and it is the most economical, both to construct and maintain. To install the underground trolley to any extent would, for various reasons, be a scandalous waste of money."

The report of Mr. Dalrymple comes with especial force at the present juncture when, by the decision of the United States Supreme Court, the ninety-nine-year franchises are held invalid. This latter declaration clears the horizon and makes some kind of a settlement of the franchise situation in Chicago necessary. The citizens of that city have now had the opinion of the manager of the largest and most successful municipally operated street railway in the world. They have also had considerable experience with the shifting and devious ways pursued by the average municipal officer. If they still persist in endeavoring to establish a municipal street railway system in Chicago they will have no one to blame but themselves.

The High-Voltage Trolley

One of the striking features of European single-phase practice is the tendency toward higher trolley voltages, compared with which 3300 volts seems low. The early roads, like the Stubaital, were installed with a 2500-volt trolley. This was increased on the Blankenese, and one or two other roads, to 6000 volts to 6600 volts. Then followed the Swiss installation of the Oerlikon Company, described in a recent issue, of 15,000, and the Siemens-Schuckert Company is now experimenting with 20,000 volts for use on the Swedish Government Railways. Nor have direct-current advocates been silent on this question of high voltage. Mr. Sprague's belief in the practicability of 1500 volts is well known, and Max Deri, a prominent European designer and engineer, has gone on record in favor of the practicability of building a d. c. motor of the interpole type which could be operated on voltages between 2000 and 3000.

It is not our purpose here to discuss the relative merits of these different proposals, but to point to the marked tendency toward much higher trolley voltage both in a. c.

and d. c. systems, and also to direct attention to two points in the 15,000-volt system of the Oerlikon Company, which has been in operation long enough to demonstrate its feasibility. One is that both the Ward-Leonard scheme of conversion to d. c. on the locomotive, and the regular commutated single-phase motor construction have been given steady work, and that neither locomotive, despite the high voltage used, has given any trouble in the matter of insulation. The other is, that though the Ward-Leonard locomotive would appear to involve very considerable extra weight, it is an open question whether, with thoroughly modern design of the d. c. apparatus and a given draw-bar pull and speed, the weight of a commutating single-phase equipment would not be nearly as great. We earnestly hope that comparative data from these two types of locomotive may ere long be published. Such result would throw a great deal of light upon the questions of heavy electric traction now before the house, and until we do get them, or the first of the N. Y., N. H. & H. locomotives starts up, we shall still have to rely on computations and guarantees.

The successful use in Switzerland of 15,000 volts on the trolley wire, is a sufficient demonstration that the employment of such voltage is not open to any very grave objections. The catenary construction, with long spans from the bridges, seems to ensure a very reliable system of working conductors. Collection of current at high voltage no longer has any special terrors for the engineer, and with the small current required, it becomes entirely feasible to work very long sections of road from a single power house, and the cost of the distributing system becomes absurdly small. One power station per hundred miles of line is then entirely feasible, while using the trolley wires alone for the transmission, and the operation of a long line from hydraulic powers becomes a comparatively simple matter. Without passing beyond line pressures now known to be entirely practicable, one could thus operate the whole New York Central system from New York to Buffalo, without burning a pound of coal for motive power. It may be many a year before this feat is seriously undertaken, but the days of low voltage are surely numbered. It will not be so very long before we are looking back upon them as upon the atmospheric engines of a century ago. A few daring experiments will show the way, and then the world will fall into line as it has many a time before "when the thing that couldn't happen has occurred." The use of hydraulic power for transportation is an end greatly to be desired, for the world needs the coal, what is left of it, for other purposes—keeping warm, for example. At the present rate of consumption, it will not take many years to put the price of fuel where it will have to be used very sparingly. It is, therefore, particularly interesting to record anything that can delay a day so uncompromisingly cheerless. With the Oerlikon experiment going on, and with the tests with high voltages now being conducted for the Swedish Government, it looks as if the Continental engineers were keeping up their end of the good work. Another year will certainly bring a rich store of experience in the performance of single and three phase locomotives. It has taken some years of experiment to work up to this point, but progress hereafter should be more speedy.

OAKLAND TRACTION CLUBROOMS

The Oakland Traction Consolidated, of Oakland, Cal., whose repair shops were described in the *STREET RAILWAY JOURNAL* for Feb. 3, has fitted up for its employees one of the handsomest suites of clubrooms that is to be found anywhere in the country. The rooms are for the exclusive use of em-

ployees for their benefit, to use and maintain without payment of rent or other charges.

For this purpose the men formed the Oakland Traction Club, starting off at the first of 1905, when the rooms were first occupied, with 200 members. Membership to the club is limited to employees of the Oakland Traction Consolidated and the Key Route System, and all employees from any of the divisions or departments are admitted on the same basis. The club elects its own officers, and is not dictated to or influenced in any manner by the officials of the company. Starting with perhaps some prejudice from a few, the club has had a substantial and satisfactory growth—satisfactory not only to the company, but to the men themselves. The members now number 360 out of a total of 1000 employees. That the proportion is not far greater is accounted for by the fact that some of the division headquarters are at present located some distance from the rooms. However, when the company completes the new car houses which it is now erecting in a central location in East Oakland, a larger number of men will be able to take advantage of membership in the club and of the use of the rooms.



FIG. 1.—OFFICE AND CLUB ROOMS IN THE GENERAL OFFICE BUILDING

ployees of the company, as well as of its allied corporation, the San Francisco, Oakland & San Jose Railway (operating the Key Route System), and that they are appreciated and enjoyed by the men is shown by the successful club which has been formed to maintain the quarters and by the popular patronage which the rooms receive.

The clubrooms are located in the company's general office building on San Pablo Avenue, Twenty-First Street and Grove Street, and occupy the entire second floor and a portion of the ground floor. This building, Fig 1, is of a substantial brick construction, and was built and occupied for a number of years as a cable power house and car house. The cable plant was abandoned when the San Pablo road was changed to an electric line.

When the combined properties of the Oakland Traction Consolidated required larger offices, part of the ground floor of this building was fitted up for that purpose. This left the entire upper part of the building unoccupied, and when the idea of a clubroom for the men was broached by General Manager Kelly, this space was available, and it has proved to be very suitable. To one acquainted with the building in its original form, the transformation that has taken place seems remarkable. An entire floor had to be put in for the second story, partitions and stairways were added, the walls were cleaned, and finally suitable finishes were put on floors, ceilings and walls. As mentioned above, W. F. Kelly, general manager of the company, fathered the idea, while J. Q. Brown, assistant general manager, with the aid of H. L. Griswold, his assistant, designed and supervised the construction. The entire suite of rooms was fitted up and furnished and equipped by the company at its own expense, and then turned over to

A membership fee of \$2 is charged for admittance to the club, and the monthly dues are 50 cents. For these fees, a member of the club is entitled to the full use of the rooms and gymnasium. The only additional charge is one of 5 cents per game for the use of the bowling alleys.

The present officers of the Oakland Traction Club are as follows: President, Charles E. Parsons; vice-president, George St. Pierre; treasurer, George Williams; secretary, C. W. Graham. The directors are chosen one from each division. The different features of the club's affairs are man-



FIG. 3.—A VIEW OF THE BOWLING ALLEYS

aged respectively by a house committee, an entertainment committee, a finance committee, an auditing committee and a bowling committee. The bowling committee has charge of the alleys and manages a tournament, each division and each department having a team, eight in all. Prizes are offered for the successful teams.

There are five men regularly employed to do the janitor service, tend to the cigar stand, bowling alleys, etc. In ad-

dition the club's secretary is given a small salary for attending to the club's clerical business.

Entrance to the clubrooms is obtained from Twenty-First Street through a spacious hallway, in one corner of which is a cigar stand, where cigars and tobacco are sold at standard market prices. No liquors are sold or allowed in the rooms. The cigar stand is maintained by the club and the profits are

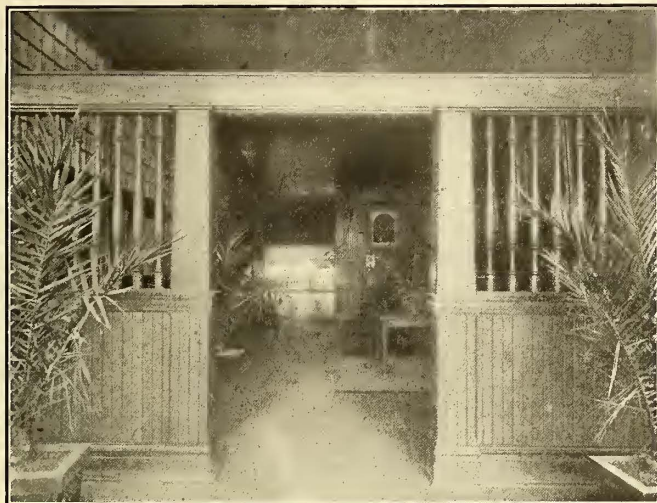


FIG. 2.—ENTRANCE HALL TO THE CLUB ROOM

turned into the club treasury. Fig. 2 is a view of the entrance hall looking toward the cigar stand.

Beyond this hall is the bowling alley room, where two good alleys are installed. This room was formerly used for the cable drive of the old cable power plant, and its length, 250 ft., was therefore more than sufficient for its new use. That the room is an excellent one for bowling may be judged by the illustration, Fig. 3.

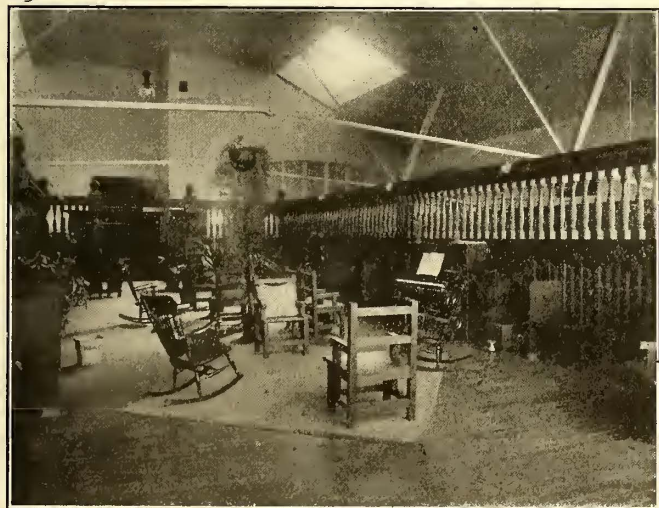


FIG. 5.—ASSEMBLY ROOM OF THE OAKLAND TRACTION COMPANY'S CLUB ROOMS

Leading from the entrance hall to the second floor is a broad, easy stairway, opening on the upper floor into a reception hall, Fig. 4. The second floor has an area of 150 ft. x 150 ft., all of which is devoted to the uses of the club. Directly beyond the reception hall is the assembly room, Fig. 5, which is comfortably furnished with chairs, settees, tables and a piano, the last purchased by the club. To the right of the assembly room in the northwest corner is the reading room, Fig. 6, where on a spacious table are arranged the thirty or more magazines, journals and papers which the club sub-

scribes for or receives gratuitously. The scientific and technical publications are preserved for filing and binding, while the popular magazines, after they have been read, are given to the different hospitals in Oakland. Writing tables, provided with the club's stationery, are conveniently located in this room.

Next to the reading room and opening off the assembly

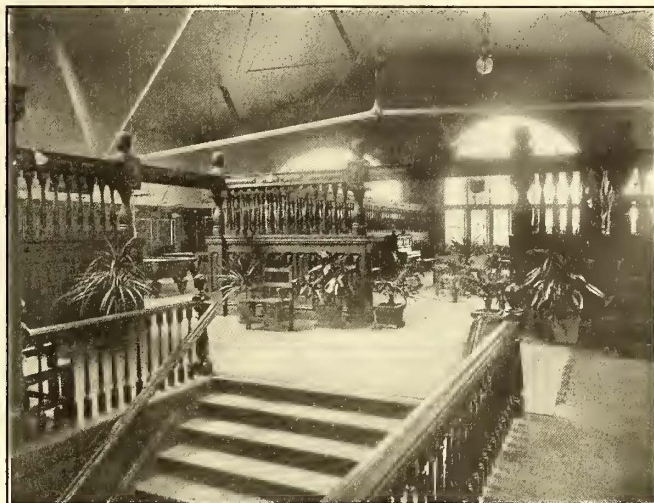


FIG. 4.—THE ENTRANCE TO THE RECEPTION HALL

room is a card room, where four tables are provided for cards and other table games.

Extending along the south side of this half of the building is the billiard room, Fig. 7, where three pool and billiard tables, furnished by the company, serve to keep many of the men busily engaged during their leisure moments. The room

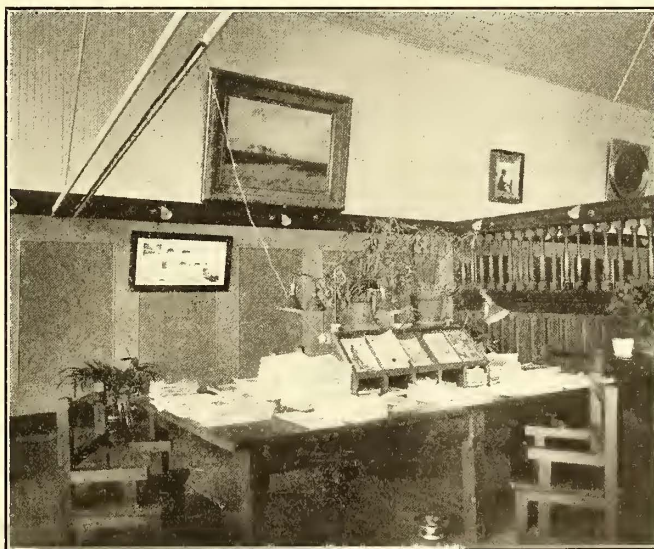


FIG. 6.—THE READING ROOM. THE LARGEST STACK OF PAPERS IS COMPOSED OF "STREET RAILWAY JOURNALS"

is well lighted, and comfortable settees are arranged along the sides.

At the right of the reception hall is an instruction room, Fig. 8. The walls are hung with charts illustrating the design and operation of the air brake. Regular instruction is given here to new men.

The rooms described above are all located in the west half of the second story of the building. They are finished in Oregon pine and stained a dark brown, which gives a handsome and rich appearance. The floors are stained to corre-

spond and the walls are paneled and covered with burlap of a tone harmonizing with the whole. The Old Mission style of furniture has been adopted throughout, and a generous supply of palms, ferns and other plants typically Californian, serve to give the rooms a semi-tropical and withal a very pleasing and homelike appearance. The walls are hung with some handsome works of art, loaned by directors of the com-

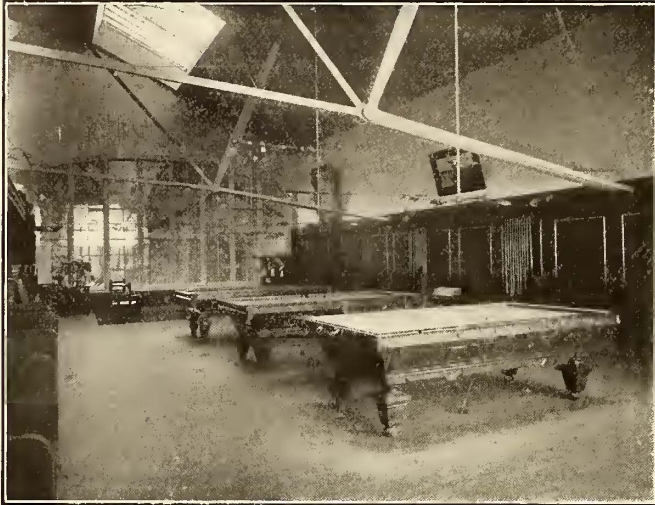


FIG. 7.—BILLIARD ROOM IN THE OAKLAND TRACTION COMPANY'S CLUB ROOMS

pany. The partitions are heavy and open pillared at the top, the construction being of a pleasing Colonial style.

The entire eastern half of the second floor is occupied by the gymnasium, lockers, lavatories and baths. The gymnasium is a large, airy room, as may be seen from Fig. 9. It is equipped with vaulting horses, ladders, weight machines,

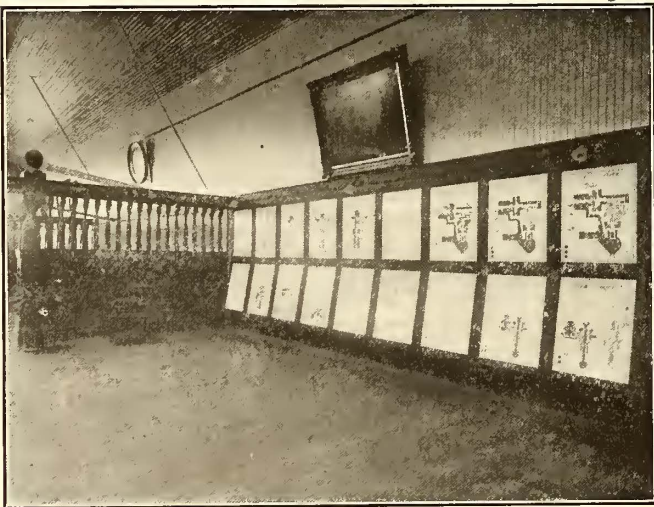


FIG. 8.—INSTRUCTION ROOM

ropes, dumb bells and clubs, wrestling mats, boxing gloves, punching bags, Roman rings, etc. Four shower baths are provided and 350 lockers, sufficient for all the members, no extra charge being made for the use of either bath or locker.

Even considering the considerable expense to which the company was put in building, equipping and furnishing the rooms, the officers feel that the investment was an exceedingly profitable one, as not only has a kinder and more unselfish feeling been engendered among the employees toward the company, but a decided improvement has been noticed in its efforts to secure and keep in service conscientious and efficient men. The men appreciate the broad-gage policy so sub-

stantially shown by the company, and have more desire to work for its interests and welfare. In short, the clubrooms are a success and are proving profitable alike to employees and employers.

Acknowledgment is hereby made to F. W. Frost, assistant secretary, and J. Q. Brown, assistant general manager, for their kindness and assistance in furnishing material and photographs for this article.

SINGLE-PHASE RAILWAY NEAR HAMBURG, GERMANY

Several short articles which have been published recently in the *STREET RAILWAY JOURNAL*, have referred to important electric railway systems proposed or under construction in Hamburg. There are two such enterprises. One is a projected underground and elevated electric railway system within the city. Up to the present the electrical system has not yet been selected, but the contract for the elevated structure will soon be awarded. The other line is a suburban railway, connecting Ohlsdorf, Hamburg, Altona and Blankenese, belonging to the Prussian Government. This line is being equipped with the Winter-Eichberg system of the Allgemeine Elektrizitäts-Gesellschaft, and will be opened on Oct. 1, 1906. The power house contract was divided among Brown, Boveri & Co., Siemens-Schuckert Works and Lahmeyer & Co.

The rolling stock of the Blankenese-Ohlsdorf line will consist of 51 two-motor car units. That is, each unit will be composed of two motor cars, each mounted on three axles, and permanently coupled together. There is a single truck under the outer end of each car, and a single running axle under the inner end. The car, which carries the current-collecting apparatus, carries the switches and trans-

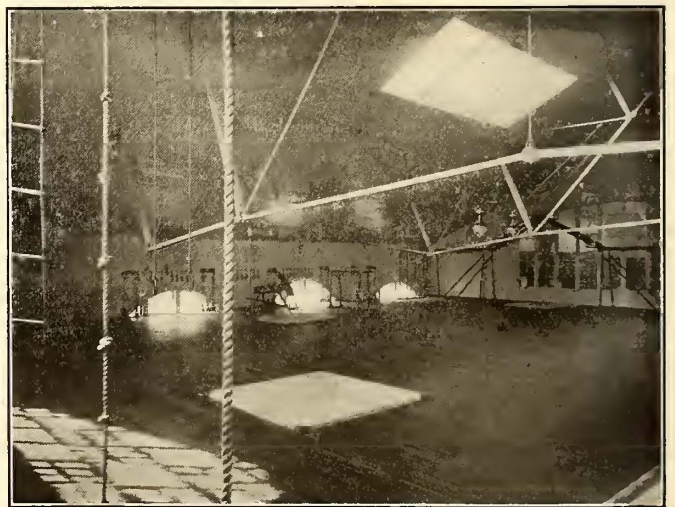


FIG. 9.—INTERIOR OF GYMNASIUM

former for the high tension, and has both of its truck axles motor-driven, whereas the second car carries low-tension apparatus only, and has but one of its axles (the outside one) motor-driven. The first car is divided into a motorman's cab, and two third-class and one second-class passenger compartment. The third-class compartment adjoining the motorman's cab has double doors and seats that fold up, so that it can be used as a baggage compartment, if desired. The second car also contains a motorman's cab, a third-class and a second-class section. Each motorman's cab has a folding seat and is otherwise arranged so that it can be available for passengers when it is at the rear

of the train. The seating capacity is 122 or 124, depending upon the direction of the train. All compartments are furnished with side doors, but there is no communication between the compartments.

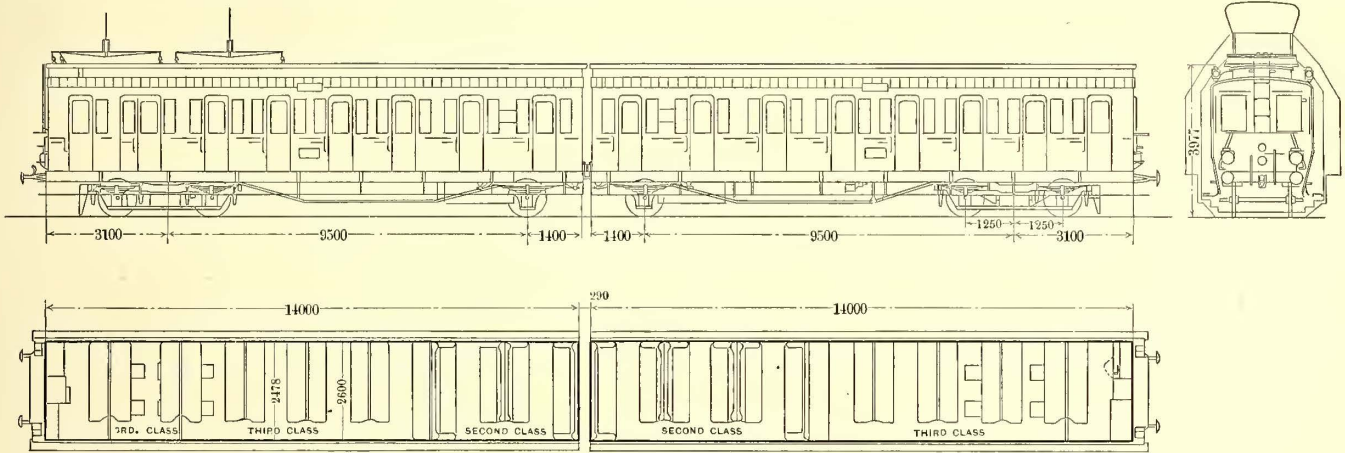
The roof is covered with cross-strips of leaded sheet iron, which are connected together, and with the tin covering of the car sides, and are grounded so that a falling high-tension wire will be immediately short-circuited.

The trucks have a wheel base of 2.5 m. (8 ft. 2 ins.) with wheels 1 m. (39.37 in.) in diameter. The Knorr air brake is used. The length of each car is 14 m. (46 ft.), and the width 2.6 m. (8 ft. 5 ins.). The length of the train over all between buffers, 29.55 m. (97 ft.), and total weight without passengers, 71 tons.

On the interurban section the trolley potential is 6000 volts, and the wire is carried at a height of 5.2 m. (17 ft.) over the center of the track in the open and 4.8 m. (15 ft. 9 ins.) under the bridges. At the terminal station the overhead potential is only 300 volts, and the trolley wire is placed 4.5 m. (14 ft. 9 ins.) above and at a distance of 1.2

a commutating switch which is connected pneumatically and electrically with the collectors, changes the connections of the motors from the transformer to the trolley wire direct. The high-tension collectors have sliding contacts of aluminum, while the low-tension collectors are of the roller type. The low potential collectors are short and can never spring high enough to come in contact with the high-tension wire. The lighting current is obtained from a 300-volt tap on the power transformer. The lamps are of 16 cp and 25 cp, are made for 48 volts and are placed four in series. As the 16 cp and 25 cp lamps are in separate circuits, the burning out of a lamp on one circuit will not affect those on the other. Owing to the possible variations in voltage, five steadying resistances are introduced in each lamp circuit. There are also four 150-volt, 16-cp signal lamps, placed in two series, and one petroleum signal lamp.

The heating current is also taken from a 300-volt tap on the power transformer. Every compartment, except the baggage and motormen's, has a 2-kw and a 1-kw heater arranged in parallel, hence three degrees of temperature can be secured.



Note.—All dimensions shown are given in millimeters.

PLAN OF THE EXPERIMENTAL CAR FOR THE BLANKENESE-OHLSDORF SINGLE-PHASE RAILWAY

m. to 2 m. (4 ft. to 6 ft. 6 ins.) from the center of the track. Twenty-five cycles are used.

The motors, which are three in number, are of the Winter-Eichberg 51-V type, and are somewhat larger than those used on the Niederschöneuweide-Spindlersfeld (See STREET RAILWAY JOURNAL for Oct. 17, 1903). Ventilation is secured by taking air in through the hollow axle. In this way it does not come into direct contact with the commutator. There are two sets of brushes, set 90 degs. apart electrically. At a speed of 600 r. p. m., the motors are 115 hp on the one-hour rating. They are designed for 25-cycle single-phase current at 750 volts. One oil transformer is provided on the car for the three motors used. Each group of motors has an oil-exciter transformer, whose taps are arranged for five running positions.

The control system used is of the Allgemeine Company's multiple-unit contactor type, so that any desired number of these motor trains may be coupled together and operated from one master controller. There is also a special contactor for the electric heaters, which is brought into the circuit when the master-controller handle is at zero, and, therefore, when no current is going to the motors.

A voltage of 300 is used on the trolley wire in the depots at the ends of the line, as stated, and these wires are lower than those on the interurban portion. When the overhead collectors change from the proper height for the high-tension wires to the proper height for the low-tension wires,

Current is taken by the heaters only when the motors are not taking current.

The compressor is operated by a 300-volt 3-hp a. c. motor, and to prevent vibrations of the car floor, is mounted on the one-motor truck.

ELECTRIC RAILROADING IN MANILA IS A SUCCESS

The Manila Electric Railroad & Lighting Corporation, which operates all the electric railways in Manila, aggregating 40 miles of track, reports for the four weeks ending March 7 gross earnings of \$37,025. This is an increase at the rate of about 10 per cent. a month. It will be remembered the road was built complete and is operated by J. G. White & Company, of New York City.

The Trenton Street Railway Company has reduced the fare between Trenton and Princeton from 15 to 10 cents, for the 12 miles. As tickets are sold at the rate of six for a quarter, the fare is really reduced from 12½c. to 8 1-3c., or only 4 1-6c. for the 7 miles from Trenton to Lawrenceville. Prior to 1902 the fare was 20c. each way between Trenton and Princeton. The Trenton, Lawrenceville & Princeton Railroad (New Jersey & Pennsylvania Traction system) reduced the rate to 10c. for the 13 miles it covers, and the Trenton Street Railway has made the two reductions since.

EARNINGS OF ELECTRIC RAILWAY COMPANIES

BY WYATT W. TAYLOR

A comparison of the earning and cost of operation of the electric railways in the United States has recently been compiled by the writer, from figures given in the report of the United States Census Bureau for the year ending June 30, 1902, and recently published. The States are classified geographically, so that figures for contiguous States can be more easily compared. The differences in the various items, when so classified, are extremely interesting. Thus, the table shows

of city track. The "fare passengers per car mile" do not vary as much as most of the other figures, and with the exception of Kansas, New Jersey, Rhode Island, Montana and Washington, are all between 2.98 and 4.89. Other interesting comparisons can be drawn up from the table but need not be discussed here.

INTERURBANS BUILD UP TOWNS IN INDIANA

According to statistics recently gathered by the State statistician for Indiana, towns and cities connected by interurban railways have made a comparatively greater in-

STREET AND ELECTRIC RAILWAYS.—TABLE OF YEARLY EARNINGS AND COST OF OPERATION. COMPILED FROM THE U. S. CENSUS REPORT OF 1902, ON STREET AND ELECTRIC RAILWAYS

STATE OR TERRITORY.	Number of Companies.	Gross Earnings.	Percentage of Operating Expenses to Gross Earnings.	Car Mileage.	Gross Earnings per Car Mile.	Net Earnings per Car Mile.	Fare Passengers per Car Mile.	Length in Single Track Miles.	Gross Earnings per Mile of Single Track.	Net Earnings per Mile of Single Track.	Fare Passengers per Mile of Single Track.	Percentage of Maintenance of Way to Total Operating Expenses.	Percentage of Maintenance of Equipment to Total Operating Expenses.	Percentage of Operation of Plant to Total Operating Expenses.	Percentage of Operation of Cars to Total Operating Expenses.	Percentage of Miscellaneous Expenses to Total Operating Expenses.
NEW ENGLAND STATES.																
Maine.....	19	\$ 1,542,508	73.1	6,815,671	22.6	6.1	3.99	330.40	\$ 4,668.60	\$ 1,255.60	76,897	12.9	14.0	17.8	33.5	21.8
New Hampshire.....	7	604,131	79.2	3,214,879	18.8	6.1	3.9	174.45	3,469.90	725.00	67,432	7.4	10.2	28.0	34.0	24.0
Vermont.....	9	249,228	80.7	1,412,528	17.6	3.4	3.32	86.05	2,396.30	558.40	53,070	13.0	10.0	20.7	45.2	11.1
Massachusetts.....	74	23,617,570	69.5	101,373,975	23.3	7.1	4.61	2,578.42	9,159.70	2,797.80	182,822	9.2	11.6	15.7	45.5	18.0
Rhode Island.....	7	2,964,260	63.8	12,296,893	24.1	2.7	5.12	350.35	8,400.90	3,059.20	189,356	15.0	11.3	15.6	41.8	16.3
Connecticut.....	21	4,284,089	64.7	20,186,690	21.2	7.5	3.93	593.43	7,219.20	2,545.30	134,194	11.9	10.5	15.8	40.2	21.6
EASTERN STATES.																
New York.....	96	59,315,606	56.8	251,312,176	23.6	10.2	4.89	2,889.10	20,530.80	8,874.00	407,305	7.1	11.2	15.6	46.0	20.1
New Jersey.....	25	8,137,477	53.1	35,372,346	23.0	10.8	5.35	174.45	9,321.70	4,368.30	219,414	6.3	13.3	17.6	44.2	18.7
Pennsylvania.....	98	30,319,211	51.5	133,501,899	22.7	11.0	4.33	2,542.07	11,927.00	5,780.50	258,988	9.9	13.1	13.2	46.5	17.3
Delaware.....	3	500,412	72.0	3,006,798	16.6	4.6	3.35	89.66	5,581.20	1,559.50	116,301	3.2	9.7	23.5	37.4	26.2
Maryland.....	10	4,898,627	47.2	24,832,682	19.7	10.4	4.13	456.63	10,727.80	5,675.00	228,377	12.3	20.0	44.0	18.5	18.5
Virginia.....	16	1,553,478	65.0	12,335,072	12.6	4.4	3.60	378.30	4,106.50	1,438.40	127,562	9.3	9.8	24.1	31.7	25.1
West Virginia.....	8	1,102,171	59.2	6,734,171	16.4	6.7	3.22	93.64	11,770.30	4,798.30	155,049	7.5	7.4	15.0	42.6	27.5
CENTRAL STATES.																
Michigan.....	24	6,494,691	56.3	33,046,839	19.7	8.6	3.52	1,083.11	5,996.30	2,529.10	111,374	8.8	11.6	18.0	42.8	18.8
Ohio.....	62	16,587,693	55.1	83,996,438	19.7	8.8	3.43	2,454.83	6,757.20	3,045.10	121,284	8.6	9.5	17.8	46.0	18.1
Indiana.....	26	3,813,076	58.2	23,095,357	18.1	7.6	3.17	679.47	5,611.80	1,924.58	88,838	8.8	13.8	16.4	38.2	22.8
Kentucky.....	12	2,932,901	53.2	15,477,507	18.9	8.8	3.64	296.76	9,883.10	4,925.45	198,255	15.1	9.4	11.9	41.9	21.7
Wisconsin.....	17	3,902,059	51.1	15,609,884	25.0	12.2	4.03	446.14	8,748.50	4,276.50	159,156	6.9	8.3	19.6	36.0	29.2
Illinois.....	48	24,164,965	58.3	121,142,474	19.9	8.3	3.83	1,713.39	14,103.60	5,872.40	238,032	7.5	14.2	16.7	41.3	20.3
Minnesota.....	5	3,727,648	46.1	15,692,887	23.8	12.8	4.67	316.27	11,786.30	6,348.90	216,547	5.4	12.9	15.3	45.6	20.8
Iowa.....	22	2,384,421	61.3	11,809,254	20.2	7.8	3.30	359.04	6,812.60	2,638.30	101,942	10.9	10.7	20.1	35.2	23.1
Missouri.....	16	10,691,220	56.8	55,762,991	19.2	8.4	3.83	720.78	14,832.80	6,408.60	279,291	6.8	12.8	16.2	44.7	19.5
SOUTHERN STATES.																
North Carolina.....	7	437,259	73.7	1,676,978	26.1	6.9	3.28	58.76	7,441.40	1,955.60	115,228	9.0	8.7	24.6	24.7	33.0
South Carolina.....	7	597,577	66.7	2,520,231	23.7	7.9	3.62	77.98	7,063.20	2,550.80	117,656	6.0	8.9	14.0	34.0	37.1
Georgia.....	10	2,375,224	52.0	10,733,429	22.1	10.6	3.04	308.38	7,702.30	3,066.20	108,074	4.1	8.2	14.4	32.5	40.8
Florida.....	6	529,743	64.0	2,349,449	22.5	8.1	3.65	61.75	8,578.87	3,082.80	133,596	6.1	7.7	19.2	30.2	36.7
Alabama.....	9	1,497,351	58.7	6,152,896	24.3	10.0	3.76	204.72	7,314.10	3,023.90	111,122	8.2	13.0	13.0	34.2	31.6
Mississippi.....	5	258,654	74.3	923,990	28.0	7.3	3.36	25.30	10,223.50	2,632.40	123,577	8.6	7.7	32.2	21.2	30.3
Tennessee.....	8	1,866,835	57.7	10,138,603	14.4	7.8	3.52	248.53	7,511.50	3,161.00	140,432	9.0	11.7	15.2	38.0	26.1
Louisiana.....	8	2,910,244	60.4	18,594,869	15.7	6.2	2.98	198.84	16,434.10	7,590.90	278,782	9.3	13.8	16.8	47.3	12.8
Arkansas.....	7	371,560	58.2	2,144,776	17.3	7.2	3.21	51.33	7,238.70	3,022.20	131,082	8.8	9.0	25.5	40.6	16.1
WESTERN STATES.																
Nebraska.....	4	1,148,994	57.1	6,273,945	18.3	7.8	3.56	119.56	9,610.20	4,125.70	195,569	18.6	9.7	18.7	40.3	12.7
Kansas.....	11	370,481	69.4	2,417,364	15.3	4.7	2.83	195.81	1,892.00	578.20	61,406	9.6	11.4	17.3	39.9	21.8
Texas.....	17	1,547,846	64.2	9,804,017	15.8	5.7	3.08	309.36	5,003.40	1,791.90	99,047	11.2	11.1	17.8	38.0	21.9
Colorado.....	7	2,227,286	58.4	8,925,066	20.0	10.4	4.75	234.53	9,496.80	3,951.20	183,865	14.4	9.9	18.6	40.9	16.2
Montana.....	5	492,023	74.2	1,354,822	36.3	9.4	5.22	63.21	7,783.90	2,008.30	103,506	10.7	7.8	16.2	33.5	23.8
Utah.....	3	561,328	63.6	3,047,222	18.4	6.7	3.77	89.04	6,304.20	2,296.10	123,088	15.3	11.5	16.8	45.6	10.8
Washington.....	8	2,542,905	62.0	8,378,420	30.5	11.7	5.01	228.93	11,107.87	4,223.50	181,471	11.9	8.6	17.5	32.8	29.2
Oregon.....	6	1,042,895	62.7	4,781,105	21.8	8.1	3.97	140.48	7,423.87	2,768.80	137,041	10.7	13.2	16.5	44.8	14.8
California.....	35	9,967,288	54.2	41,512,788	24.0	11.0	4.42	839.95	11,866.50	5,434.90	219,753	9.8	11.4	16.3	51.1	11.4
All other States and Territories.....	12	3,021,063	52.2	16,671,311	18.1	8.6	4.06	175.57	17,207.2	8,233.00	383,594	4.4	12.2	18.0	47.5	17.9
United States.....	799	\$247,553,999	57.5%	1,144,430,466	21.6 cts	9.2 cts	4.26	23,134.44	\$10,700.70	\$4,549.20	212,217	8.5%	11.5%	16.9%	43.2%	19.9%
Hawaii and Porto Rico.....	5	515,913	64.0	1,913,409	27.0	9.7	5.04	41.26	12,504.00	4,497.50	232,564	6.3	8.4	16.8	33.5	35.0

Note.—All expenses, except dividends and interest on bonds, are included in aggregate of Operating Expenses.

that in the percentages of operating expenses to gross receipts, the New England roads are all much above the average for the United States, whereas in the Central group most of the states are under the average, and the highest is not as high as the lowest in the New England States. A comparison of net earnings per car mile shows also great differences. Minnesota is highest, with Wisconsin next. In gross and net earnings per mile of track New York and Louisiana lead, undoubtedly owing to the large preponderance

crease in population and material prosperity than towns and cities having steam road facilities alone. The figures show conclusively that many towns and cities having steam railroads have remained at a standstill for years previous to being connected by electric lines. The report disproves the theory that electric lines are injurious to small towns, from a business standpoint. This is true in the matter of increase in manufacturing as well as local business and increase in population.

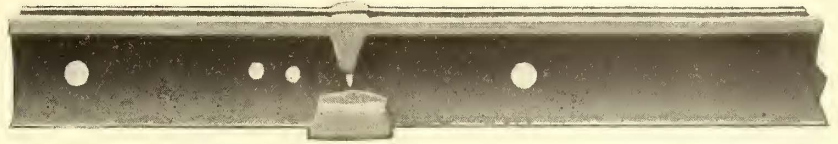
A NEW SYSTEM OF ELECTRICALLY WELDING RAIL-JOINTS

Since the introduction about twelve years ago of continuous rails with welded joints for street railway track, three kinds of welded joints have come into more or less general use in this country and abroad, viz., the Falk, or cast-welded joint; the Lorain, or the joint which is electrically welded by means of current from a transformer, and the Goldschmidt or thermit-welded joint.

A fourth method is now being employed in Germany, and has been adopted on several railways. It is being exploited by the Accumulatorenfabrik Aktiengesellschaft, of Hagen and Berlin, and it is a modification of the electrically-welded joints. It does not depend, however, upon the production of a welding heat by the resistance and transformer method, as in the Lorain system. Instead, a high temperature is secured by the use of a large electric arc, which melts a quantity of steel at the point of application, viz., at the joint. The negative pole of this arc is formed by the rails themselves, and the positive pole is a carbon supplied with direct current from a special generator and other apparatus provided for the purpose. The carbon or positive pole is attached to a holder so that it can be moved back and forth

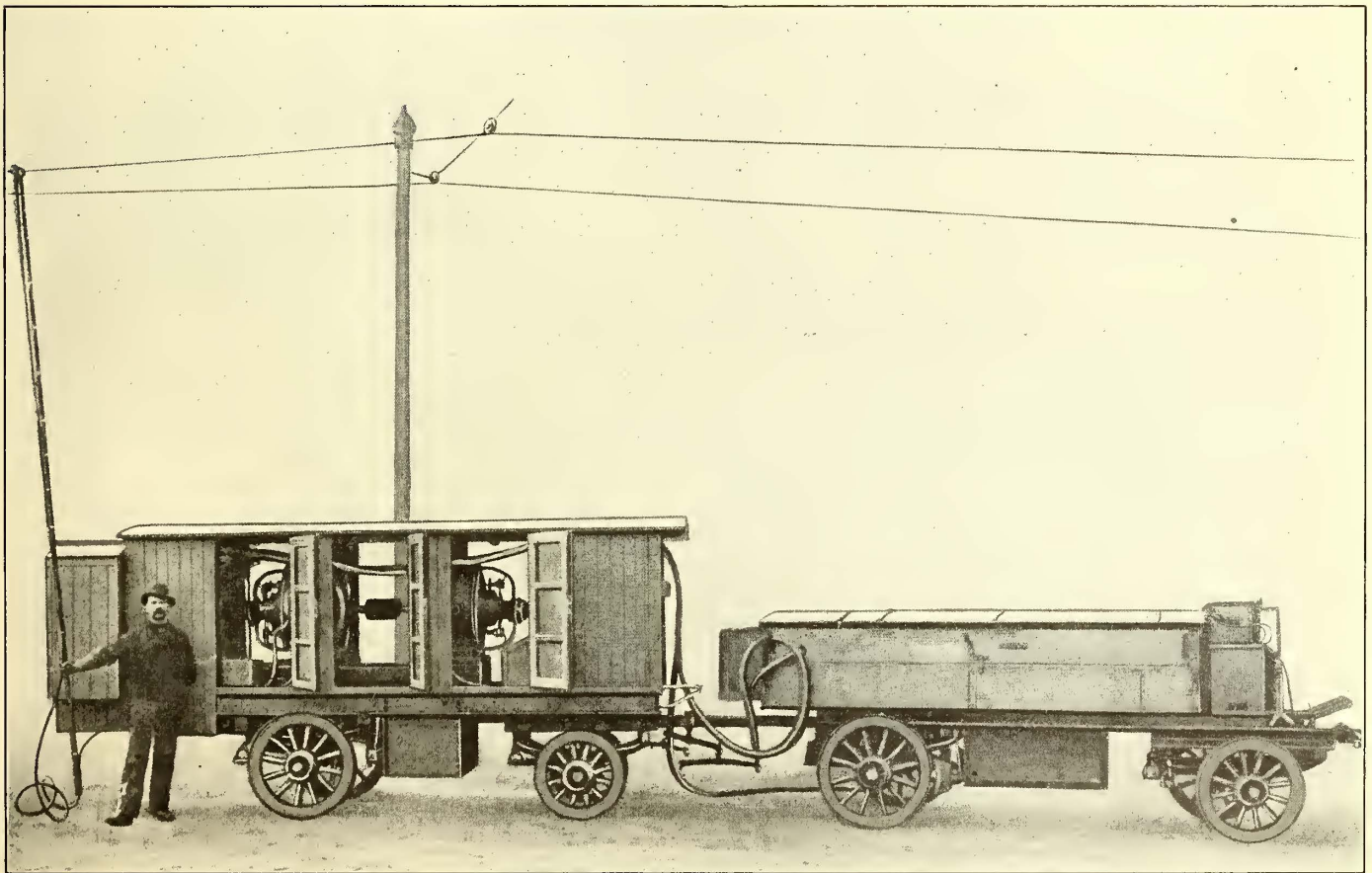
tem has been employed to a considerable extent for joint welding by a number of the electric railway companies in Germany during the last few years, and has also been applied to welding steam engine cylinders, power shears, broken gears, and for other industrial purposes.

For rail welding, the two vehicles illustrated below are employed. The left hand vehicle contains a motor gen-



THE JOINT AFTER WELDING

erator whose motor is connected with the railway circuit, and whose generator supplies direct current at 60 volts, the potential required for the arc. Owing to the great variations in the current which occur during the process, it has been found best to place a storage battery in parallel with the generator or low-tension side of the motor-generator set. This battery is carried in the second vehicle, or the one at the right hand in the illustration, and is connected with the motor generator by cables. Both vehicles are mounted on



THE RAIL-WELDING OUTFIT, CONSISTING OF MOTOR-GENERATOR AND BATTERY WAGONS

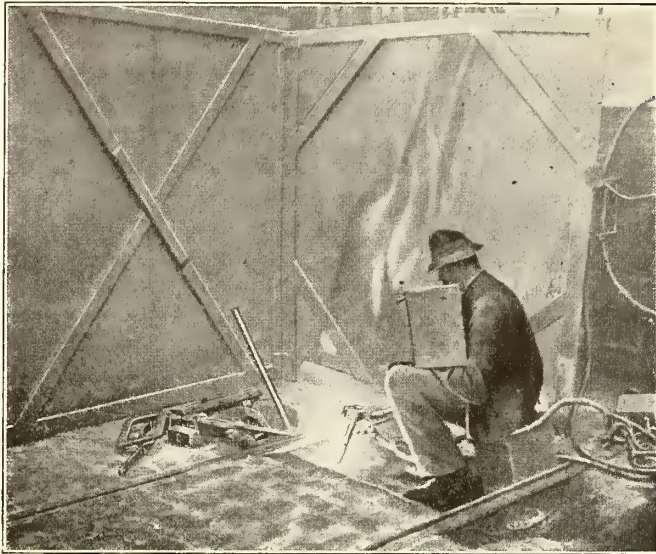
by hand over the pieces of steel, which are to be reduced to a liquefied condition at the joint to form the welding portion. During this process the joint itself is held in a form or mold, so that as the metal melts it flows underneath and around the base and under the head of the rail. A small quantity of steel is first melted, and additional steel is fed into the arc until enough has been melted to form the weld. The steel employed is of the same composition as that used in the rail itself, and is obtained from old rails. The sys-

wheels so that they can stand in the roadway and not interfere with traffic on the tracks, and the flexible connection with the trolley wire for operating the generator can also be removed to allow a car to pass.

About 30 kw-hours are required to weld one joint on track weighing 50 kg per running meter (100 lbs. per yard).

The first practical application of this method was made on the Hager Strassenbahn, where about 500 joints were welded during 1903, and during the first three months of

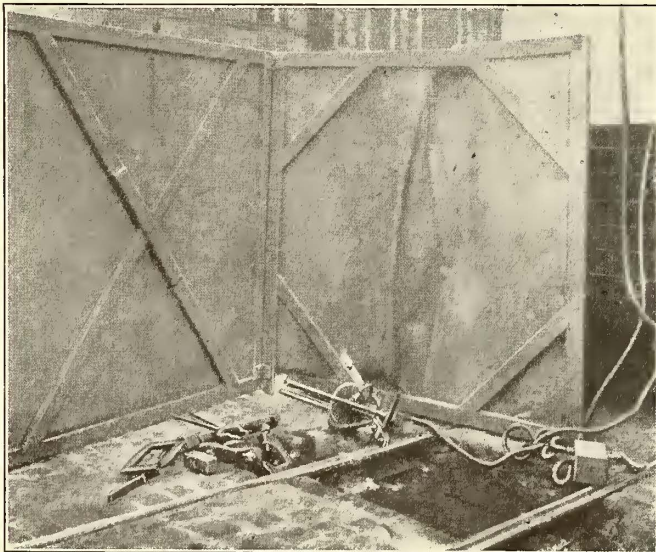
1904. This work was done on old track weighing only 32 kg per running meter (64 lbs. per yard), and which was laid in a moist soil. A number of defects developed in this pioneer installation, as was also the case with certain work which was done a little later in Aachen. The early difficulties, however, were soon overcome, and in the fall of 1904 about



APPLYING THE FLAMING ARC TO THE JOINT

500 additional joints were made in Hagen with much better results than the first time, as only 2 per cent of the joints were broken and a smooth-riding rail was obtained.

In September, 1904, the Grosse Berliner Strassenbahn welded 100 joints on its heavy traffic lines, Strassburg installed 100 in November, 1904, Gladbach 250 in the summer of 1905, and Dusseldorf about 250 in December, 1905. It is reported that on none of these lines have any breakages of these welds



A VIEW OF THE JOINT AFTER WELDING

developed. The longest continuous sections of rails welded did not exceed 500 m. (1640 ft.), but the Accumulatoven Gesellschaft recommends a maximum of 50 m. (164 ft.)

An interesting application of this welding method was made by the Berliner Elektrische Strassenbahn, which uses mitred joints. At ten joints, which had become worn, a piece of rail was cut out and a new piece welded. The resulting elevation of the joint was so great that it became necessary to cut out pieces one meter long before perfectly successful welds could be made.

FROM A CONDUCTOR'S POINT OF VIEW

In several former issues of the JOURNAL articles have appeared from a man employed on one of the large electric railways as a conductor, under the caption, "From a Conductor's Point of View." This man has secured another position that requires him to travel continually about eight or nine hours every day. He has contributed some of his observations, which will no doubt prove interesting.

THE BREAKING IN OF NEW MEN

When a man is appointed to the position of conductor or motorman on a street railway, he is assigned to ride around a certain number of days with an experienced man to learn the duties of that particular position, and it often happens that the making of a good man for either the front or rear of a car is spoiled at the beginning by his teacher not taking the pains or not having the ability to instruct him as he should be taught. When the new man arrives at the depot, he is placed "breaking in" with the first conductor that comes along, without regard to temperament or other qualities. If the new man has never had any experience in railroading, this conductor has what he considers a very unpleasant task. He at once begins to feel sorry that his car is not the one ahead, and his chief ambition in life is to get rid of the greenhorn. As the new man naturally cannot handle the car to perfection, the conductor will only allow him to do as little as possible. He will only permit him to collect fares when there are but a few people in the car, while he will stand on the rear platform and ring the bell. Or he will collect the fares himself and instruct this new man to stand on the platform and ring the bell. On the matter of day cards, he will watch the learner write the numbers, and if a mistake is made he will simply state the numbers to be substituted for those already written, instead of going into details.

While the quickness a conductor student will develop without the aid of an experienced instructor depends, of course, upon his natural aptitude, yet his preliminary instructions should be carefully followed up, and while the real process of "breaking in" commences after this conductor has started to take out runs on his own accord, pains should be taken to instruct him and give him a few points and "wrinkles," as far as it is possible to do so.

The New York management has found that the practice of paying a man during his period of instruction as motorman, and of giving extra pay to those acting as instructors, is an excellent one, and there is no doubt in the mind of the writer that the same policy could be generally adopted to advantage.

REMEMBERING PASSENGERS

It is surprising to notice that there are conductors of eight, nine and ten years standing who do not seem to be able to localize and central their "freight." Thus, suppose their car, with a seated load and several standing passengers, reaches stances is to size up the new passengers as they board the car. The proper thing for the conductor to do under these circumstances is to size up the new passengers as they board the car, their height, their sex, and, more particularly, their articles of clothing and where they locate themselves in the car, yet this is a duty that is honored more in the breach than the observance. The conductor should look over people about to board his car, just as a bank cashier examines a roll of bills for counterfeit money; he should, in fact, take a mental photograph of them. To acquire perfection, he should practice looking over his passengers as his car proceeds on its journey. He should start at the door, look at the first man he sees and say to himself, "Where did he board the car?" And so on, whenever he had a chance, throughout the journey.

It is surprising what an instinct will be built into a man by

this method. Nothing will be left to chance. He will be able to locate his passengers by system and lose a very small percentage of fares. A new man should be told to practice this, even after he has been on the road some little time. Another point might be mentioned in this connection. When a number of persons board the car together, the conductor should take particular note of anyone that looks like a beat, and should get after his fare the first thing. This would give these people to understand that it was not an easy matter to beat a conductor.

SHOULD PROMOTIONS BE MADE FROM THE RANKS

There are arguments both for and against the placing in an executive office of an employee who has served in a subordinate position. This subject is one that has been discussed time and time again from its sentimental or ethical side, but the business aspect of such a policy has never been taken up in this paper. It is all right to say that a man who has been ten or fifteen years with a company has first claim on the new office to be filled, but from a practical business standpoint there are other features to be considered. The most important question is, "Can he fill the bill?" The natural answer will be, "If he was good enough to work for the company a number of years in a subordinate capacity, he certainly can." But while a certain man can perform excellent service in one capacity, he may be lost when he undertakes to work along other lines, and while it may sound brutal to say so, long service breeds in many otherwise good men a familiarity with their old associates, which is fatal to good service from them as executives. Take, for instance, the position of claim agent. It is an undisputed fact that a good claim agent is born, not made. Suppose a road has a vacancy in its claim department and that there are two applicants under consideration. One has served the road a number of years, the other has never been connected with it, but is well known for his natural aptitude on questions pertaining to the settlement of claims. Is it not the better policy for the road to appoint the latter person and get a sure thing?

True, the question has been raised time and time again that promotions from the ranks give the subordinate employees something to look forward to, an incentive to better work. But does it? We will say that there are 100 men connected with a certain division. A vacancy occurs. Of course, only one man can be promoted. He is taken from the ranks, and a large percentage of the ninety-nine who are not promoted consider that they have been unjustly treated. Then, there are executive positions that are exceedingly unpleasant. The writer knows of one such position, that of inspector in a large foundry, who works from 6 p. m. until 6 a. m., 365 days in the year. He is also in constant danger. If the position of trolley inspector was as dangerous, and if an inspector could never get a night off, would old-timers overexert themselves to secure the position?

A man accepting a position as a motorman or conductor with a street railway company is at his level. If he can secure something better, all right; if he cannot, he is not losing anything. In fact, there are many men holding high positions with street railway companies with whom it would pay the company to present them their salaries if they would let someone else do their work. The main question to be considered is, "Can he deliver the goods?"

THE BOND COMPANY, THE EMPLOYER AND THE EMPLOYEE

Professional bonding is undoubtedly of considerable good, but carried beyond a well defined limit, it acts against the interests of the railway. It stands to reason that a large street railway company should have a system complete enough in itself to conduct its own investigations, yet in many cases an

applicant, who has passed the company's investigators, will be refused by the bond company for some technical reason, leaving a company short of conductors and placing it in a position in which it cannot be independent. Thus, if a delivery man for a dry goods store, who is bonded, loses a valuable parcel, perhaps worth three or four months' salary, from his wagon, and is asked to pay for it and refuses, he is blacklisted by some bond companies. The writer knew a young man that worked in a furniture store, and broke a piece of furniture, and was asked to pay for it. As it would have taken his salary for six weeks, he refused, and was compelled to resign. He made application for employment to the local street railway company and secured a position as a conductor. His former employer finding this out notified the bond company. The latter company got busy, and only through the intervention of influential friends was the man's position saved. This man is with the company to-day, and is one of its best conductors. Street railway companies should certainly not stand for the mere whims of bond companies.

VERSATILE EXPERIENCE

It seems to be a standing rule among the great majority of street railway companies not to let a man change from one department of its service to another. That is, a man that has worked as a conductor is not allowed to resign as such, and take a position as a motorman, and vice versa, except in rare cases. Such a ruling is a detriment to street railway interests in general. It stands to reason that the more versatile a man is the more valuable he is. Experience in one position helps a man to do better work in another. For instance, take motormen that have worked as conductors. Their value is practically demonstrated many times, especially during a rush trip.

Understanding as they do the requirements of the rear end of the car, they will look around if the conductor is inside the car collecting fares and will not start too soon. At a transfer point they will open the front door and call out that point. Their experience as conductors also helps them to prevent accidents.

The value of a conductor being an ex-motorman was practically demonstrated to the writer not long ago. The car on which we were traveling jumped the track. Naturally, a somewhat difficult proposition presented itself, as the wheels were nearly at right angles to the rails. The ex-motorman stood at the wheels of the car that were off and directed the motorman of the car as to the proper time to start and reverse his car. At the same time he used the jumper, and incidentally in a quicker manner than if the conductor had had no experience on the front end.

perience on the front end.

And in this connection take as a supposititious case a young man in his twenties, who has secured a position with a street railway company, and is looking forward ten or fifteen years to an executive position with the company. He perceives that the more varied experience he has the better it will be for him in the future. He will probably try, after he has served in one capacity a time, to change to another. If he has influence, perhaps he will be able to accomplish this result, but in the majority of cases he will find his task an unsurmountable one with that particular road. The only course left open to him now, if he still persists in this ambition, is to resign from this road, and go to another city. While this will give him an even better practical knowledge and an insight into the workings of other managements, yet the inconsistency of the first road's management is apparent from the fact that it will later offer him a position higher up on the strength of his general knowledge.

THE DALRYMPLE REPORT

The famous report by Mr. Dalrymple, general manager of the Glasgow Corporation Tramways, on the Chicago situation, was made public by the City Council of Chicago on March 12. This is the report which Mayor Dunne has had for some nine months, but which he has refused to submit to the Council. The numerous requests by the Council to the Mayor for a copy, and its final request for another copy to the Glasgow authorities, are matters of common knowledge. The six copies of the report sent from Glasgow in answer to this request reached City Clerk Anson, of Chicago, at 10:55 a. m., on Monday, March 12. Alderman Thomas Hunter and Linn H. Young also received the opinion of the Glasgow expert. Accompanying the report was a letter addressed to the city clerk, City Council and the City of Chicago, as follows:

The corporation have under consideration the request by your City Council that you be furnished with the views of James Dalrymple, general manager of the Glasgow Corporation Tramways, on the question of local transportation of the city of Chicago, and after corresponding with Mayor Dunne of your city on the subject, the corporation sees no good reason why they should not comply with the request of your municipality.

In these circumstances Mr. Dalrymple has prepared a print in regard to the matter, and I have pleasure in sending you inclosed six copies of the same.

I am, sir, your obedient servant,

ALEXANDER WALKER,
Deputy Town Clerk.

The full report follows:

MR. DALRYMPLE'S REPORT.

GLASGOW CORPORATION TRAMWAYS

46 Bath Street, Glasgow, 29th June, 1905.

The Honorable Edward F. Dunne, Mayor of Chicago.

My Dear Mayor:

As desired, I beg to send you the following notes regarding your proposal that the municipality of Chicago should now take such steps as may be necessary to own and operate its street railway systems.

In the first place, I must again convey to you the thanks of the Lord Provost and of the City Council of Glasgow for the honor you have conferred on them in looking to their city for information at this juncture.

As for myself, I have had a most delightful and instructive trip and have enjoyed myself among your people immensely. Every one I met, not only in Chicago but in all the cities I found time to visit, was exceedingly kind and all seemed anxious to give me whatever information I required. My visit to your country will, I feel sure, be of great value to me as a public official in the service of the city of Glasgow.

As I understand the position, you were elected Mayor by the citizens of Chicago on a distinct issue, viz., the immediate municipalization of the street railways of your city. Your object, I take it, in asking the City Council of Glasgow to allow me to visit your city was to learn from me how and why the municipality of Glasgow took over the operation of street railways; also that you might have full details regarding the organization and management of a municipal street railway department, and whether our experience in Glasgow could be applied to Chicago.

From the day I landed at New York I endeavored, through the press and in private interviews with yourself and your associates in the city government to tell what the municipality of Glasgow have done and are doing in this connection, and how they have made a conspicuous success in the management of all the public utilities under the control of the City Council—including, of course, the street railways, which have been operated by the city since 1894.

PUBLIC UTILITIES IN GREAT BRITAIN

It is now an accepted principle in Britain that all public utilities—such as water, gas, electric light, street railways, etc.—be under the control of the municipality. I do not know that it is necessary for me to repeat here the details regarding the management of the Glasgow street railways, as this information has been very fully given you already.

I had not been many hours in your city before I fully realized why the citizens of Chicago should be so anxious that a change be made at once in the management of your street railways, and it did not astonish me that you should have been elected Mayor by such a large majority when you had intimated to your people that, if elected, you would take immediate steps to have the street railways owned and operated by the municipality.

STUDY OF CONDITIONS

During my stay in Chicago I devoted a considerable time to the study of your street railway system. I was extremely anxious in the first place to know the history and the present financial position of the various operating and underlying street railway companies in your city, and I must confess that it took me some time to completely master the facts in connection with the various changes that have taken place in the position of these companies from time to time.

It was also necessary for me to devote some time to the study of your system of municipal government, which I found extremely interesting.

CHICAGO NEEDS A CHANGE

Regarding the present condition of the street railway system of Chicago, I consider that your citizens are fully warranted in demanding an immediate change, so that they may have the traveling facilities that are now enjoyed by the citizens of every other city of the United States.

Under the existing circumstances, the most natural, and, indeed, the only way out of the difficulty which would present itself to the ordinary citizen, who does not generally go into details, would be complete and immediate municipalization.

SYMPATHIES IN FAVOR OF MUNICIPAL OWNERSHIP

I have endeavored, in considering this important question, to look at it from every point of view—my sole object, like your own, being to recommend a course of action which would be for the common good of the citizens of Chicago. From my training and experience you can readily understand that my sympathies are entirely on the side of municipal ownership and operation of street railways, but in Chicago you are peculiarly situated in this connection at the present moment.

SEES OBSTACLES IN THE WAY

There are many questions which tend to make the position a very difficult one for a municipality to deal with. There is, for instance, the unsatisfactory state of the various franchises that have been granted to the street railway companies. If these long franchises are upheld, it would be very difficult—I would almost say it would be impossible—for your city to purchase these.

Presuming for a moment that you are able at a satisfactory figure to purchase the present undertaking, including the franchises, there would undoubtedly be a very grave danger in your attempting to operate what would be the largest street railway undertaking in the world without making a very radical change in the methods usually employed in carrying on municipal work by the cities of the United States.

And if you would seriously consider making a start on the Adams Street loop, which you may be compelled to do, this new system would undoubtedly for a long time to come add to the present confusion.

There are many other points of difficulty.

Yet, as I said at the outset, the time has now arrived when the street railways of Chicago should be put on a proper basis, and the equipment brought up to date. How should this be done?

DESIRABILITY OF SETTLEMENT

Although the time may not have yet arrived when your city could take over the responsibility, should it be the desire of your citizens to do so, yet I think an arrangement might be made now with this end in view.

I may be traveling beyond my brief in making the suggestion, but I cannot refrain from expressing my strong conviction that a serious attempt should be made on the part of the municipality and the street railway companies to arrive at a reasonable settlement.

IF COMPANIES OBJECT, START A SYSTEM

If the street railway companies do not seem inclined to be reasonable, then, I would say to you, start your municipal system without delay.

I cannot, of course, at this time go into all the details of what I would consider a reasonable settlement. The present companies must, of course, be merged into one, so that the whole may be operated as one complete system. All claims under the ninety-nine-year franchise must be waived. There must be one fare and no central loops. The use of trailer cars should be discontinued.

PRESENT EQUIPMENT, ACQUISITION

The present equipment would require in a great measure to be thrown into the scrap heap, the whole work of reconstruction being carried out at the sight and to the satisfaction of the city officers. The new operating company might be allowed a fixed time in which to have the whole system put into complete order and afterwards have a franchise for, say, 20 years, the municipality having the right, say, every 5 years, to take possession on stated terms.

A percentage of the gross annual earnings should be handed over to the city treasury to be used for specific purposes, say the upkeep of the streets; full and detailed statement of all incumbent expenditure, both on account of capital and revenue, should be produced annually by the operating company to the city officers.

The above are a few points which occur to me at the moment.

SEES GREAT TRACTION SYSTEM AHEAD

Under good, sound, economical management the street railway system of Chicago is destined not only to be the largest, but the finest in the world.

Now, presuming that the present companies are unwilling to meet you on anything like reasonable terms, what is the only course left open for you? I should say, undoubtedly, to start your municipal system on each line as the franchises expire.

AMERICAN CITIES NOT READY FOR MUNICIPAL OWNERSHIP

I should be very sorry, however, were you forced to take such a step, as, speaking generally, I should say, from my knowledge and experience of what it means to operate a municipal street railway system, that the municipalities of the United States are not yet quite ready to successfully undertake this work.

In your list of questions you ask some information regarding the management of a municipal street railway system. I would certainly recommend that the street railway department be managed by a small committee of the City Council, to be chosen irrespective of politics, and that the whole internal management be placed under one permanent officer. I

have already given you very fully my views in regard to the management generally.

FAVORS OVERHEAD TROLLEY

You are anxious to have my opinion in regard to the system of traction. I say, unhesitatingly, that no other system should be thought of at the present time than the overhead trolley. If properly conducted it is not unsightly, it is not dangerous, it is the most reliable and it is the most economical, both to construct and maintain. To install the underground trolley in any extent would, for various reasons, be a scandalous waste of money.

AS TO PRODUCTION OF POWER AND FARES

In regard to the production of power, it should not be necessary for you, at the outset, to erect a power station, but when the whole system is in operation you should certainly have one central high-tension generating station, with substations. Meantime you should purchase your power.

In regard to the fares, it is unlikely that your citizens would care to change from the uniform fare with transfers, to the European system. You cannot issue transfers if you adopt the graded system of fares. The Adams street route might, however, be a very suitable one on which to test the graded system should you think it desirable to do so.

OFFERS TO AID CITY

I do not know that it is necessary for me at the present moment to say more. If you should finally decide that there is no other course open to you than to gradually municipalize your street railway system I shall let you have every assistance in my power in regard to the organization of the various departments, such as engineering, transportation and accounting, and in regard to management generally.

I have again to thank you and my many friends in Chicago for the opportunity afforded me of paying my first visit to your country and for the great kindness shown to me while I was in your city.

I am, my dear mayor, yours very sincerely,

JAMES DALRYMPLE."

SUPPLEMENTARY NOTES.

In accordance with Mayor Dunne's request for fuller information, Mr. Dalrymple sent the following "notes on the administration of the street car service by a municipality":

I.—CITY COUNCIL

The administration of the street railway department to be entirely under the control of the City Council. They should appoint annually from their number a transportation committee and should also appoint the general manager. All minutes of the transportation committee should be regularly submitted to the City Council for approval.

II.—TRANSPORTATION COMMITTEE

As stated above, the City Council should appoint annually from their number a transportation committee consisting of, say, from twelve to fifteen members. This committee should carry out the work of the street railway department like the board of directors of the private corporation. The regular meeting of this committee might be held, say, every fortnight, for the transaction of all business in connection with the car service. This committee might, with advantage, appoint the following sub-committees:

1. Sub-committee on finance.
2. Sub-committee on extension.
3. Sub-committee on stores.
4. Sub-committee on staff.

All matters referred to these sub-committees to be approved by the parent committee.

DIVISION OF WORK

Sub-committee on Finance—The sub-committee on finance would carry through all financial transactions, pass all accounts for payment, and receive reports from the general manager regarding the revenue and expenditure of the undertaking. They would also prepare reports and issue an annual financial statement. This sub-committee would also effect all insurances. It would also see that all revenue was duly accounted for and lodged in bank. All borrowing on capital account would also come under this committee, which would see that all payments for interest and sinking fund were properly applied. It might be well also to remit to this committee any proposed alteration of fare and the collection of same.

WORK OF EXTENSION COMMITTEE

Sub-committee on Extension—All proposals regarding extensions of the system should be remitted to this committee for consideration and report. Any negotiations which might be rendered necessary on account of any extension of the systems might be carried through by this sub-committee. This sub-committee might also take in charge the obtaining of the necessary powers for making extension of the system and also any suggestion regarding the fixing or alterations of routes.

WORK OF COMMITTEE ON STORES

Sub-committee on Stores—This sub-committee should take charge of the drawing out of specifications and schedules for the carrying out of any work for the department, and also for the purchase of material and supplies. This sub-committee would see that all requirements were duly advertised in accordance with the standing orders of the City Council. They would meet regularly to open all offers and to consider same. Their recommendation of acceptance of offers would, of course, be submitted to the parent committee for approval.

SUB-COMMITTEE ON STAFF

Sub-committee on Staff—The sub-committee could consider all salaries and wages, hours of labor and general condition of service. All applications by members of the staff for increase of wages, etc., could be remitted to this sub-committee for consideration and report.

GENERAL MANAGER

It would be a mistake for you to take a single step in the organization of the street railway department until you had first of all secured the services of a general manager, who would be the adviser of the transportation committee and the City Council from the very start.

SELECTING THE GENERAL MANAGER

As indicated in my letter to you, the general manager should be appointed by and be directly responsible to the City Council through the transportation committee. He should be a man who has had experience in dealing with large bodies of workmen and a good organizer. If possible, you should secure a man who has had experience in the operation of a large street railway undertaking. He should have absolutely no connection with any political party and his appointment should be made solely on account of his fitness for the position. The success or failure of the undertaking depends in a very large measure on the manner in which the general manager carries out his duty. You will, no doubt, see that it would be impossible to secure the best man for the position unless he has an agreement over a period of years and is made entirely independent of all changes in the City Council. The City Council should give the general manager complete control of the whole staff. He should be held personally responsible for the good conduct of those under him. He should be absolutely free to engage and discharge his men.

GENERAL STAFF

Under the general manager, and directly responsible to him, there should be three heads of departments—first, the chief engineer; second, the traffic superintendent, and, third, the financial superintendent. The chief engineer will require the assistance of an electrical engineer, who shall be directly responsible for all the electrical plant; a mechanical engineer, who shall be directly responsible for the workshops; a civil engineer, who will be charged with the upkeep of the permanent way; and a draftsman.

TO HAVE CHARGE OF CAR SERVICE

The traffic superintendent shall have charge of the car service and all the car-service employees, such as inspectors, timekeepers, motormen, conductors, etc. He will be responsible for the conduct of all under his charge. He should personally engage all the traffic staff and should also be responsible for the disciplining of his men. The time tables of the cars and the laying out of more routes will also come under his charge. He will receive all reports from the inspectors on the road and also from motormen and conductors, etc., and will take general charge over all matters relating to operation of cars.

TO LOOK AFTER FINANCES

The financial superintendent shall have under him an accountant, with a bookkeeping staff, cashier, pay clerks, purchasing clerks, corresponding clerks, etc. He will be responsible for the conduct of the general office, and the preparation and checking of all financial statements required by the general manager.

SELECTION AND TRAINING OF STAFF

In the organization of a municipal railway department a very great deal depends on the arrangements that are made for the selection and training of conductors and motormen and also on the standard of efficiency that is set up and maintained. From the separate print which I send you you will get full details as to our methods of selection and training in Glasgow. The system we have adopted is working admirably. It will very likely be necessary for you at the outset to begin operations with men who have had experience in street railway work, but very soon your general manager will find it to be to your advantage to engage young men and train them himself.

TRAINING ORIGINAL MEN

We in Glasgow rarely engage a man who has been in street railway work before, and we have made it a rule never to re-engage a man who has been in our service. A strict medical examination you will find to be absolutely necessary, and, as you will find no difficulty in obtaining application from suitable young men, you will be able to fix the standard very high. We engage all our men on the understanding that, after serving for a few months conducting a car they must, when asked, go through the motor school and learn to drive a car. If a man fails to qualify as a motorman, he has to leave the service.

WORKING HOURS

The working hours of the traffic staff in Glasgow are, on an average, nine hours a day. The staff work any six days out of the seven. When we started operations we allowed the men to work seven days if they chose, but now we have a strict rule in force that no man is to be allowed to work more than six days a week. We find this is a very good rule, and it is strictly adhered to. Our time tables for the operation of the cars are very carefully drawn out, so that nearly all our men finish their day's work within 12 hours; that is to say, from the time reporting in the morning till the time that a man is relieved at night should not exceed twelve hours. In a few instances the spread-over reaches fourteen, or in one

or two cases fifteen hours; but these come in the cycle of duties very rarely and cannot be avoided.

DURATION OF EACH SHIFT

We endeavor to give a man $4\frac{1}{2}$ hours on duty for each shift, so that every man is relieved about the middle of his 9 hours' work. Of course, the work-shop staff and all artisans employed in the department work whatever hours are fixed for, the time being fixed by the different trades. The corporation always pays what is recognized as the trade union rate of wages, and where no union rate exists we pay whatever is recognized as a fair rate in the district.

FARE COLLECTION

The American system of fare collection is, of course, entirely different from that in general use in this country. Our system of graded fares necessitates a much more complicated system of check than is necessary where there is one uniform fare. It is generally admitted, however, by your street railway men that your system of check is very deficient. With our system of check I believe we get the money that is collected by the conductors, whereas with your system it is generally recognized that the street railway corporation does not get all the money from the conductors that they collect from passengers. Our routes, as you know, are divided into stages of rather over half a mile each on the average. For each one of these stages a passenger pays 1 cent. If he desires to travel farther he can travel over any four consecutive $\frac{1}{2}$ -penny stages for 2 cents, and six stages for 3 cents, any eight stages for 4 cents, etc.

COLLECTING FARES IN GLASGOW

Whenever a passenger pays his fare the conductor punches a ticket in the section over which the passenger is entitled to travel. The passenger is bound, so long as he is on the car, to retain this ticket and exhibit it to the conductor or inspector when asked to do so. The conductor's bell punch registers the number of passengers he has carried. The conductor is, in addition, responsible for every ticket which he receives and the inspectors on the route board the cars frequently in order to ascertain that every passenger is in possession of a ticket and is traveling on the section for which he has paid. We endeavor to make this check—both on the conductor and passenger—as complete and perfect as possible, and in Glasgow we find no difficulty in getting the people to co-operate with the department in this connection.

NO TRANSFERS IN GLASGOW

In Glasgow we have no transfers—indeed, with our system of tickets and the division of our routes into stages, transfers are really not necessary, and, in fact, it would be very difficult to carry out a transfer system. In introducing a municipal car service in Chicago, you cannot be too careful in obtaining full powers to deal with passengers in connection with any offenses against your rules and regulations. Our judges here uphold the department in enforcing our rule.

PUNISHING OBSTREPEROUS PASSENGERS

Only the other day a passenger, when asked by the inspector to show his ticket, pointed to the floor of the car and said his ticket was there and that he (the inspector) could pick it up and look at it if he pleased. The inspector refused and asked the passenger to pay again. This he would not do. He was summoned to appear at the police court and was fined \$1.25 for not paying his fare. It would be very unfortunate for a municipality working a street railway to have any looseness in the fare collection, as any slackness might lead to abuses which would result in very heavy losses. It is worth a very great deal of trouble to be able to keep the staff honest. Your people in Chicago might consider that any system such

as I have described might be a step backward. We, however, knowing what the results might be, would not think for a moment of relaxing our checks in the slightest degree.

CONCERNING A POWER STATION

There are only a few municipalities having a separate power station for the street railways; the usual plan is to have a combined lighting and traction station, the station being under the charge of the city electrical engineer, the street railway department simply requiring to pay a price per unit for the power used. In Glasgow, however, and in several of the other large cities the street railway department has its own power station. For our system, which is designed for about 250 miles of single track and 900 cars, we have a power station with a total capacity of 11,000 kw, with a staff of 100 men. We have high-tension current at 6500 volts, converted at five sub-stations to 500 volts direct current. The power station is under the charge of a superintendent, who is responsible to the chief engineer. You will find our power costs fully detailed in the annual report for 1905, copy of which has already been sent you.

MAINTENANCE OF TRACK

It will be necessary for you to organize what we call a permanent way staff for the maintenance of your track. Under a municipal street-car system the track is very often under the city engineer and the annual cost of the maintenance is charged to the street railway department. In the larger cities, however, it is usual for the permanent way staff to be under the charge of the street railway department. In Glasgow, in addition to maintaining the track, we frequently lay extensions of the track by our own staff. As a rule, however, we do all extension work by contract. In order to keep the track in perfect order a very large staff is required. We have at present rather over 150 miles of single track and we have altogether in our permanent way department about 650 men. These men are divided into squads of various sizes, each squad being responsible for the maintenance of the lines in a certain district. Each squad is under the charge of a separate foreman, the whole being under a civil engineer, who is responsible to the chief engineer.

OVERHEAD EQUIPMENT

Another department of the service is the staff charged with the erection and maintenance of the overhead equipment. This staff is divided into three sections:

1. The staff charged with the construction of the overhead equipment for new lines. We do all this work by our own staff.
2. The maintenance staff, which is continually on the road inspecting the wires.
3. The emergency staff, which is at call should any part of the overhead equipment give way.

Each of these squads is under a foreman, who is responsible to the chief engineer.

FEEDERS AND CABLES

The upkeep of the mains and cables, as well as the electrical equipment at the power stations and sub-stations, is under the control of the electrical engineer. The mains and cables staff not only look after any faults in the cables, but they lay all new work, as we prefer to do this work by our own staff.

ARRANGEMENT OF CAR HOUSES

We find that the most suitable size of a car house is to have accommodation for from 150 to 200 cars. In designing your car houses you should make near the entrance gate a commodious office for the accommodation of the motormen and

conductors and the traffic staff generally. In a car house holding, say, 200 cars, it is necessary to have an office measuring about 720 sq. ft. There should also be a store for the material used by the repair staff, a fitters' workshop, and a room for the cleaners, where the men can store their cleaning material, brushes, etc. Ample kitchen, lavatory accommodation and bath should also be provided. We have also in our car houses a large reception room, fitted up with gymnastic appliances, tables, chairs, drafts, chests, bagatelle, etc. At all our car houses there are car pits almost over the whole car house for convenience in inspecting and repairing trucks and motors. Our most recently constructed car house has accommodations for 180 cars, and covers 14,747 sq. yds. The cost of the land was \$25,000, and the cost of the building was \$127,000.

MAKE-UP OF CAR-HOUSE STAFF

The staff at the car house is made up as under:

TRAFFIC STAFF	
Motormen and conductors.....	335
Depot clerks	3
Pit cleaners	3
—	
Total	341
REPAIR STAFF	
Foreman fitter	1
Fitters	4
Truckmen	4
Controllermen	3
Handy man	1
—	
Total	13
CLEANING AND OILING	
Car cleaners	48
Greasers	3
Sandman	1
—	
Total	52

HIS IDEAS AS TO REPAIR SHOPS

It is advisable to have one general workshop for the maintenance of the rolling stock and all plant connected with the street-car service. We in Glasgow have a workshop covering an area of over 25,000 sq. yds. We started at first on a much smaller scale, but as we had secured the ground we were enabled from time to time to extend our premises, which now cover all the ground originally purchased. In this workshop we not only do repair work, but we have built all the 700 cars belonging to the department. In addition to the general store, which is adjacent to the workshop, we have a saw-mill, car-building shop, repair shop, paint shop, blacksmith shop and fitters' shop. All these departments are equipped with the most modern machine tools. Each department is under the charge of a foreman, the whole workshop being under a general works manager, who is responsible to the chief engineer for the conduct of his department. The staff employed at present numbers over 500.

GENERAL STOREROOM

You will find it of very great service to equip a large general store, where all material and supplies should be delivered for distribution throughout your system. The general store should, if possible, be adjacent to your workshops, and should be under the charge of a competent store man. I have already given you a copy of our standard list of stores; since we issued this list we have found that the dealing with stores has been very much simplified; each foreman who is requisitioning for stores has a copy of this list and he has simply to quote the standard list number and there is no dubiety as to

the material he wishes. These particulars are all fixed to the different partitions, both in the general store and also in the subsidiary stores, and each of the car houses. I have already supplied you with a copy of each of the forms which we use in connection with the requisitioning and dispatching of material from the general store.

RULES AND REGULATIONS

In the book of rules and regulations for the staff which I left with you you will find what we call our by-laws, giving the different offenses which are punishable by fine or imprisonment. By the act authorizing the municipality to operate the street railways, we are empowered to make these by-laws. It might be worth your while to take a look through our by-laws, to compare the powers which we possess with those of the street railway companies of Chicago.

ACCIDENT CLAIMS

This part of the work of a street railway department is becoming a very important one, as it costs a very large sum annually to settle accident claims. In the United States I found that the street railway companies were even worse than they are here. Our practice in Glasgow has been to insure against accident claims. The private corporation which has taken this work in hand has room in the office of the department and all reports and claims are immediately handed over to the insurance officials, who investigate all accidents and settle or contest all claims. Last year we paid a premium amounting to about \$75,000. This covered us for claims in connection with any single accident amounting to \$12,500 and an annual total of \$125,000.

We consider that it is much better for a municipality to give this work into the hands of a private corporation than for the claims to be settled by the transportation committee and possibly discussed by the City Council.

The work should only be undertaken by the street railway department, with the general manager given full power, so that accident claims would not fail to be discussed by the transportation committee and the City Council.

ANNUAL FINANCIAL STATEMENTS

In Glasgow we have from the very first issued a full annual report and financial statement. I have already handed you a set of these reports from 1894, when we began to operate the street railways, and have since my return sent you a copy of the report for the year which has just closed. The form of our income and expenditure statement and also of our capital account is almost exactly the same as that which has been adopted by the street railway corporations of America. I think in issuing your annual statement you could not do better than have it prepared on the American form—which, as I said, is practically the same as our own. It is necessary, of course, to make a slight difference in the allocation of the net revenue, but this does not in any way affect the question. You, of course, are issuing the accounts of a municipality, which are necessarily slightly different from a private corporation.

BENEVOLENT ASSOCIATION

I think you would find it very advantageous to inaugurate a friendly society among the men belonging to the street railway department. In Glasgow, we have had a very flourishing Friendly Society for a number of years. Membership is quite optional. Out of a total staff of 4400, we have 3370 members. The non-members are chiefly artisans, who have their own trade societies, and the lower class of laborers. Practically all the traffic staff are members. We consider that this society has been a great assistance to the department and to the staff in many ways. It induces the men to remain with

the department and take an interest in their work. I have already given you copies of our Friendly Society reports, and also of our rules and regulations, and I think a set of forms.

ADVISES CHICAGO TO HAVE ASSOCIATION

Nearly all the municipal railways in this country are now forming friendly societies, and I think it would be well for you to go fully into the question. You will see from the rules that in Glasgow each member pays 12 cents per week to the funds of the society and the department adds 6 cents. When a member is off for sickness on a doctor's certificate he receives 15 shillings, or about \$3.60 a week for the first 6 months; 10 shillings, or about \$2.40, for the second 6 months, and 5 shillings, or about \$1.20, for the second year. He also receives medical attendance and medicines free of charge. Admission lines to infirmaries and convalescent homes are also available for members and their families.

SUPERANNUATION FUND

It would be advisable also to institute a superannuation fund, which can be accumulated so that it will be possible to grant a small weekly allowance to members of the staff who, after long service, may have become unfit for work. We have instituted such a fund in Glasgow and we are accumulating it as speedily as possible. To this fund 2 cents per week per member is contributed by the members of the society. These 2 cents are taken from the 12 cents contributed to the Friendly Society and the department adds another 2 cents. This fund does not come into operation until 1911. A municipality cannot throw off its old and infirm servants as a private corporation can do. And therefore it is well to make provision for them.

TEXT OF OTHER CORRESPONDENCE.

With the Dalrymple report was made public the full text of the correspondence between Mr. Dalrymple and Mayor Dunne and the officials of Chicago and Glasgow. This correspondence opened on July 10, 1905, with a cablegram from Mayor Dunne to Mr. Dalrymple, saying:

"Can you give me a fuller report? Answer. Have written."

Next day came this response from Mr. Dalrymple by cable: "Cable received. Will send complete report. Write me full information required in view my letter."

Mayor Dunne replied by letter under date of July 15, saying:

"Following my cablegram on the subject of your recent communication I wish to say while I greatly appreciate what you were good enough to submit I would like very much if you should write me at length advising on the subject of administration of car lines by the municipality. Your great experience in administration in Glasgow qualifies you to lend advice on that subject, which presents to us the remaining unsolved problem. While you touched on this subject in your communication, I should be pleased if you should write me now as fully and with as much detail as you will on that subject."

LETTER FROM TOWN CLERK

Mr. Dalrymple acceded to this request. After his supplementary letter to Mayor Dunne there followed a letter from A. C. Miles, the town clerk of Glasgow, who told the Mayor it was not understood in Glasgow that Mr. Dalrymple was the guest of Mayor Dunne personally, but of the municipality. The correspondence on this subject has already been published in this paper.

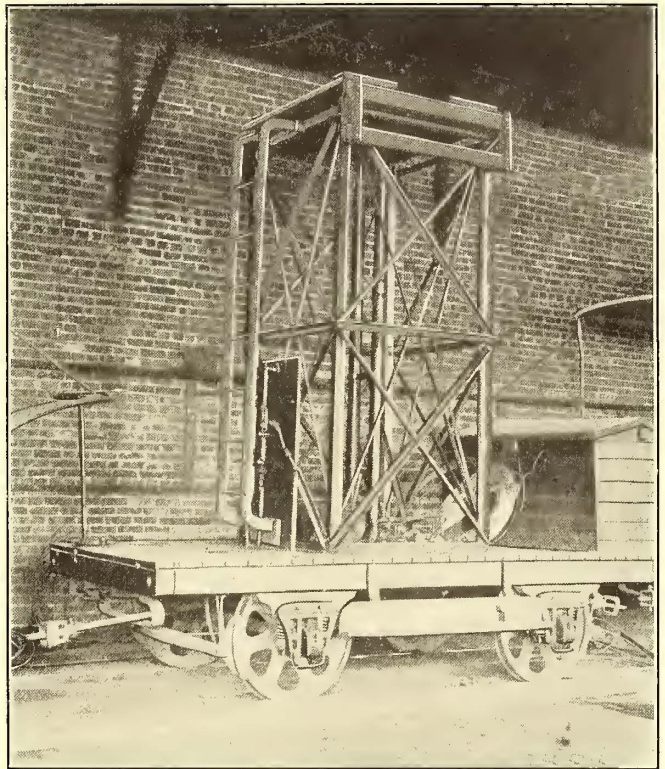
There is also included in the correspondence a report to the Glasgow tramway committee by Mr. Dalrymple on Feb.

19, 1906. In this report Mr. Dalrymple asserts he has given Mayor Dunne what he considers the best plan looking to municipal ownership.

A HYDRAULIC TOWER CAR

A tower car of unusual design operated by hydraulic pressure is in service on the lines of the Atchison Railway, Light & Power Company, Atchison, Kansas. The car, which is shown in the accompanying photograph, was constructed in the company's shops.

The frame mounted on a small push car is similar in many respects to the usual design. Extending upwards from the



HYDRAULIC TOWER CAR IN USE AT ATCHISON, KAN.

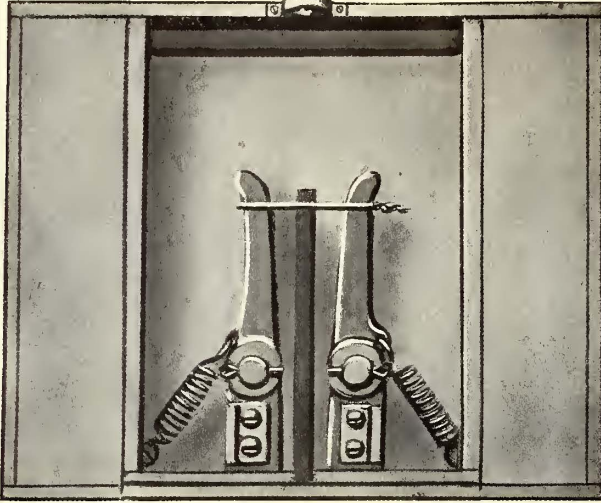
floor inside the frame are two $3\frac{1}{2}$ in. wrought iron pipes placed about 15 ins. apart and lined with $2\frac{1}{2}$ in. pipes of brass. Leather packed pistons working in these pipes raise the platform.

A seven-gallon tank placed on the floor inside the frame is filled with a mixture of two gallons of alcohol to five gallons of water. Operating a force pump mounted on a board under the ladder forces the fluid out of the tank under the pistons, and raises the platform. Master Mechanic D. S. Beatty states that the platform is raised to its full height, 8 ft., in one minute by one man at the pump. This is accomplished with two men on the platform.

With a view of introducing electricity along the line of the Kokomo, Marion & Western Traction Company for domestic uses, President Marott, of the company, has secured Mrs. A. V. Sanborn, of St. Louis, to deliver lectures on cooking by electricity and demonstrate to the farmers' and villagers' wives how successfully and economically electricity can be used in the home. The company managers believe when people living along the line acquire a knowledge of the comfort, convenience and economy of electricity, a considerable demand will be created for current.

A QUICK-BREAK FUSE BOX

The accompanying illustration shows a combination fuse and circuit breaker which the American General Engineering Company, of New York, has brought out for use with or without any circuit breaker. It is positive in action owing to its being constructed as a tension fuse and can be set at



QUICK-BREAK FUSE BOX, WITH COVER REMOVED

any amperage required. It is a certain safety check on the circuit breaker and is generally set at about 20 amp. above the latter. This device can also be used in place of the circuit breaker or fuse because it is a combination of both. Accidents caused from defective circuit breakers and other style of fuses are absolutely eliminated. This box has been tested by some of the largest railroad companies by dead short circuits on third rail and overload on trolley lines, and the results from a short circuit of 3000 amps. are said to be scarcely more perceptible than from an overload of 200 amps. The installation of this box is practically the only cost, as fuses for any amperage can be furnished for one cent each. A large number of these boxes have been installed on several important railway systems in the East.

The box contains two brass arms which are pivotally connected to two brass terminals attached as shown in the cut. The fuse wire is fastened across the ends of the brass arms and is held in place by the tension obtained from 1-16 in. steel springs connected to the arms. The arms are separated by a strip of fiber. When the box is operating the legs of the circuit are connected to the brass terminals and the fuse wire put in place. Should there be a short circuit or any other trouble causing the current flow to increase over the working capacity, the fuse wire softens and is instantly broken by the tension of the springs fastened to the arms. The arms fly back against the rests that are provided in the box. To prevent all possibility of fire the box is lined with asbestos and has two compartments. One of these sections is provided for the terminals, arms, etc., while the other acts as a condenser, that is, in the breaking of the arc when the fuse melts, the

arc rushes through the hole in the wall directly in front of it and into the smaller compartment, so that a vacuum is formed therein, and the arc instantly extinguished.

The principal features of this fuse box are its ability to break a circuit quickly without drawing an arc for any appreciable length of time, its positive action and its quiet operation as compared with the noise and shooting flames associated with many other fuses. There must be something radically wrong before the circuit is broken, and a small overload will not affect it. The fiber that is placed between the arms and terminals prevents any opportunity of arcing across at any other place than the fuse wire, while the condenser positively extinguishes the arc. This fuse box might be termed a combination circuit breaker and fuse, as it really performs the duties of both.

FIRST GASOLINE-ELECTRIC CAR FOR THE VANDERBILT LINES

The G. C. Kuhlman Car Company has recently completed the handsome interurban type of car shown in the illustration for the Lake Shore & Michigan Southern division of the New York Central lines. This car is being equipped with the Chase gasoline motor system, which Frank L. Chase, president of the Jamestown, Chautauqua & Lake Erie Company and Chautauqua Steamboat Company, has been developing for several years. This is the first car for gasoline operation to be experimented with on the Vanderbilt lines, and railway men in general are looking forward with much interest to the trial trips which will shortly be made on a line between Cleveland and Willoughby.

The car is operated by a gasoline engine in connection with an electric generator, the engine being 220 hp. All of the operating and propelling machinery is located beneath the car. The car is operated from either end, similarly to the ordinary type of electric car, and is handled in much the same manner. It is electrically lighted, heated by hot water and equipped with M. C. B. standards throughout, with high-



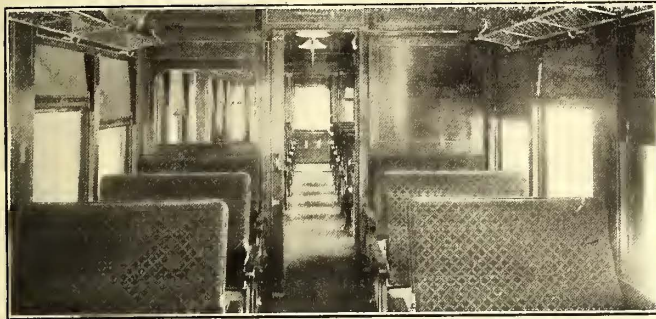
GASOLINE-ELECTRIC CAR, BUILT FOR OPERATION ON THE LAKE SHORE & MICHIGAN SOUTHERN RAILWAY

speed brakes and designed for a speed of 65 miles per hour. The car is considered to be a particularly fine piece of workmanship, although the time allowed for building was very limited. Unfortunately, it had to be photographed on a stormy day, and therefore the picture of the exterior gives a very inadequate idea of the appearance.

The interior is richly, though plainly, finished in mahogany, with inlaid lines of white holly. The dome is of the Empire style, tinted light green and decorated in gold. A hardwood partition divides the smoking compartment from the rest of the car, and against the partition at one side is a toilet room of standard steam-car character. Seats 37 ins.

wide, of the Lake Shore standard design, are upholstered in plush and have push-over backs and mahogany arm-rests at the aisle ends. The passenger compartment seats twenty-six passengers and the smoking compartment sixteen. The windows are arched in pairs, and leaded art glass is used in the upper part. The lower sashes are arranged to be raised in the usual manner of steam-car construction.

The platforms are flush the car floor and enclosed in round-end vestibules with folding doors at the entrances. The length of the body measures over the end panels 34 ft. 4 ins., and over the vestibules, 43 ft. 9 ins.; width over side sills, including sheathing, 9 ft.; height from the track to the under side of the sills, 3 ft. 6 ins., and from the under side of the

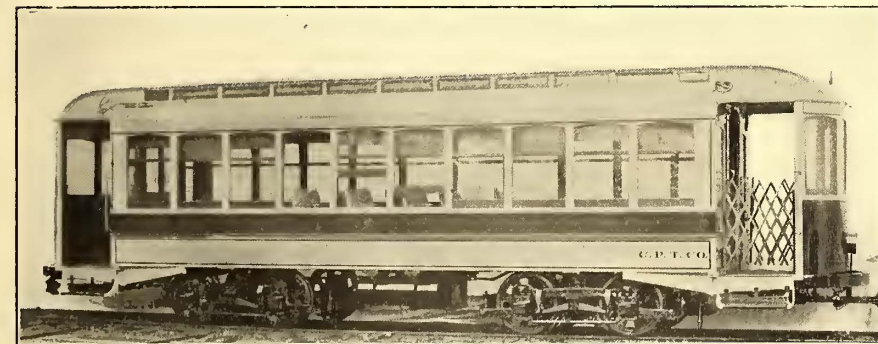


INTERIOR OF LAKE SHORE CAR

sills over the roof, 9 ft. 10 ins.; from the floor to the ceiling is 8 ft. 11 ins. The bottom framing is powerfully constructed, and includes 5-in. x 8-in. yellow pine side sills, 6-in. I-beam center sills, 7-in. x 5/8-in. sill plates, and oak end sills, 6 ins. x 8 ins. The king posts are placed under needle beams composed of I-bars. At each end are steel pilots which are brought up close under the angle-iron bumpers, and M. C. B. couplers are fitted through them.

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SEMI-CONVERTIBLE CARS FOR HARRISBURG

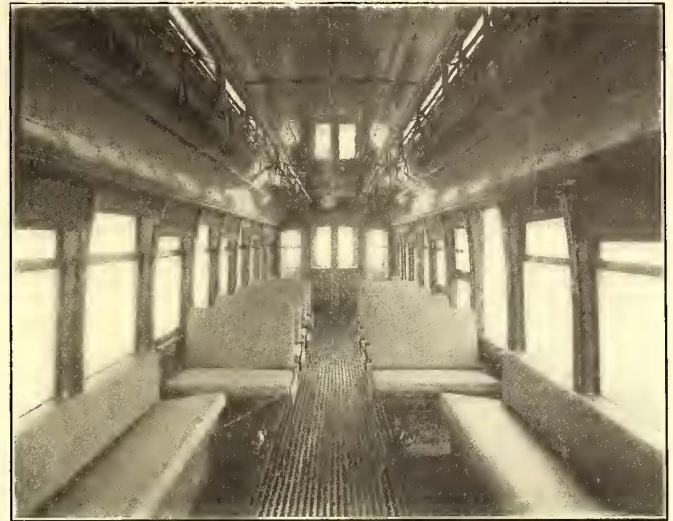
The Central Pennsylvania Traction Company operates several large systems running out to the east and south of Harrisburg and including the systems of the city of Harrisburg. Harrisburg, besides being the capital of Pennsylvania, is important on account of the large industrial plants, including several of the most extensive steel works in the



DOUBLE-TRUCK VESTIBULED CAR FOR THE CENTRAL PENNSYLVANIA TRACTION COMPANY

country. It has a population of over 50,000 and there is also a large population in the numerous manufacturing towns in the immediate vicinity. Five cars of the grooveless post semi-convertible type have recently been received from the J. G. Brill Company and placed on the division of the company's lines running between Harrisburg and Hummelstown.

Cars of the same type are used on the Valley Traction Company's lines between Mechanicsburg and Harrisburg, and also on a railway east from Hummelstown. The type is much in favor in this section of the country, and it is said that no less than forty-eight different companies in Pennsylvania are operating with it.



INTERIOR OF HARRISBURG CAR, SHOWING LONGITUDINAL SEATS AT THE ENDS

The seating plan of the new cars is unusual, as will be seen by the illustration of the interior. Longitudinal seats at the four corners each extend the length of three windows, leaving only four windows at the center of the car for transverse seats. The arrangement increases the capacity of the car by providing extra standing room and also makes it easier for passengers moving in and out when the car is crowded. This is an important feature, because the stops are frequent and passengers riding a short distance can occupy the longitudinal seats, while those who ride for a considerable distance have the more comfortable seats at the center of the car. The transverse seats are 36 ins. long, are upholstered in spring cane and have pushover backs with corner grabhandles. Both the side and cross seats are of Brill manufacture. Some of the window sashes in the picture are shown entirely raised into roof pockets, while others are partially lowered, and one can imagine the open appearance of the car when all the sashes are raised into the roof pockets. The low window sills and the large window openings give it much the appearance from the interior in summer of an entirely open car.

The cars are of standard dimensions and have the standard bottom framing of this type. The length over the body is 28 ft., and over the vestibules, 37 ft. 5 ins.; width over the side panels, 7 ft. 10 1/2 ins., and over the posts, 8 ft. 2 ins.; distance from the center to the center of the side posts, 2 ft. 8 ins. The platforms have stationary round-end vestibules with window sashes which are arranged to drop into pockets. The entrances are without doors, but have folding gates manufactured at the Brill Company's works.

Other specialties of the same make with which the cars are equipped are channel-iron radial draw bars, angle-iron bumpers, brake handles, platform gongs and signal bells, and the cars are mounted on two No. 27-G short-base equalized double trucks.

HAND-POWER EYE AND ANGLE BENDERS

Small hand-power tools can often be used to advantage both in small shops, where a limited amount of light work is done, and in shops of larger capacity well equipped with up-to-date machinery. The usefulness of such tools is unlimited and much time may be saved by their proper application. Hand-power machines with a wide field of usefulness, have recently been designed by the Wallace Supply Company, of Chicago, for bending square and round rods or flat stock, and for forming hooks and eyes on the ends of rods. The

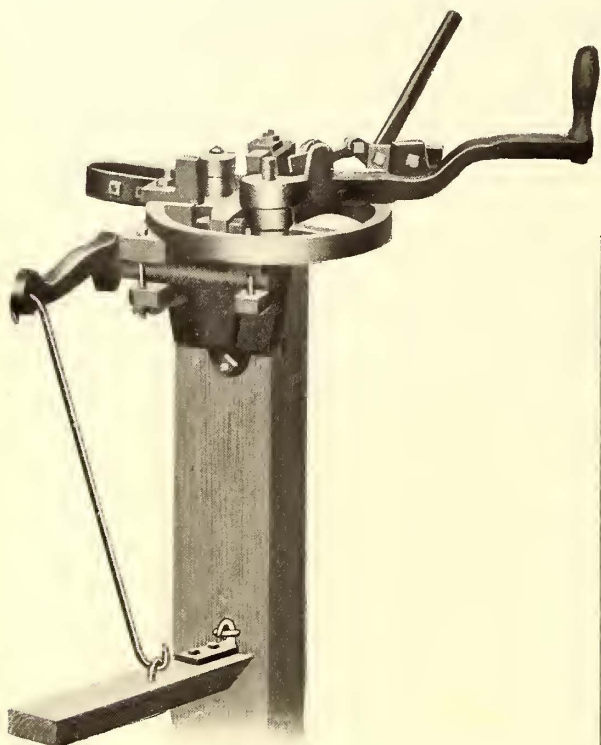


FIG. 1.—SMALL HAND-POWER EYE BENDER

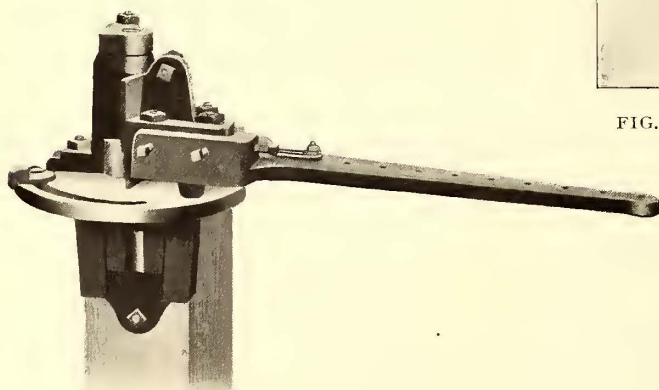


FIG. 2.—HAND-POWER ANGLE BENDER

hand eye benders are made in three sizes. The smallest size (No. 1 shown in Fig 1) takes stock up to and including one-half inch in diameter, and bends rings and eyes up to $2\frac{3}{4}$ ins. outside diameter. The next size (No. 2) takes stock up to and including three-quarters inch in diameter, and bends rings and eyes up to 3 ins. outside diameter, and the largest size (No. 3) takes stock up to and including $1\frac{3}{8}$ ins., and bends rings and eyes to 7 ins. outside diameter.

Referring to Fig. 1, the principle on which this machine works may be clearly seen. Operating upon and attached to the large handle, is a small dog moved by a light lever. This dog presses the material to be bent against the pin

shown in the center, so that when the large handle is turned the stock is pulled around the pin. A second dog, adjustable and held in position by bolts, guides the stock so that it may be bent to the desired form. The final adjustment of the second dog is made by the foot-power lever shown, making the final bend of the form. The pin in the center extends through the table, and is held rigidly in position by a nut at the lower end. The pin may be turned to any size to suit the demands of the user. In using the machine, it is not necessary to swing the full length of the bar, therefore a long rod may be handled conveniently.

The machine is supported by a cast-iron lug which fits into a socket, and may therefore be easily removed and put out of the way when not in use. The socket is bolted to the side of a bench, to the wall, or anywhere that may be desired.

The hand angle benders are made in three sizes. The smallest machine (No. 1) has a capacity for bending iron or steel up to and including 2-in. wide by $\frac{3}{8}$ -in. thick, or

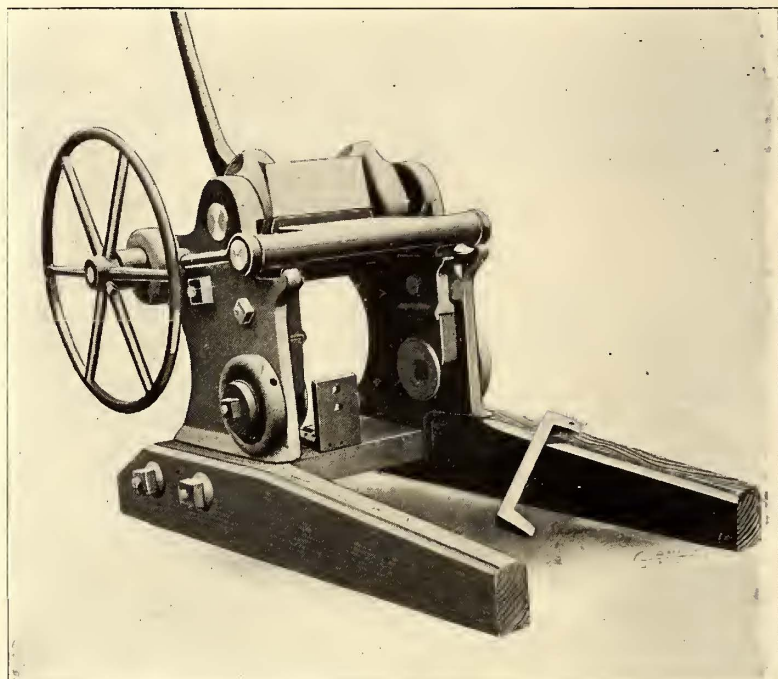


FIG. 3.—LARGE ANGLE-BENDER MACHINE, OPERATED THROUGH HAND WHEEL

$\frac{3}{4}$ -in. round or square stock, and will form any angle from zero to 90 deg. Angles less than 90 degs. may be made by the use of a special, sharp-angle die. The next size (No. 2) takes flat stock up to and including 4 ins. by $\frac{1}{2}$ -in. thick, round and square stock up to and including 1 in., and will form any angle from zero to 90 degs.

The operating principle of this machine is clearly shown in Fig. 2. The adjustment is quickly and easily effected. To set the machine for bending a right angle, the movable die is placed back the thickness of the stock both ways from the other two dies. For angles less than 90 degs., the front die is set ahead or toward the center pin far enough to allow the corner to hug tight against the stationary die at the corner of the bend. The small tongue on the handle serves as a gage and may be set at any point. The small stop block may be moved back and forth in the semi-circular slot to suit the degree of the angle that is to be formed.

The largest size, or No. 3, has a capacity for bending stock up to and including $1\frac{1}{2}$ -ins. by 12-ins. wide, and is regularly fitted with a die for bending up to a right angle, but when required a die is furnished that will bend to any angle up to 45 degs. As shown in Fig. 3, the stock is put in

and clamped fast by operating a hand-wheel which is on the side, and then by pulling down the lever the piece is bent over to the shape desired. The machine is operated

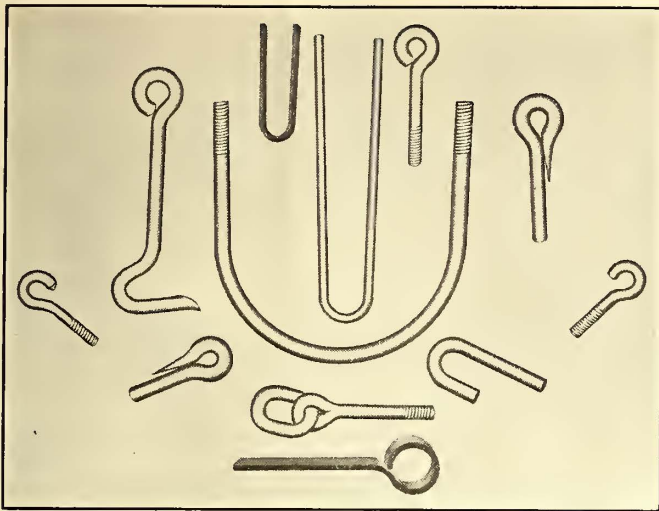
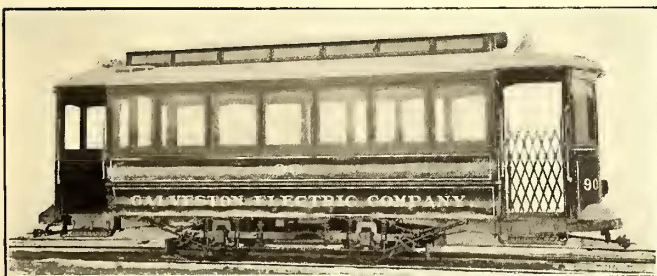


FIG. 4.—SOME SAMPLES OF WORK DONE WITH HAND-POWER EYE AND ANGLE BENDER

by one man, except in the case of very heavy work, when two men are required. Specimens of the work done with these machines are shown in Fig. 4.

NEW EQUIPMENT FOR THE GALVESTON ELECTRIC COMPANY

The Galveston Electric Company, of which Stone & Webster, of Boston, are the managers, has lately received a shipment of closed cars from the American Car Company, of St. Louis. The Galveston lines have a trackage of 35 miles and require about seventy motor cars, equally divided between open and closed types. Galveston has a population of about 40,000, and is one of the busiest cities in the country for its size. It has an immense foreign and interior trade and is especially notable for its cotton exports. The level land on which the city is laid out and the width of the streets enable the cars to keep up a fairly fast schedule at an economical



SINGLE-TRUCK CAR FOR THE GALVESTON ELECTRIC CO.

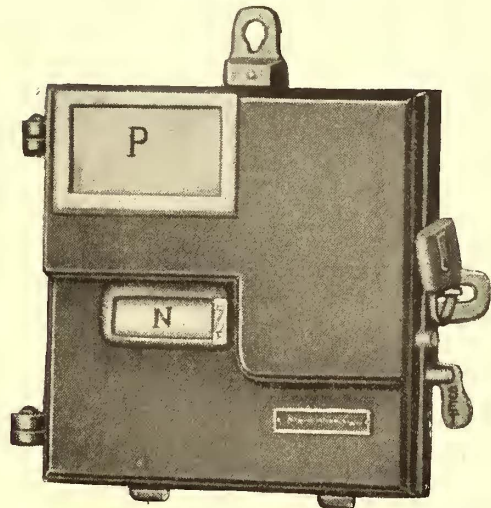
consumption of power. The climate is excellent for most of the year, with a short rainy period in the winter season.

The type of car shown has been in standard use on the Galveston lines for a number of years. The length of the body is 20 ft., and over the vestibules, 29 ft. 5 ins.; width over the sills and the panels, 6 ft. 3 ins., and over the posts at the belt, 7 ft. 6 ins.; sweep of the posts, 8 ft.; distance between the centers of the posts, 2 ft. 9½ ins.; height from the floor to the ceiling, 8 ft. 3¾ ins.; height from the rails to the sills, 2 ft. 2½ ins.; from the sills over the trolley board, 9 ft. 3½ ins. The platform steps are 14½ ins. from the rails, and from the step to the platform, 12 ins. The interiors are fin-

ished in cherry with ceilings of decorated birch. Longitudinal seats of spring cane are used and the sashes drop into side walls in the usual manner. The trucks are the No. 21-E type with 7-ft. 6-in. wheel base, 33-in. wheel diameter and 3¾-in. diameter of axles. Two motors are used per car of 25-hp each. The vestibules are stationary, with folding gates at the entrances. Sheet steel coverings are provided over the bumpers, inclined to prevent persons from gaining a foothold.

AN AUTOMATIC SECRET FARE REGISTER

The Traction Equipment Company, of New York, has recently taken up the manufacture of the Keystone fare register, a secret recording device which makes it impossible for the conductor to tell how many fares have been registered. Hence, to avoid "overs" and "shorts," it is necessary for him to turn in all of the money in his possession minus the amount with which he started. The appearance of the standard type of this machine is shown in

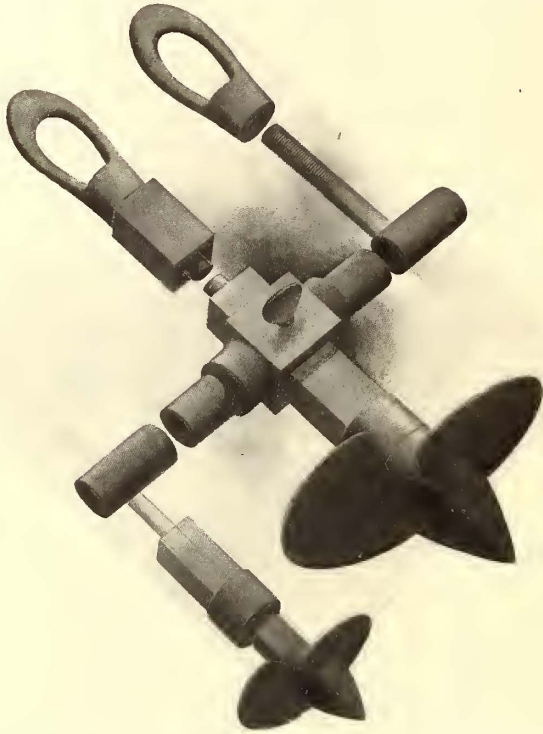


AUTOMATIC SECRET FARE REGISTER

the accompanying cut. Cords or rods for ringing up the fares are attached to each side of the register, so when the conductor records a fare he causes a gong to ring and a picture to appear in the space lettered "P." As the same car may be in charge of several conductors before the auditing department examines the secret record, a paper roll is provided at "N," on which the dispatcher writes the date and the number of the car before sending it out, and the conductor writes his name after the dispatcher has made the required entry. Once in charge of a car, the conductor rings up the fares as usual until the end of the trip, whereupon he turns a crank at the right. This records the end of that conductor's run, and when another takes charge of the car the same operation is repeated. Assuming that the record is 30 when the first man goes on a car and 85 when he leaves it, he would be held responsible for the difference between these numbers, or 55. The second conductor would have to account for the difference between 55 and the highest number recorded at the end of his trip, and so on with all the following conductors until the resetting of the register. It should be noted that this machine is also furnished with a detecting device, which causes a hole to be made on the record every time the register is opened. When the auditing clerk opens the register, this hole is made at the top, but if one should be found anywhere else on the record its location will indicate at once upon whose run the register was tampered with.

IMPROVED GUY ANCHOR

A number of material improvements have been added to the Stombaugh guy anchor, made by W. N. Matthews & Brother, of St. Louis. A new type is shown in the accompanying view. The 5-in. and 6-in. anchors are now made with a square



A COUPLE OF GUY ANCHORS, SHOWING CONSTRUCTION

shank of equal size, permitting the use of the same wrench for both anchors, whereas formerly separate wrenches were necessary. In the past, considerable trouble was caused the users of the 5-in. and 6-in. anchors by defective welds in the rods and eyes. A full rod is now used with no welds. The eye is drop-forged and threaded to the rod. A much larger eye is thus permissible and the eyes are now made amply large to accommodate standard guy thimbles. This eye is made smooth and of such shape as to do away with the absolute need of the thimble.

The hollow shaft is made of seamless square tubing of much greater torsional strength than the old style round tube. It is further reinforced by a malleable iron square key that fits the square shanks of the anchors. This key is brazed on. The handles are attached to a sliding cross that is held at any point on the shaft by means of a non-reversible set-screw. This sliding cross is a great convenience when screwing the anchor into the ground, as the maximum amount of leverage can always be had at all stages of the installation.

In installing the anchor, the hollow shaft is slipped over the rod after removing the eye. It is keyed firmly to the square shank of the helix, and the eye is then replaced on the end of the rod. The eye will serve to hold the wrench firmly in place during installation. The handles are then slid down the shaft to a convenient point, and then the anchor is screwed in until the handles get too close to the ground for further manipulation. The set-screw is now loosened and the handles are slid back again to a more convenient position for

work, when the process is repeated as before until the anchor is driven in to the required depth. The eye is then removed, the wrench pulled out, the eye replaced, the guy strand is attached, and the pole is anchored securely in a period not exceeding 15 minutes or 20 minutes.

NEW LONDON TUBE OPENED FOR TRAFFIC ON MARCH 10

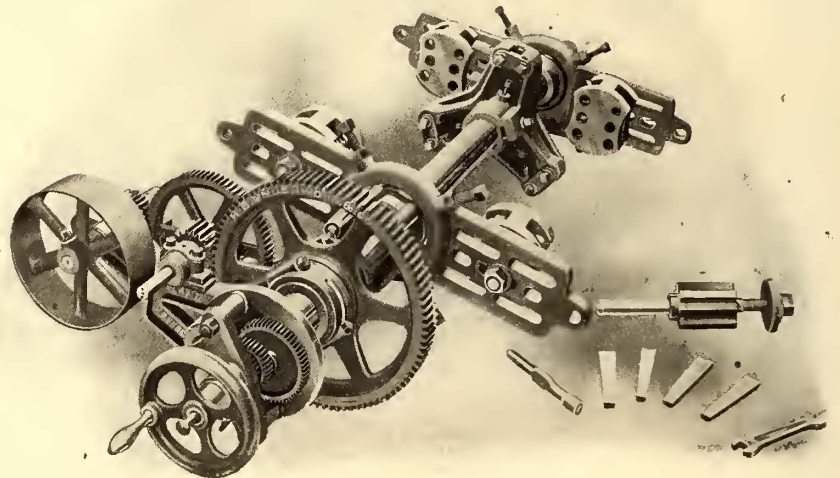
The Baker Street-Waterloo "Tube," one of the late Charles T. Yerkes's London group of railways, was opened to public traffic on March 10.

This is the latest addition to the London under-ground electric railways and a most important link in the solution of the city's traffic problem. The new artery, which is $5\frac{1}{4}$ miles long, runs north and south, traversing all the older lines, with which it is connected by subways.

The construction of the road was commenced in 1898 under the auspices of the late Whitaker Wright's group of roads, and it was subsequently purchased by the Yerkes-Speyer interests. The new "tube" passes under the Thames, 35 ft. below its bed.

A PORTABLE BORING BAR

Among the many railway tools made by the H. B. Underwood Company, of Philadelphia, is a portable tool designed for general boring, and made in several sizes. With this tool all kinds of engines, steam hammers, pumps, air compressors, Corliss valves, etc., can be bored in place. It has fixtures for boring (with one or both cylinder heads off) in any position and in very cramped places. It can be readily operated in a space that is large enough to take the piston out of the cylinder. Many times cylinders can be rebored in place in less time than they could be removed from fixed position, leaving all of the steam connections, holding-down bolts, etc., intact. Enough cutter heads are



PORTABLE TOOL FOR GENERAL BORING PURPOSES

furnished with each size bar to bore diameters given for each diameter of bar. These bars are powerfully geared and can be driven by power or hand. Each bar has two changes of feed; the feed screw is steel; the feed nut is also made of steel, cut to insure great wear. A full complement of expanders is sent to fit stuffing-boxes. One set of sample tools and wrenches is furnished with each outfit. The company is prepared to make special sizes of this machine to suit requirements.

FINANCIAL INTELLIGENCE

WALL STREET, March 14, 1906.

The Money Market

Greater ease has characterized the local money market during the past week, rates for all maturities ruling somewhat below those recently quoted. The heavy liquidation in stocks last week has left stock commission houses fairly well supplied with funds, making it unnecessary for them to borrow in the open market, and the easier tendency which has prevailed was due almost entirely to the extremely light demand, rather than to any pressure of funds by the banks or individual lenders. There were a number of other developments that worked in favor of lower rates, the most important of which was the placing of \$10,000,000 Government funds with the depository banks here and at the principal interior points, the decline in sterling exchange to about the lowest point of the year, which enabled a local institution to engage \$1,250,000 gold in the London market for import to this side, and the decidedly favorable exhibit made by the bank statement published last Saturday. Local bankers, however, were not inclined to offer with any degree of freedom, the belief being quite generally that no material reduction in interest charges will take place until money begins to return from the interior to this center. At the present time the demand for funds at the principal cities West and South, in connection with the spring trade, is still urgent, and is likely to continue so for several weeks to come. The importation of gold, above referred to, was followed by a hardening of discount rates at London, which was reflected in an advance of $\frac{3}{4}$ cent on the pound in sterling rates here, and which prevents the further importation of the precious metal at this time. Discount rates at Berlin also displayed a hardening tendency, due largely to the uncertainty regarding the final outcome of the Algeciras negotiations. The Paris market, however, has ruled somewhat lower, the discount rate being quoted at 2%, a decline of $\frac{1}{8}$ per cent. Government finances continue to improve. Receipts are in excess of expenditures, and Treasury officials are of the opinion that the surplus for the current month will reach \$2,000,000. The bank statement, published on the 10th inst., was far more favorable than was anticipated. Loans decreased \$21,259,200, due to liquidation in stocks and to operation of foreign bankers in the local money market. Cash decreased \$5,448,300, which was considerably more than was indicated by the preliminary figures, but as the reserve required was \$6,903,250 less than in the preceding week, the surplus reserve was increased by \$1,454,950. The total surplus reserve now stands at \$6,463,700, as compared with \$9,278,150 in 1905, \$29,937,075 in 1904, \$1,024,000 in 1903, \$3,112,900 in 1902, \$10,002,000 in 1901, and \$5,676,375 in 1900.

Money on call has loaned at 6 per cent and at $3\frac{1}{2}$ per cent, the average for the week being about $4\frac{1}{2}$ per cent. Sixty and ninety-day contracts have been made at $5\frac{1}{4}$ and 5 per cent, while five and six months' maturities were obtainable at 5 per cent. Commercial paper has ruled quiet and somewhat easier, in sympathy with the lower time loan quotations, choice double names being quoted at 5 and $5\frac{1}{4}$ per cent.

The Stock Market

The most important events of the week as bearing upon the stock market were the announcement that \$1,250,000 gold had been engaged abroad for shipment to this country, and the positive refusal of the Anthracite coal operators to accede to any and all of the demands made by their employees. Ordinarily, the publication of any such momentous news as this would have exerted a considerable influence upon security values in general, the one announcement for good and the other for evil. In the present instance, however, the market was little affected by either of the developments referred to, and throughout the greater portion of the week speculation was light and of an almost wholly professional character. The adverse decision of the United States Supreme Court in the trust investigation and Chicago traction cases, together with the uncertainty felt concerning the outcome of the Moroccan conference, although London was a considerable buyer of some of its favorites here, held buying for the long account in check. At the same time, however, there was a marked absence of selling pressure. This left speculation entirely at the

mercy of the professional room traders, and in consequence thereof fluctuations in prices were of an irregular character.

The bearish contingent selected Reading and Amalgamated Copper in an endeavor to force down prices of the general list, believing these stocks to be the most vulnerable, the one because of the threatened strike, and the other because of reports of shutting down of the mines in Montana, on account of unusually severe weather. In neither case, however, was any serious decline brought about, principally for the reason that the general sentiment is that even if there is a strike in the Anthracite coal fields it will do no particular harm to the companies, while in the case of Amalgamated Copper its refusal to yield to bearish manipulation is accounted for by the continued strength of the copper metal market, as indicated by a further advance in prices of $\frac{1}{8}$ per cent per pound. Although, as before stated, the general movement of prices was irregular, the tendency appeared to be upward, and in a few exceptional cases pronounced strength was developed. This applies with particular force to the shares of several Southern companies, both railway and industrial, and is explained by the unprecedented business which is now being done by practically all enterprises in that locality. Other notably strong features included some of the Vanderbilt properties and the smelting and lead stocks, which is attributable to a revival of the deal rumors in existence some time since.

Generally speaking, the local traction group was quiet. This was especially true of all the Interborough and Metropolitan securities, the reason for this being a general disposition to await some tangible developments concerning the pending merger. In the case of Brooklyn Rapid Transit, however, considerable activity developed, and on what appeared to be what the street usually described as good buying, the stock showed considerable strength. The exceptional weather conditions, with the promised unusually early opening of the seaside resorts, would appear to be sufficient explanation for the buying of this stock; still, in addition thereto, there was a recurrence of the old-time stories of a purchase by Pennsylvania interests and of the securing of control by the Rapid Transit of its only formidable competitor.

Philadelphia

Although dealings in the traction stocks have been comparatively small during the past week, they have been accompanied by a higher range of values, and in several instances prices scored sharp advances. Philadelphia Company's shares again led the list in point of activity, about 1500 shares of the free common stock selling at $51\frac{1}{4}$ and 51, while upwards of 12,000 shares of deposited stock changed hands at $53\frac{5}{8}$ to $53\frac{7}{8}$. The preferred stock sold to the extent of about 1200 shares, at from 50 to $50\frac{1}{4}$. Philadelphia Rapid Transit was quite active and strong. In the early dealings rose from $30\frac{3}{8}$ to $32\frac{5}{8}$, on comparatively light purchases, but during the last half of the week there was a gradual decline to $31\frac{1}{2}$, the latter price, however, representing a gain for the week of a full point. A conspicuous feature of the trading was the strength in Fort Wayne & Wabash Traction stocks, the common rising $2\frac{1}{4}$ points to 29, on the exchange of 500 shares, while the preferred rose to 68, on the purchase of 300 shares, an extreme gain for the week of 18 points. Philadelphia Traction was strong. Opening at $101\frac{5}{8}$, the price dropped to 100 and $100\frac{1}{8}$, ex the dividend of \$2 per share. Other transactions included American Railway stock at $51\frac{1}{2}$, American Railway warrants at $1\frac{1}{4}$ and $1\frac{1}{2}$, Consolidated Traction at 82 and $81\frac{3}{4}$, Railways General at 7, Union Traction at $63\frac{1}{4}$ to 63, United Companies of New Jersey at 269, United Traction of Pittsburg preferred at $49\frac{7}{8}$, United Railway Investment of San Francisco preferred at 92, and Fairmount Park Transportation at 20.

Chicago

The market for street railway issues at Chicago was more active, but weaker, trading and prices being influenced by the decision of the United States Supreme Court in the franchise litigation. At first the decision was construed as a victory for the railway companies, but later, when the details of the decision were received, showing a victory for the city, prices for all issues crumbled away. Chicago City Railway, after selling at $193\frac{1}{2}$, dropped to 170, ex the dividend, on sales of 216 shares, and at the close 150 was bid for the stock. West Chicago dropped from

50 to 38, and rallied to 40, while North Chicago, after selling as high as 85, declined, too, and closed at 57. Chicago Union Traction common broke from 13¼ to 6, on sales of about 1000 shares, and the preferred sold at 27. West Chicago first mortgage bonds, which sold early in the week at par, were 95 bid, while the consolidated 5s were 80 bid. The 4½ per cent bonds of the Chicago Consolidated Traction Company were 45 bid and offered at 60. Other transactions included Chicago & Oak Park Elevated preferred at 26 and 25, the common at 7 and 6⅞; Northwestern Elevated preferred at 65, South Side Elevated at 94 and 95, Metropolitan Elevated common at 28 and the preferred at 68⅞.

Other Traction Securities

The traction issues at Baltimore were quiet but firm. United Railway free common stock sold at 17¾ and 18¼ for about 2000 shares, while receipts representing about 1000 shares of deposited stock brought 18¾. The bonds were comparatively quiet, the 4s selling from 92¼ to 93 and back to 92½. The free incomes at 74¾ and 73⅞ and 73¼, while the pooled incomes changed hands at 73¾ and 73⅞. Norfolk Railway & Light 5s were a shade easier, about \$25,000 selling at from 100½ to 100. Other sales were: North Baltimore Railway 5s at 120, Lexington Street Railway 5s at 104½, Baltimore City Passenger 5s at 106, Washington City & Suburban 5s at 105, and Citizens Railway & Light of Newport News 5s at 88½. The Boston market was quiet but generally firm. Boston Elevated rose from 154 to 154¾. Boston & Worcester common after selling at 32½ ran off to 30½, but recovered later to 31. The preferred was strong, with sales at 80½ and 81. Massachusetts Electric sold at 18¾ and 19, and the preferred rose from 68 to 68¾. West End common and preferred were comparatively active, the first named selling at 100 and the preferred at 114¾ and 114. In the New York curb market the Interborough stocks ruled firm. Interborough Rapid Transit sold to the extent of 1000 shares at 228½ to 229½ and back to 229. Interborough-Metropolitan common advanced from 51½ to 53¼, and closed at 53⅞, after sales aggregating 20,000 shares. Interborough-Metropolitan preferred sold from 89½ to 87½ for about 6000 shares, and about \$350,000 of the 4½ per cent bonds brought prices ranging from 90¾ to 90½. New Orleans Railway common lost ¾, 1600 shares changing hands at 36¾ to 36, and \$30,000 of the 4½ per cent bonds brought 91 and 90⅞.

Security Quotations

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

	Mch. 7	Mch. 14
American Railways	51½	51¼
Boston Elevated	154	154½
Brooklyn Rapid Transit	79%	84%
Chicago City	—	*a199
Chicago Union Traction (common)	—	7½
Chicago Union Traction (preferred).....	—	—
Cleveland Electric	—	80
Consolidated Traction of New Jersey.....	81	82
Detroit United	97¼	99½
Interborough Rapid Transit	228	228½
Interborough-Metropolitan Co. (common), W. I.....	51	52%
Interborough-Metropolitan Co. (preferred), W. I.....	88	88½
Interborough-Metropolitan Co. 4½s, W. I.....	90½	90½
International Traction (common).....	37¼	—
International Traction (preferred) 4s.....	73½	—
Manhattan Railway	156½	158
Massachusetts Elec. Cos. (common).....	18½	19
Massachusetts Elec. Cos. (preferred).....	67	60
Metropolitan Elevated, Chicago (common).....	23	26½
Metropolitan Elevated, Chicago (preferred).....	68	68
Metropolitan Street	115	115
Metropolitan Securities	71¼	72¼
New Orleans Railways (common).....	35½	35¾
New Orleans Railways (preferred)	80½	82%
New Orleans Railways, 4½s.....	89½	89
North American	98¼	99%
North Jersey Street Railway	27½	27
Philadelphia Company (common).....	50%	51
Philadelphia Rapid Transit	30½	30%
Philadelphia Traction	101	*100
Public Service Corporation 5 per cent notes.....	94½	95½
Public Service Corporation certificates	72	74
South Side Elevated (Chicago).....	93	94½
Third Avenue	132½	132
Twin City, Minneapolis (common).....	116½	117%

	Mch. 7	Mch. 14
Union Traction (Philadelphia)	63	63
West End (common).....	99½	99½
West End (preferred).....	114	114

* Ex-dividend. a Asked. W. I., when issued.

Iron and Steel

According to the "Iron Age," the returns from the coke blast furnaces show that the capacity of the furnaces in blast on March 1, was 479,739 gross tons per week, as compared with 482,156 gross tons per week on Feb. 1. During February the furnaces of the steel companies did not produce as heavily as expected, making only 1,216,760 tons, while the Merchant furnaces produced 677,272 tons, making a total for the short month 21,894,032 tons, as compared with 2,068,893 tons in January, the record month. Partial reports indicate that stocks are still falling off slightly in the Northern districts. The uncertainties as to full supply are having a considerable effect upon the pig iron markets. Current business in pig iron is limited to early requirements. The steel rail trade continues the banner branch of the industry, and some very good inquiries have appeared. The demand for structural material is very heavy.

WORCESTER SALE TALK REVIVED

Periodically for some time past the rumor has been revived that the New York, New Haven & Hartford Railroad, through the Consolidated Railway Company, was negotiating for the purchase of the Worcester Consolidated Street Railway Company. A story in circulation in financial circles at this time is to the effect that an offer has been made to the trustees of the Worcester Railways & Investment Company for the taking over of the property at \$105 a share. The Worcester Railways & Investment Company, it will be remembered, is the holding company for the railway. The State Mutual Life Insurance Company, Metropolitan Life Insurance Company, the Deweys and the Bullocks are said to control the property through ownership of stock. One source of information has it that already a large block of the stock has been acquired, and that the holdings of one other interest are necessary to a change of control. An increase within two weeks of ten points in the stock, from 90 to 100, bears out the statement that developments are to be expected soon.

THE ELECTRIC RAILWAYS OF CANADA

According to the official Canadian report on the subject there were 793 miles of electric railroad in Canada on June 30, 1905. The increase during the year was 36 miles. The total paid-up capital of all the companies was \$61,033,321. The consolidated income account of all the electric railroads of Canada for the year ended June 30, 1905, with the increases over the preceding year, is as follows:

	1905	1904
Gross earnings	\$9,357,125	\$8,453,609
Operating expenses	5,918,194	5,320,527
Net earnings	\$3,438,931	\$3,133,082

The number of passengers carried by all the electric roads during the year was 203,467,317, an increase of 22,777,319. The freight carried amounted to 510,350 tons, showing an increase of 110,189 tons.

Below are shown the number of passengers carried in some of the larger cities for the year:

City—	Passengers Carried
Montreal (three companies).....	67,297,268
Toronto (three companies).....	65,792,792
Ottawa	9,328,690
Quebec	5,558,110
Hamilton (four companies).....	6,396,419
Winnipeg	11,255,967
London	4,812,520
Halifax	3,540,310
St. John	2,680,601
Vancouver, Victoria and New Westminster (one company)	10,352,410

The total car mileage for the year was 45,959,101, an increase of 3,982,977.

Fifty-six people were killed by the street railways and 1269 were injured.

SUPREME COURT DECISION IN CHICAGO CASE

The Supreme Court of the United States announced its decision on Monday, March 12, in what is known as the Chicago Traction cases, involving the time the charters of the Chicago street railways expire. Only a synopsis of the opinion was given, this being read by Justice Day. It reverses the opinion of the lower court in some particulars, and affirms it in others. The Circuit Court of the Northern District of Illinois held that as to several of the roads their charters would not expire until 1958, others in 1906, and that still others had already expired. The Supreme Court upholds the constitutionality of the ninety-nine year law, and concedes that the act of 1865 extended the corporate lives of the old companies, which were originally twenty-five years, to ninety-nine years. It denies, however, that the act granted the companies rights in any streets for that length of time. The court holds that the companies which operate lines in certain west and south side streets specified in the original ordinance have a right to use them until the city shall purchase the tangible property used in the construction or operation of the lines. That is the condition found in the ordinance of 1858, and the Supreme Court holds that that ordinance was confirmed by the act of 1865. In the matter of grants of street railway privileges made by the annexed towns of Jefferson and Lake View, it is held that they do not extend beyond the life of the corporation making them. A synopsis of the decision follows:

1. The Circuit Court of the United States for the Northern District of the State of Illinois had jurisdiction to render judgments against the Chicago Union Traction Company, the North Chicago Street Railroad Company and the West Chicago Street Railroad Company, set up in the bills afterward filed for the appointment of receivers.

2. The proceedings for the appointment of receivers were not shown to be conclusive and fraudulent, and the court had jurisdiction to entertain the bills and appoint the receivers and put them into possession of the property of the railway companies.

3. The ancillary bills filed by the receivers were maintainable in aid of the court's jurisdiction to settle controversies as to the property which was to be administered and disposed of under the orders and decree of the court.

4. The acts of 1859, 1861 and 1865 were not unconstitutional under the constitution of Illinois of 1848, in force when the same were passed.

5. The acts of Feb. 6, 1865, amending the act of Feb. 14, 1859, had the effect to extend the corporate lives of the Chicago City Railway Company and the North Chicago City Railway Company and the Chicago West Division Railway Company for the term of ninety-nine years. It affirmed the contracts with the city, prescribing rights and privileges in the streets of Chicago in all respects as theretofore made, including time limitations as contained in the ordinance previously passed. It recognized and continued the right of the city and the companies to make contracts for the use of the streets upon terms and conditions, including the time of occupancy, as might be agreed upon between the Council and the corporations.

6. Corporate privileges can only be granted as against public rights when conferred in plain and explicit terms. The ambiguous phrase in the act of 1865, "during the life hereof," did not operate to extend existing contracts for the term of ninety-nine years, or limit the right of the city to make future contracts with the companies covering shorter privileges.

7. The amending act of 1865 had reference to the North Chicago City Railway Company, as well as the corporations specifically named in the first sections of the acts of 1859 and 1861.

8. The ordinances of May 23, 1859, granting rights and privileges in certain streets to the Chicago City Railway Company and the North Chicago City Railway Company, respectively, are radically different. The grant to the former company for the south and west divisions of the city is during all the terms specified in the act of Feb. 14, 1859, which act expressly ratified the ordinances of 1858, granting the right to use the streets therein named for the term of twenty-five years and until the city shall purchase and pay for the same as set forth in said ordinance. On the North Side the term granted is for twenty-five years, "and no longer."

The privileges conferred upon the Chicago City Railway Company and its grantee were confirmed as made by the act of 1865, with the effect to confirm the right of the companies to occupy the streets named in the ordinances of 1858, May 23, 1859, and similar ordinances for the term of twenty-five years and until the city shall elect to purchase and pay for the property of the said railway companies.

On the North Side, the grants being limited to twenty-five years and no longer, no such right exists to remain in the use of the streets until purchased by the city.

9. Whatever rights existed in the streets were not lost to the companies by the acceptance of the ordinances granting a change from animal to cable or electric power in the operation of the railways.

10. The grants in the town of Jefferson having been made after the acceptance of the city's and village's act, are limited to the term of twenty years.

11. The grants by the Supervisors of Lake View are not in perpetuity, as the Lake View Road was but an extension of the North Side system, which was expressly limited in the duration of its grant to the term of

twenty-five years. No intention will be presumed to make an extension of this part beyond the life of the grant to the main line of the North Side Road.

12. The grants by the Trustees of Lake View will not extend beyond the life of the corporation making them, and upon the annexation of the town of Lake View to Chicago the further right to use the streets must be derived from the grants by the Council of that city under the power conferred by the cities and villages act.

The decree is reversed and cause remanded for further proceedings, in accordance with the views herein expressed.

Justice McKenna delivered a dissenting opinion, concurred in by Justices Brown and Brewer.

In order better to convey the significance of the decision, it has seemed advisable briefly to review the history of the traction situation. Street railroading in Chicago had its beginning in August, 1858, when the Chicago Common Council passed an ordinance granting to Frank Parmlee and his associates the right to lay tracks and operate a street car system on certain streets in the south and west divisions. A year later, Mr. Parmlee and his associates were incorporated as the Chicago City Railway Company, and shortly afterwards the Council gave to that corporation the right to extend its lines over a number of other streets in the same two divisions. Both this second ordinance and the first one provided that "the right to operate said railways shall extend to the full time of twenty-five years from the passage hereof, and at the expiration of said time the parties operating said railways shall be entitled to enjoy all said privileges until the Common Council shall elect by an order for that purpose to purchase said tracks of said railways, its cars, carriages, station houses, station grounds, depot grounds, furniture and implements of every kind and description used in the construction or operation of said railways, or any appurtenances in and about the same.

Other ordinances were passed by the Council for several years, practically based in regard to the limit of time upon the first one. In July, 1863, the City Railway Company sold out all its rights in the west division lines, and in certain east and west lines on the south side, like Madison, Randolph and Lake Streets, to the Chicago West Division Railway Company, which, of course, succeeded to the rights and limitations of the Chicago City franchises. Thereafter, separate ordinances were passed for the City Company and the West Side Company, most of which were mere amendments to the original ordinance.

On Feb. 6, 1865, the Legislature passed a law, which since has become famous as the "ninety-nine year act." The old City Railway Company had been incorporated for a term of twenty-five years. The act of 1865 extended the term of incorporation of the street car company to ninety-nine years.

The companies, soon after the passage of this act, set up the claim that it not only extended their corporate life, but also extended their franchises to the same degree. Furthermore, they held and always since have insisted that the effect of the ninety-nine year act by the Legislature was to render null and void all the limitations as to time in any further ordinance, so that the right to use the streets must be terminated by the corporate life of the company, and not by the limitations fixed by the City Council.

The City Railway Company has retained its independent corporate existence on the south side. The West Division Company, through Charles T. Yerkes, has been merged into the north side company under the name of the Union Traction Company. Both the City Railway Company on the south side and the Union Traction Company, which covered the rest of the city, held to their original contention that the ninety-nine year act extended to all franchises.

The city from the outset denied this, and persisted in putting limitations of time in all the ordinances. The contentions were fought out in one way or another until finally Judge Grosscup, in the United States Circuit Court, rendered a decision which now is upset by the Supreme Court. Judge Grosscup decided in favor of the companies in regard to all ordinances and franchises in existence prior to May 3, 1875, which was the date of the adoption of the cities and villages act under the Illinois Constitution of 1870. He held the ninety-nine year act of 1865 extended the life of all ordinances, and took away from the Council the right to limit a franchise, giving it privileges which were merely administrative. This view he applied to everything until the vote at the charter election in 1875, at which time he declared the people gave back to the City Council absolute control over the conditions of the street car franchises.

MORE ABOUT THE SOUTH JERSEY & SEASHORE ELECTRIFICATION

At the meeting of the stockholders of the West Jersey & Seashore Railway Company, held last week, the increase in the capital stock of the company from \$8,076,000 to \$10,000,000 was authorized, this additional amount to be used in paying part of the expense of equipping the line with electricity between Philadelphia and Atlantic City. The annual report of the company for the year was presented, and some remarks were made by President A. J. Cassatt of the company regarding the details of the change of motive power that are of especial interest at this time. These remarks were confined to terminal facilities, details of line construction and operating plans, and supplement the information given previously in these columns regarding the electrical equipment.

The plans contemplate a terminal adjoining the present ferry terminal in Camden, opposite Philadelphia, and a double-track overhead line thence to Haddon Avenue station, where a connection will be made with the present tracks on the surface. From that point the line will be double tracked with 100-lb. rail to Newfield, and from Newfield to Atlantic City with 85-lb. rail. That part of the Cape May division from Newfield to Millville will also be electrified and a single-track railway laid with 100-lb. rail.

To avoid crossing the Atlantic City Railroad at grade, the Newfield branch, from a point at or near the Meadows Tower, about 2 miles from the present Atlantic City terminal, will be extended and double tracked, crossing the thoroughfare on a new drawbridge between the present bridge, used by the main line, and the old drawbridge. After passing the thoroughfare, the tracks will cross over and above the Atlantic City Railroad and join the present right of way in Atlantic City near Ohio Avenue, and will thence parallel the present tracks to a point south of the present terminal in Atlantic City, where a new terminal will be located facing on Atlantic Avenue and lying between Tennessee and New York Avenues. The service from Camden to Woodbury will be by an overhead trolley line, and from Woodbury to Atlantic City by the third-rail system; from Newfield to Millville there will be overhead trolley service.

By agreement with the Central Passenger Railway Company, of Atlantic City, and the Atlantic City & Shore Railway Company trackage rights have been granted to the latter company over the South Jersey & Seashore Railway Company's lines between a point of connection with the Newfield branch, at or near the Meadows Tower, and Somers Point via Pleasantville, so as to permit the transportation of passengers between Atlantic City and Somers Point and further aid in the development of the Atlantic City territory, for which privilege the South Jersey Company will receive a satisfactory rental.

STEEL-CAR PLANT OF AMERICAN CAR & FOUNDRY COMPANY AT ST. LOUIS

The American Car & Foundry Company has selected a site in St. Louis for its new plant for the manufacture of steel cars, and has acquired property on Levee and First Streets, between St. George and Lynch Streets, in South St. Louis. This plot is 1200 ft. in length and 300 ft. in width, extending on the levee side from St. George Street to a point beyond Lynch Street and near Dorcas Street, and on the First Street side from St. George Street to Lynch Street. The main building, which will be constructed of steel, will be 800 ft. long by 180 ft. wide. There will be additional small structures, as well as yards, supplied with all necessary facilities. The new plant will practically be an addition to the existing South St. Louis factory. The new buildings and ground will cost \$1,000,000. This factory will employ about 1000 men. With the force employed in the existing factory, the company will have about 4000 men in the South St. Louis plants. The company has plants at Madison and St. Charles, as well as at other places in different parts of the country.

CHANGE IN DATE OF MEETING OF SOUTHWESTERN ASSOCIATION

The date of the meeting of the Southwestern Electrical & Gas Association has been changed from the second Tuesday in May to May 16, 17 and 18, at Galveston, Tex. Frank J. Duffy, of Beaumont, Tex., is secretary of the association.

JERSEY FREIGHT BILL PASSES SENATE

The electric railway freight bill, introduced in the New Jersey Legislature, has passed the Senate and will go to the House this week, it is expected. A largely attended hearing, at which only two steam railroads were represented, was mentioned in the STREET RAILWAY JOURNAL last week. The bill was reported favorably at once and passed without trouble. It will be chiefly valuable to existing country lines operating under street railway or traction charters. New roads, built under steam railroad charters, have freight-carrying privileges. Municipalities will have the right, under the terms of the bill, to permit or refuse the freight-carrying privilege, and to regulate the conditions under which traffic shall be carried on. The Trenton, Lawrenceville & Princeton Railroad, the Trenton & New Brunswick Railroad, the Burlington & Mount Holly, and Bridgeton & Millville Traction Companies (the two latter chartered under a special privilege of the traction act prior to 1895) carry freight, and will not be affected by the law.

MEETING OF UNITED RAILWAYS OF ST. LOUIS

The annual meeting of the stockholders of the United Railways Company of St. Louis, for the election of directors, was held March 5. Two new directors were elected to fill vacancies. They were Charles H. Huttig, president of the Third National Bank, and Christopher D. Smithers, of New York, identified with North American Company interests. Mr. Huttig succeeds the late W. H. Thompson, and Mr. Smithers succeeds Eugene Delano, of New York, who resigned from the board some time ago. The following directors were re-elected: John I. Beggs, of Milwaukee; James Campbell, Murray Carleton, Robert McCulloch, Henry S. Priest, W. V. N. Powelson, Festus J. Wade, of St. Louis; C. W. Wetmore, George R. Sheldon, of New York. The only outside director in attendance at the meeting was Mr. Beggs, president of the company. The 249,000 shares of common stock, held in the voting trust agreement, of which the United Railways owns a majority, was voted in addition to 64,000 shares of preferred stock. The new board will organize and elect officers in about two weeks. The re-election of Mr. Beggs as president and Capt. McCulloch as vice-president and general manager is regarded as certain.

CLEVELAND, ASHLAND & MANSFIELD CONTRACTS TO BE PLACED

The Roberts & Abbott Company, of Cleveland, consulting engineers for the Cleveland, Ashland & Mansfield Railway, expects to close contracts within the next thirty days for the construction and complete equipment of this road. The line will be an extension of the Cleveland & Southwestern Traction Company's system, and it will be largely owned by the Pomeroy-Mandelbaum interests, which control the Cleveland & Southwestern.

The road will extend from the Southern division of the Cleveland & Southwestern at Seville, to Le Roy, Lodi, West Salem, Pope, Nankin, Ashland and Mansfield, a total of 42 miles. Grading will average about 8300 yards to the mile, with comparatively little heavy work, and few bridges. The line will be supplied with power from the main station of the Cleveland & Southwestern at Elyria, where another 1500-kw turbine will probably be installed to assist the two units of that size now in operation. There will be five sub-stations, each having a 300-kw rotary with necessary transformers for stepping the voltage down from 26,500 to 370 volts. One of the sub-stations will be a floater, while the others will be installed in brick buildings containing residence, waiting room, freight room and machinery room. Seven combination passenger, smoker and baggage cars, and one express car will be purchased; they will be equipped with four 75-hp motors and train control system. Track will be laid with 70-lb. rail, and the overhead will be similar to the Cleveland & Southwestern standard. A car house and light repair shop will be built at Mansfield. It is very probable that the entire contract will be let to one company, and the various items sublet through the contractor.

The line will connect at Mansfield with the Ohio Central Traction Company, and it will form part of the through route from Cleveland to Columbus. It is probable that the Ohio Central power will also be supplied from Elyria when the connecting link is completed.

TO GUARD AGAINST ACCIDENTS

An important conference was held at Indianapolis, March 6, by the State Railroad Commission with the signal engineers of the different railroads in the State and officers of interurban roads. The object of the conference was to discuss the subject of "railroad crossings" and the prevention of accidents at crossings by the use of interlocking switches, derails, etc. Previous to the organization of the State Railroad Commission, all interlocking switches, derailing devices, etc., put in at railroad crossings had to be approved by the State Auditor. This authority is now delegated to the Commission. The Commission charged the railroads with having had too many accidents at crossings. These it attributed to several causes, among them the laying of guard rails at the side of the "derails," to prevent the derailing of the train, and the placing of derails 300 ft. from the crossing instead of 500 ft., as prescribed. The signal engineers insisted that derails placed 300 ft. from the crossing were as effective as if placed 500 ft. The Commission intimated that it would rule that all guard rails must be removed except in special cases, where, by permission of the Commission, they may remain.

It was brought out that the law discriminates against interurban roads in the matter of putting in crossings. When an interurban road desires to cross a steam line it must bear the expense of putting in an interlocking switch, but steam roads may cross an interurban road without incurring the cost of such crossing.

The following statistics were recently gathered by the State statistician:

INTERURBAN RAILROAD ACCIDENTS IN 1905

From causes beyond their own control—		
	Killed	Injured
Passengers	0	38
Employees	0	12
All others	1	10
<hr/>		
Total	1	60
From their own carelessness—		
Passengers	10	1,869
Employees	3	129
All others	26	2,288
<hr/>		
Totals	39	4,288
The amount paid in damages, \$96,061.30.		

ROCK ISLAND ELECTRIFICATION IN IOWA

The Des Moines, Winterset and Indianola branch of the Chicago, Rock Island & Pacific Railroad, with 48 miles of track, is to be electrified and operated as an interurban road. Plans for the carrying out of this project have been under consideration by the officials of the Rock Island ever since the discontinuance of the interurban service on the line from Des Moines to Indianola last fall. While those interested are not ready to announce all of their plans, enough is known to say that the operating company will be independent of the Rock Island and will operate the line under a long-time lease. The Rock Island will make all the changes necessary on its right of way, such as improving the roadbed, installing the trolley wires and poles and appurtenances. The power and the rolling stock will be furnished by the operating company. The Westinghouse and the General Electric Companies, it is stated, have already made figures on the cost of electrifying the tracks. The move has been taken, so it is said, to protect the Indianola and Winterset property of the Rock Island against deterioration, threatened by the invasion of the territory by interurban lines. The three best cities on these branch lines are now the objective points of three different interurbans. The Des Moines North & South expects to construct a line to Carlisle; the Des Moines & Indianola Interurban will construct a line connecting Des Moines with Indianola, and the Des Moines, Winterset & Creston Company is now making a location survey for a line from Des Moines to Winterset and thence to Creston. The Rock Island has concluded to electrify its branch lines to these towns, so as to be able to compete satisfactorily with the interurban lines, and in order to do this the scheme of resorting to an independent company to operate the lines when electrified was resorted to. This will take these lines out of the Rock Island system, and permit the charging of interurban rates, without subjecting the Rock Island system to the charge of discrimination between stations.

POWER STATION FOR THE NEW YORK, WESTCHESTER & BOSTON

The City & County Contract Company, of 30 Broad Street, New York, which is the constructing company for the New York, Westchester & Boston Railway, has issued specifications for the power plant, which will include steam turbo-alternators with their dependent auxiliaries, twenty-four water-tube boilers with superheaters and their parts, three open exhaust feed-water heaters, six horizontal outside-packed plunger boiler feed pumps, three surface condensers, twenty-four mechanical stokers, and one 60-ton electric traveling crane. Plans and all additional information can be obtained at the office of Wm. A. Pratt, chief engineer, New York, Westchester & Boston Railway Company, 30 Broad Street, New York City, or at the office of L. B. Stillwell, consulting electrical engineer, 100 Broadway, New York City, or Sargent & Lundy, consulting mechanical engineers, Railway Exchange Building, Chicago, Ill.

Bids will be received by T. D. Rhodes, president, the City & County Contract Company, at his office, Room 1516, 30 Broad Street, New York City, on March 24, 1906, up to 12 o'clock noon.

STRANG GASOLINE-ELECTRIC CARS ON TOLEDO LINE

William B. Strang, of New York, whose gasoline-electric car is making a tour across the Continent, announced while in Toledo last Saturday, that cars of this type would be used on the Toledo, Fort Wayne & Indianapolis Railway, which was organized some time ago. W. B. Strang & Company are also stated to be financially interested in the project and to have arranged for the financing and building of the road. The projectors of the road announce that they have secured all the required right of way between Indianapolis and Ft. Wayne, and expect to begin construction work in April, and it is expected that this portion will be ready for operation this year. In the meantime another company will be formed in Ohio to build the Toledo-Ft. Wayne section. The Toledo, Ft. Wayne & Indianapolis Railway Company was formed some time ago with \$3,000,000 capital stock. Hon. C. N. Thompson, of Indianapolis, is president of the company; Charles E. W. Coles, of New York, secretary-treasurer, and W. H. Ogden, of Indianapolis, general manager. Joseph A. Vandergrift, who is associated with W. B. Strang & Company, will have charge of the construction. The Strang cars will be used in passenger service, while the freight trains will probably be handled by steam locomotives.

TUNNEL RECOMMENDATIONS IN NEW YORK

The Rapid Transit Commission last week, in a formal communication to the Board of Estimate and Apportionment, recommended a four-track subway branching from the Fourth Avenue-Fort Hamilton line at Thirty-Sixth Street, Brooklyn, and running as a subway to Eighty-Sixth Street and Bay Thirty-Fifth Street, in Unionville, and then as an elevated system across the low-lying ground at the edge of Gravesend into Stillwell Avenue, and down Stillwell Avenue to Surf Avenue, in the heart of the amusement district, in the West End. The subway will cost about \$8,000,000. Express trains will make the run from points in Manhattan to Fourth and Atlantic Avenues, in Brooklyn, and then down Fourth Avenue over the route just decided upon at a speed equal to the express service in the subway. Probably the trip will be made from Harlem to Coney Island in about 40 minutes. The route as decided upon taps the Borough Park, Bensonhurst, Bath Beach, Blythebourne, Martense, Lefferts Park and Homewood sections, and will give the people of those localities a much improved service. Whether the Belmont interests build the Fourth Avenue subway to Coney Island or not the Rapid Transit Commission expects to arrange a traffic agreement by which, on the payment of an extra fare, through trains will be run from the Bronx to Coney Island. In effect, the new section will be an extension of the Fourth Avenue and Fort Hamilton subway, the plans for which were approved by the Rapid Transit Commission on July 14 last, and by the Mayor on July 28. This last section is so planned that connections can be made with the subway now under construction, and with the Prospect Park extension heretofore authorized, and also with the Brooklyn and Manhattan loop lines approved by the Commission on July 14 last.

PETITION TO CANCEL LEASES OF THE UNION TRACTION COMPANY, CHICAGO

The North and West Chicago Street Railway companies have filed in the Federal Court a petition for the cancellation of the leases of their properties to the Union Traction Company. Judge Grosscup set May 2 as the date for the hearing of the case. The reasons given by the petitioners for demanding a restoration of their properties are:

That the receivers of the Union Traction Company have violated the terms of the leases in using money to pay the debts of the Union Traction Company when it should have been applied to pay rent.

That these receivers, while acting as trustees for the underlying companies, have loaded them with debts in excess of \$3,000,000, and the money obtained has been spent for the benefit of the Union Traction Company.

That the receivers, while obligated under the leases to furnish the money for the improvement of the properties, have used for this purpose money which should have been applied to the benefit of the underlying companies.

That the Union Traction Company is financially and otherwise unable to carry out the terms of the leases, especially in the matter of coming to an agreement with the city, and it should consequently get out of the way so the underlying companies can manage their own affairs.

The petition states that leases were made to the Union Traction Company June 1, 1889. These on July 24, 1903, were modified by mutual agreement. They provided that out of the gross income, the Union Traction Company was to deduct necessary operating expenses and the payment of fixed charges on the underlying companies, and the net income, up to a fixed amount, was to be paid in rentals to the stockholders of these companies, when the residue was to go to the Union Traction Company.

The statement is made that instead of keeping the terms of the leases, \$196,416 belonging to the underlying companies was used to pay debts of the Union Traction Company, and that other money belonging to the North and West Side companies was used for the purchase of cars. The further charge is made that, while the receivers were managing the underlying companies, promissory notes to the amount of \$1,090,000 in the name of the West Chicago Company and \$2,316,000 in the name of the North Chicago Company were discounted, and the money thus raised applied to the benefit of the Union Traction Company, although the underlying companies are held liable for its payment.

In another suit brought by the underlying companies to recover its properties, Judge Grosscup has just overruled the demurrer of the defendants, and the case will now be tried on its merits.

This suit was brought by the North and West Chicago Street Railway companies Dec. 1, 1904, against Charles T. Yerkes, the receivers of the Union Traction Company, and the trust company and bankers involved, and the suit will now be tried on its merits. The object of the suit is to recover for the plaintiffs the outlying traction companies which Mr. Yerkes built and merged into the Consolidated Traction companies.

RESIDENTS FAVOR ELECTRIFYING EVANSTON BRANCH OF THE CHICAGO, MILWAUKEE & ST. PAUL RAILROAD

The ordinance before the City Council to permit the Chicago, Milwaukee & St. Paul Railroad to equip the Evanston branch from Wilson Avenue to the city limits for electrical operation is indorsed by the North Shore Improvement associations, representing the residents of the suburbs through which the road passes. The objections to the ordinance are said to be largely from real estate men and property owners near the present terminal of the Northwestern elevated at Wilson Avenue. As the ordinance now stands, it permits the St. Paul Railroad to operate three tracks by electricity at the present time. Elevation of the tracks must be begun in seven years and completed in ten years, and when the elevation is completed six tracks may be operated, two of which may be used for freight. The part of the ordinance to which the railway company objects is the clause giving the city the right to limit the Northwestern elevated trains on the loop and compelling the company to establish terminals north of the Chicago River for the accommodation of passengers who may come over the new road from the outlying towns. The matter will come before the Council on Monday, March 19.

ANOTHER CAR HOUSE BURNED IN NEW YORK

Another car house of the New York City Railway Company was destroyed by fire last week. This was the building of the company at Eighth Avenue and Fiftieth Street, occupied jointly by the company and the New York Transportation Company, operating an electric cab service throughout the city. The fire occurred on Saturday afternoon, during a severe wind storm, and reduced the building to ashes. The ground floor was used by the street railway company for the storage of cars, while the remainder of the building was used similarly for storage purposes by the Transportation Company. The cars were accessible, so after the fire began little difficulty was experienced in running them into the street. With the cabs, however, the task was not so easy, and the work of salvage had to be abandoned with fifty still in the building.

NEW YORK CITY RAPID TRANSIT BILL REPORTED TO THE SENATE

After a session lasting until nearly midnight, the cities committee of the Senate, Tuesday, March 13, reported out the Elsborg Rapid Transit bill in amended form, and it is likely to be passed as amended. The changes in the bill, to which all the contending interests agreed, make the clauses concerning the manner of letting of contracts for the construction, operation and maintenance of new subway routes permissive instead of mandatory. There is, however, this exception, that the manner of letting the contracts is put up to the Board of Estimate and Apportionment, which shall say in the first instance whether it is expedient and in the public interest for the contracts to be let singly or together. Then the Rapid Transit Commission takes hold and follows the plan laid down by the Board of Estimate. Another feature of the measure does away with the self-perpetuating character of the Rapid Transit Commission, in that all vacancies on the board are filled by the Mayor.

GENERAL OFFICE FOR STONE & WEBSTER IN TACOMA

Stone & Webster, of Boston, whose property interests in the Far West include the Seattle Electric Company, the Puget Sound Electric Company, the Tacoma Railway & Power Company, the Puget Sound Power Company and the Whatcom County Railway & Light Company, all in Washington, have opened a suite of offices in the Pioneer Building, First Avenue and James Street, Tacoma, which will be in charge of Jacob Firth, as resident manager. Mr. Firth now is president of the Seattle Electric Company and of the allied corporations, and is also president of the Puget Sound National Bank. H. F. Grant, general manager of the Seattle Company, will have offices with Mr. Firth, and will be considerably relieved of the details of the management of that property through the appointment of J. B. Lukes to the position of general superintendent of the company. Heretofore Mr. Lukes has been superintendent of lighting and power of the company.

NEW ROAD OUT OF WASHINGTON

The Great Falls & Old Dominion Railway, extending out of Washington, was opened to traffic Wednesday, March 7. The road eventually will extend from Georgetown, Washington, to Great Falls, but at present is operated only to Difficult Run. After crossing the Aqueduct Bridge at Georgetown the line pushes its way in a southwesterly direction over hills and through filled gullies, which form a typical "Old Dominion" landscape, every spot of which teems with history. One of the features of the route is the trestle 1½ miles from Great Falls. This structure, which is 600 ft. long and more than 70 ft. high, spans a deep gully, through which flows a small stream. The power house is located on the south bank of the Potomac, near the Aqueduct Bridge. A feature of the equipment is the use of Westinghouse-Parsons turbine units. The car house, built of reinforced concrete, is located in Rosslyn. The rolling stock of the company consists of five passenger coaches and a baggage car. The cars are painted a bright yellow, and the interiors are finished in light maple, with rattan seats. They are 42 ft. long and seat forty-two persons. Each car is equipped with four 50-hp motors.

The system of fares is unique among suburban lines. The route has been divided into four sections. The terminal of the first is at the border line of Alexandria County, Va.; the second

ends at the Falls Church Chain Bridge Road; the third at the Lewinsville Road, and the last at Great Falls. Six tickets will be sold for 25 cents, and a ticket is required for each division. City car tickets will also be accepted, and transfers will be given by and will be accepted from the Capital Traction Company.

MORE JOHNSON BILLS IN OHIO

Not daunted by his recent failure to get through the Ohio Legislature the bill introduced by Representative Metzger, which would have virtually given Johnson's so-called 3-cent fare company a free hand in Cleveland, Mayor Johnson has introduced two new street railway bills. A new bill by Metzger seeks to accomplish the same ends as the former bill, but by other means. The bill provides that City Councils shall advertise for bids for street railway franchises, and then submit all bids, after they have been incorporated into ordinances, to the vote of the people. It provides that tracks shall not be laid until there have been filed the consents of a majority of the property owners on a street; such consents once given cannot be withdrawn, and the failure of a company to obtain a majority of consents on a street or part of a street shall not invalidate the grant, insofar as it relates to other streets where a majority of consents have been secured. On streets where tracks are already laid it shall not be necessary to obtain consents, unless it is desired to lay additional tracks. Under this provision a Council can grant franchises on streets where existing franchises have expired without the necessity of obtaining the consents of property owners.

Another Johnson* measure provides that a municipality may issue bonds for the purpose of acquiring a street railway system, and that such bonds shall not be a lien upon the credit of the city, but only upon the street railway property. In the event of a foreclosure of a mortgage on a municipally-owned street railway, such foreclosure shall carry with it a twenty-five-year franchise, but the terms and conditions of such franchise shall be fixed in the ordinance at the time the bonds are issued.

IMPROVEMENTS IN TACOMA AND SEATTLE

W. S. Dimmock, general manager of the Puget Sound Electric Railway Company and of the Tacoma Railway & Power Company, has been in the East during the last week or two, arranging for important improvements and extensions to those railways. The interurban line will be extended to American Lake, Olympia and Summit, and a considerable amount of double track will also be laid. Practically all of the lines in South Tacoma will be equipped with double track, and nearly all the lines in Tacoma are to be paved. Twenty-five new 50-ft. passenger cars have been ordered from the St. Louis Car Company, and fifty new freight cars have been purchased. One new large sub-station will also be erected. Mr. Dimmock reported that the business conditions in the Northwest were excellent, and that both Seattle and Tacoma are growing rapidly.

INTERURBAN ENTRANCES INTO CHICAGO

If the plans under consideration for extension of elevated lines of Chicago to connect with suburban and interurban lines for the building of an elevated structure over the Rock Island tracks for electric cars, and for the operation of electric cars over the Chicago & Northwestern tracks to connect with the Northwestern Elevated are carried out, the outlying districts on all sides of Chicago will have rapid transit facilities to the heart of Chicago. Ordinances are now before the Council for the extension of the Humboldt division of the Metropolitan elevated from its present terminus near Lawndale Avenue to the city limits at Seventy-Second Avenue, and for an extension of the Douglas Park division to Forty-Sixth Avenue.

It is proposed to connect the extended Humboldt division with interurban lines much in the same manner that the Aurora, Elgin & Chicago electric line operates over the tracks of the Metropolitan system. Interurban and suburban lines would also be connected with the extension of the Douglas Park division.

The ordinance of the Chicago, Milwaukee & St. Paul Railway permitting the connection of its Evanston branch with the Northwestern Elevated if passed, will provide for entrance into the city of electric cars from the north. The plan is to provide the tracks of the steam road north of Wilson Avenue, the present terminus of the Northwestern elevated, with an overhead trolley. At Wilson Avenue an incline will bring the electric cars on the

elevated structure and upon this they will be carried to the business district. Such an arrangement would probably give entrance into the city to the Chicago & Milwaukee electric line, which now terminates at Evanston.

A third plan, said to be under consideration, is to build an elevated structure for electric cars over the Rock Island and Lake Shore tracks. This would give entrance to interurban lines from the south.

CONSOLIDATION OF SPOKANE COMPANIES

Jay P. Graves, of Spokane, has effected the consolidation of the Spokane & Inland, the Spokane & Coeur d'Alene, the Spokane Traction Company, and the Spokane Terminal Company, with which he is associated, as the Inland Empire Railway Company. The Spokane & Coeur d'Alene was backed originally by Mr. Blackwell, of Spokane, who is president of the Howard Lumber Company, and controls large timber tracts in Idaho. The Spokane & Inland is under construction and runs southeast from Spokane into the Palouse Country. It is projected for a distance of about 140 miles, part of which is under construction. It will serve territory in which the Potatch Lumber Company operates extensively. The Spokane & Inland will use electricity for its day traffic, and expects to haul timber and lumber at night with steam power. It has a contract with the Washington Water Power Company for electric power. The Spokane Traction Company has about 13 miles of street railroad in Spokane. It receives its power also from the Washington Water Power Company, not now identified with the Graves interests. Mr. Graves, it is also announced, however, has secured water power on the Columbia River at Kettle Falls, 75 miles from Spokane, where 100,000 hp is available. The officers of the Inland Empire Company are: Jay P. Graves, president; F. Lewis Clark, vice-president; F. A. Blackwell, chairman of the board of directors.

TERMS OF THE CHICAGO & MILWAUKEE ELECTRIC RAILWAY FRANCHISE IN MILWAUKEE

Mention was made in the STREET RAILWAY JOURNAL for March 10, of the fact that the Chicago & Milwaukee Electric Railway Company had secured a franchise to enter Milwaukee. The franchise is limited to thirty years, and permits the laying of a double track from the south limits to the center of the city. The line will terminate in a loop, enclosing one block, the tracks being laid on Sixth, Cedar, Seventh and Wells Streets. The franchise permits the operation of local, as well as interurban cars, and provides for the carrying of baggage and express matter. A terminal building to facilitate the handling of freight, and to serve as a passenger station will be built at some point on the loop.

The only compensation asked for by the city is that the railway company pay \$1,000 towards the construction of a viaduct over the tracks and yards of the Chicago, Milwaukee & St. Paul Railway, provided the city loses its cases against the railway, now before the Supreme Court, to compel the latter to build the viaduct. The electric railway company further agrees to repair the streets for a distance of 1 ft. on each side of its tracks.

The sentiment in Milwaukee in favor of the granting of the franchise was so strong that after the ordinance for the franchise was presented, it was obtained in the minimum time permitted by the State laws and city charter. It was presented Jan. 8, and was passed Feb. 27. It is interesting to note that petitions were presented signed by the property owners on each of the two parallel streets considered as a route for the electric line, asking that the tracks be laid on their street.

Within a year the company will be operating cars from Evanston, the southern terminus of the road, into the business district of Milwaukee. It is expected that the total distance, 74 miles, will be made in 2¼ hours. The fact that with the exception of a distance of 2 miles, the tracks will be laid on a private right of way, and that the tracks are double the whole distance will make possible the high scheduled speed.

Should the ordinance pass that is now before the Chicago City Council to permit the Evanston branch of the Chicago, Milwaukee & St. Paul Railway to be equipped for electrical operation, the trip from the business district of Milwaukee to the loop district in Chicago could be made by electric cars with only one change, this at Evanston, where the two lines connect.

ANNUAL MEETING OF IOWA STREET & INTERURBAN RAILWAY AND IOWA ELECTRICAL ASSOCIATIONS

The annual convention of the Iowa Street & Interurban Railway Association will be held in Des Moines, April 19 and 20. Kirkwood Hotel will be the official headquarters of the association. At the meeting papers will be presented on "Standard Car and Truck Construction for Street and Interurban Work," "Discipline of Car-Service Employees," "Comparative Value of A. C. and D. C. Systems of Distribution for Railway Work." In addition there will be other papers devoted to electric railway practice. The Iowa Electrical Association will hold its annual meeting at Des Moines on April 18 and 19. Both associations extend a hearty invitation to the trade to attend.

GEORGIA RAILWAY & ELECTRIC REPORT

The Georgia Railway & Electric Company has issued its pamphlet report for the year ended Dec. 31, 1905. The company controls the street railway, electric light, power and steam-heating facilities of the city of Atlanta and Fulton County, Ga. The income account for the year ended Dec. 31 compares with that of the previous years as follows:

	1905	1904
Gross earnings	\$2,500,574	\$2,112,973
Operating expenses	1,216,032	1,088,081
Earnings from operation.....	\$1,284,542	\$1,024,892
Taxes	100,664	72,560
Net earnings	\$1,183,877	\$952,332
Charges	513,304	497,856
Balance	\$670,573	\$454,476
Preferred dividends (5 per cent)	120,000	120,000
Balance	\$550,573	\$334,476
Common dividends (2 per cent)	120,292
Surplus	\$430,281	\$334,476

The balance sheet as of Dec. 31, 1905, compares with that of the same date in the preceding year as follows:

	1905	1904
Assets:		
Construction plant	\$18,883,934	\$18,492,852
Supplies	213,717	159,991
Cash and debts received.....	254,602	209,073
Prepaid accounts	5,736	5,927
Treasury bonds	319,000	189,000
Stocks and bonds	206,623	55,500
Job and work orders	36,895	12,465
Sinking fund bonds	68,000	66,000
Sinking fund premium.....	4,060	3,900
Sinking fund trustee	9,627	883
Total	\$20,002,196	\$19,195,594
Liabilities—		
Capital stock, preferred.....	\$2,400,000	\$2,400,000
Capital stock, common.....	6,014,600	6,014,600
Mortgage bonds	10,358,000	10,089,000
Accounts payable	216,098	141,512
Interest payable	4,791	4,888
Taxes payable	26,549	5,686
Reserve accounts	95,108	86,453
Sinking fund interest	13,377	10,063
Profit and loss	873,671	443,389
Total	\$20,002,196	\$19,195,594

President Arkwright in his remarks to the stockholders says in part:

"The property is in good condition. In this connection it is to be noted that of the 144 miles operated 105 have been entirely built or rebuilt since 1899.

"The sum of \$391,483 was expended for various kinds of new construction during the year; \$319,000 consolidated bonds were issued to the company during the year, but are held by the company as treasury assets.

"The Atlanta Northern Railway Company completed its interurban line from Atlanta to Marietta, and its operation commenced

on July 17 last. Its entire capital stock is owned and its bonds guaranteed by the Georgia Railway & Electric Company. It owns 15 miles of track. From July 17 to Dec. 31 last its gross earnings amounted to \$51,596; operating expenses and taxes were \$30,534, leaving net earnings of \$21,061.

"There is no special cause for the growth in earnings of the Georgia Railway & Electric Company during the year other than the continued growth and prosperity of the section served by your company. The growth in the railway department did not come from increased mileage, as none was added."

DETROIT, MONROE & TOLEDO TRANSFERRED

On March 1 the sale of the Detroit, Monroe & Toledo Short Line Railway to the Detroit United was consummated, and the property again passed into the control of the Everett-Moore syndicate, which owned it previous to their embarrassment. The old directors of the Short Line have resigned and the following have been elected: H. A. Everett, E. W. Moore, J. C. Hutchins, George H. Russell, Edwin Fullerton, Allen F. Edwards, John Brampron and A. E. Peters. The new board elected the following officers: J. C. Hutchins, president; F. W. Brooks, vice-president; George H. Russell, treasurer; A. E. Peters, secretary. Mr. Hutchins announces that there will be no change in the operating staff, and that W. B. Tarkinton will continue as general superintendent in direct charge of the property. The road is one of the finest pieces of electric railway construction in the country. More than half of it is double track, and limited cars make the 60 miles from center to center in 2 hours. It is stated that as soon as arrangements can be made through cars will be operated from Cleveland to Detroit in connection with the Lake Shore Electric, also an Everett-Moore property.

REPORT OF HAVANA ELECTRIC RAILWAY

The report of the Havana Electric Railway for the year ended Dec. 31, 1905, has been made public. It shows an increase in gross receipts of \$272,246 and an increase in surplus of \$370,921. The detail figures follow:

	1905	1904
Gross receipts	\$1,542,870	\$1,270,624
Operating expenses and taxes.....	776,052	724,746
Net earnings	\$766,818	\$545,878
Interest on funded debt.....	395,897	408,270
Surplus	\$370,921	\$137,608
Previous surplus	138,153	545
P. & L surplus.....	\$509,074	\$138,153

President Hanson, of the company, in his report to shareholders, says: "Having regard to the fact that the profits for the year, after paying all fixed charges, amount to \$370,000, and that a glance at the statement will show you that the company has absolutely no liabilities, except practically those of the current month, while the reserve fund now amounts to about \$500,000, the directors feel that the shareholders may reasonably hope for a dividend on the preferred shares in the near future. The outlook, so far as the directors can see, is just as favorable for expansion for the current year as it was last year and the year before."

During the past year the company has turned out from its own shops in Havana thirty new passenger cars at a cost of less than \$90,000. This amount being much less than the same equipment would cost purchased in the United States justifies the action of the board in providing the necessary shops and equipment for this purpose. An arrangement has been reached with the Havana Central Railroad Company by which certain rights held by this company for the construction of lines in the province of Havana, were sold to the railroad company, and these lines are now being constructed by that company. An agreement was also reached with the Cuban & Pan-American Express Company by which the Havana Electric agreed on satisfactory terms to transport over its lines the express freight of the express company.

At the stockholders' meeting of the Havana Electric Company, held in Jersey City, the proposed issue of \$300,000 of bonds was ratified and directors were re-elected. The reason for the issue of \$300,000 of bonds is to make proposed extensions of the system.

DATE SET FOR SALE OF NATIONAL ELECTRIC PLANT

A formal order has been entered by Referee Maxwell, at Milwaukee, directing the sale of the plant, real estate, patent rights and good will of the National Electric Company, on March 26, in the referee's court, at Milwaukee. The meeting of the creditors was harmonious, and no objection was entered in the proceedings. N. A. Christensen, the former owner of the plant, who has already submitted a bid for the purchase of the bankrupt electric company, was present with his attorney, E. H. Bottum. The resolution provides for the sale of the assets of the National Electric Company at public auction, to the "highest bidder for cash"; the trustee to require a deposit of \$25,000 as an earnest of good faith. The entire assets are to be offered free of all encumbrances, and the purchaser must assume all of the unfinished contracts in force at time of sale. There is no doubt that the offer of the Standard Trust Company, of New York, will be accepted, as up to date it is the most advantageous bid made, and will realize to all creditors 50 per cent on their claims. Attorney Francis G. Bloodgood stated in court that claims aggregating over \$1,000,000 which his firm represents have already accepted the New York Trust Company's proposition. Mr. Bloodgood was asked if the Westinghouse Company, of Pittsburg, which at the time of the bankruptcy proceedings was negotiating for the purchase of the plant, was the client for which the Standard Trust Company was acting, but he refused to commit himself on the question. The report of the appraisers of the company inventories the property as worth \$3,033,517.46, including supplies, \$411,619; machinery, \$205,877; tools, \$37,630; equipment, \$42,459; the shop in Paris, \$10,000; real estate, \$69,000; buildings, main property, \$196,448; south side shop, \$3,000; sprinkler system, \$32,503. The First National Bank filed one of the largest claims of indebtedness against the bankrupt electric company March 12. The amount is for \$236,621, with interest at 6 per cent, and alleges money loaned, between Aug. 23, 1901, and April 15, 1905. Charles A. Brown, an attorney in Chicago, also filed a claim against the National Electric Company for \$6,743.

NEW PUBLICATIONS

The Business of Contracting. By Ernest McCullough. Technical Book Agency, Chicago, Ill. Paper, 45 pages. Price 50 cents.

The field covered by this book is well denoted by its title, as it is a compact statement of the various factors that must be noted to carry out contracting successfully. The author treats of the organization of the staff and the characteristics that should be possessed by the men holding the positions of manager, superintendent and foreman; methods of bidding and figuring costs; following the spirit or letter of the engineers' specifications; field and office practice, and, in fact, neglects nothing which his own experience has found worth knowing. The booklet should also be of value to consulting engineers and others who have dealings with contractors, that they may have a clearer knowledge of the contractor's point of view.

Motive Power and Gearing for Electrical Machinery. By E. Tremlett Carter. Second Edition; revised in part by G. Thomas-Davies. New York: D. Van Nostrand Company; London: The Electrician Printing & Publishing Company; 672 pages; Illustrated. Price, \$5.

This is a second edition of the excellent book on power-station equipment by the late Mr. Carter. Mr. Thomas-Davies' additions are principally in bringing it up to date in the departments of gas engine and producer design, steam turbines and superheated steam. The book not only discusses the theory but also the design and construction of the apparatus used in electric power stations.

Report of the Ninth Annual Convention of the Street Railway Accountants' Association of America. Published by the Secretary of the Association, Birmingham, Ala. 292 pages.

The report of the Philadelphia convention of the Accountants' Association is at hand, and in addition to the proceedings contains the constitution and by-laws of the new association, list of attendants and of members, summary index of previous reports, the Standard Classification of Accounts and Standard Form of Report. The two latter are brought up to date, and are provided with complete indices. There is also an excellent portrait of Ex-President Ross. The Philadelphia convention was especially instructive, and the papers and discussion will bear reading.

STREET RAILWAY PATENTS

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

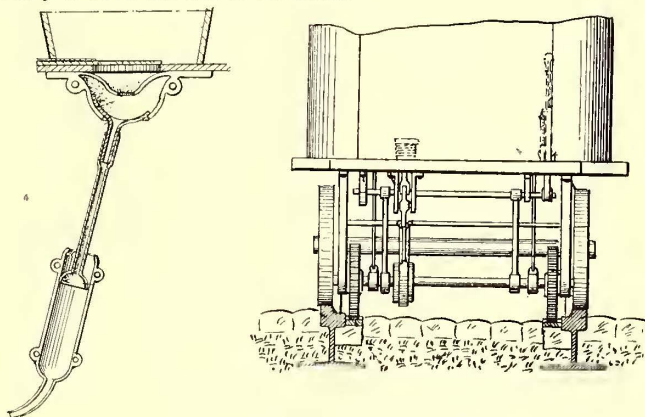
UNITED STATES PATENTS ISSUED MARCH 6, 1906

814,075. Trolley Catcher; Simeon F. Pierce, St. Paul, Minn. App. filed June 5, 1905. A fluid pressure cylinder attached to the trolley has a piston valve, which moves to admit air to the cylinder in case the wheels leaves the wire and flies upward. The admission of air serves to depress the piston and retrieve the pole.

814,081. Guard Rail for Cars; Michael W. Rogers, Lexington, Ky. App. filed July 14, 1905. An open car guard rail equal in length to the length of the carbody, and capable of being shifted endwise to alternately close the platform passages.

814,245. Railway and Railway Car; Philip K. Stern, New York, N. Y. App. filed April 8, 1905. The passenger compartments are suspended at each side. The ends of the car slope downward to the rails and are provided with track rails running longitudinally over them so that meeting cars may pass one over the other.

814,256. Track-Sanding Apparatus; Brutus D. Willits, Des Moines, Ia. App. filed May 25, 1905. A flexible sand delivery pipe is so connected to the car truck as to present its nozzle directly toward the rail at all times.



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814,278. Switch-Operating Device; Oliver J. Du Vernay, Leominster, Mass. App. filed March 20, 1905. A flat plate mounted on the lower end of a suitable standard and having a rib on its under side set at an angle to the rails.

814,293. Mechanism for Transmitting Power from Car Axles; Delbert F. Johnson, Chicago, Ill. App. filed July 7, 1905. A fan and casing therefor for ventilation purposes are incorporated in the power transmitting device, among other details.

814,322. Reversing Switch for Electrical Circuits; Thomas S. Perkins, Wilkesburg, Pa. App. filed June 6, 1904. A motor-reversing switch, operable by a pilot circuit, has two opposed solenoids acting on an intermediate plunger in the manner of a donkey pump. The plunger has various metallic rings, which establish the power circuits through suitable contacting fingers.

815,364. Lamp Regulator; Alphonsus L. Drum, Lake Forest, Ill. App. filed March 28, 1905. The lamps of a train are grouped in a single-series multiple circuit receiving current from the trolley. A solenoid automatically cuts out some of the lamps in case the voltage falls below a predetermined value.

814,371. Means for Oiling Tracks and Applying the Air Brakes for Stopping Railway Trains; Elijah S. Gunn and Harry R. Romberger, Sinona, Miss. App. filed Dec. 26, 1905. Means for automatically operating the air brakes and applying oil to the rails in advance of the locomotive in case the engineer disregards a danger signal.

814,376. Railway Signaling Device; Samuel C. Harvey, Bowling Green, Ohio. App. filed April 12, 1905. Details.

814,401. Rail; Carman M. Simpson, Millvale, Pa. App. filed Nov. 24, 1905. A base portion provided with two vertical web-flanges, and a tread portion having a flange adapted to seat between the web-flanges and be bolted therein. The base and tread portions alternate, thus providing a substantially continuous rail.

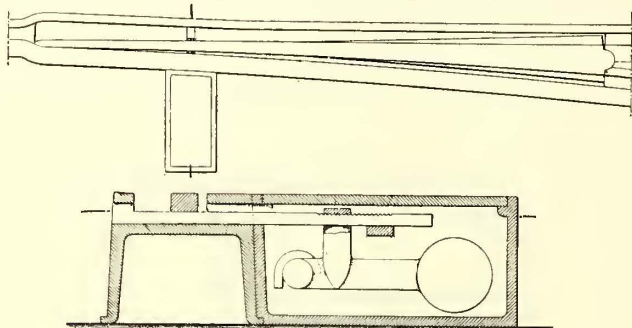
814,409. Railway Car Truck; George C. Stewart, Marengo, Ind. App. filed Oct. 27, 1905. A spring-supported bolster beam carried transversely of the car-truck frame, a guide-box laterally inclosing the bolster, an equalizing bar pivoted centrally on the beam and secured to the carbody, and oppositely arranged flexible

connections between the equalizing bar and the car-truck frame at each end of the bar.

814,422. Brake; Hugh Beatty, Pittsburg, Pa. App. filed Jan. 9, 1906. An emergency brake consisting of cog wheels adapted to be depressed to engage racks mounted in the roadbed.

814,455. Car Seat; John B. Kilburn, Philadelphia, Pa. App. filed June 18, 1904. Details of construction of a "walk-over" car seat.

814,489. Brake Hanger; Walter O. Webster, Philadelphia, Pa. App. filed June 13, 1905. A bracket having a curved pocket and having a curved portion directly under the pocket, a hanger-rod having an enlarged portion bearing against the under side of the bracket, and having a stem extending through a slot in the



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bracket, a shoe curved to fit the pocket and having an opening through which the stem of the rod passes, and means for adjusting the shoe on the stem so as to make a neat fit between the shoe and the pocket and the enlarged portion of the rod and the bracket.

814,504. Railway Switch; Victor Angerer, Ridley Park, Pa. App. filed June 8, 1905. Means for preventing accidental displacement of the switch, consisting of a bar attached at one end to the switch point and extending into a box, where it has a notched under surface. Also mounted in the box is a centrally pivoted lever weighed at one end, its other end having teeth for engagement with the notches on the bar.

814,505. Railway Switch; Victor Angerer, Ridley Park, Pa. App. filed June 8, 1905. One end of a bar is attached to the switch point, the other end extending into a casing at the trackside. A spring-pressed dog in the casing engages notches in the bar to hold the switch in either of its positions.

814,514. Car Seat; Edward G. Budd, Philadelphia, Pa. App. filed May 19, 1905. Details of construction of a "walk-over" car seat.

814,537. Safety Device for Railway Switch and Signal Apparatus; Lawrence Griffith, Yonkers, N. Y. App. filed Sept. 20, 1905. The switches are operated by electric means supplied from a power circuit, and the indicators for the switches are not operated until the power current for the switches ceases.

814,535. Electric Signal Apparatus; Lawrence Griffith, Yonkers, N. Y. App. filed Oct. 28, 1904. Modifications of the above.

814,645. Railway Car Wheel Skid; William H. Fletcher, White River, Can. App. filed April 4, 1905. A flanged shoe to be placed between the rail and a defective car wheel.

814,658. Safety Device for Railway Switch and Signal Apparatus; Lawrence Griffith, Yonkers, N. Y. App. filed Nov. 5, 1904. The signals are operated by compressed air, and means is provided whereby the indicators are not operated until the air pressure is removed.

PERSONAL MENTION

MR. JACOB RICH, prominently identified with street railroading in San Jose, Cal., in the pioneer days, is dead.

MR. W. R. COLLIER, who has been contract agent for the Georgia Railway & Electric Company, of Atlanta, Ga., has been appointed manager for the Electrical Manufacturing & Equipment Company, of Atlanta.

MR. WILLIAM C. DOUBLEDAY, for fifteen years secretary of the North Hudson County Railway Company, is dead. Mr. Doubleday resigned from the company at the time of its absorption by the Public Service Corporation of New Jersey.

MR. ROBERT BONNER, of Cincinnati, has been appointed auditor of the five roads recently acquired by the Widener-Elkins syndicate, heretofore known as the Appleyard lines. Mr. Bonner will have his headquarters in the Traction Building, Cincinnati, from which place the properties will be managed.

MR. ARTHUR W. FIELD, who for a long time has been the agent in Boston for the Peckham Manufacturing Company, has resigned from that position and has been appointed sales agent, in Boston, for the Duquesne Steel Foundry Company, of Pittsburg, which manufactures the Fowler rolled steel car wheel.

MR. JOHN H. HUMPE has been appointed general manager of the Lincoln Traction Company, of Lincoln, Neb., to succeed Mr. Charles H. Cox, whose resignation was announced in the STREET RAILWAY JOURNAL for March 10. Mr. Humpe formerly was general manager of the company.

MR. C. H. BISHOP, superintendent of the Chambersburg & Gettysburg Electric Railway Company, of Chambersburg, Pa., has been appointed superintendent of the Valley Traction Company, with headquarters at Lemoyne, vice Mr. George H. Bartle, resigned. For the present the duties of superintendent of the Chambersburg & Gettysburg Company will be performed by Mr. D. B. Fritz, electrician.

MR. SAMUEL S. HOFF, general superintendent of the Wilmington City Railway Company, of Wilmington, Del., was surprised at his home a few evenings ago by about twenty-five of the officials of the various lines under him, in honor of his fifty-fifth birthday anniversary. Mr. C. D. Mills, superintendent of the Chester Traction Company, in behalf of the officials present, presented Mr. Hoff with a massive Davenport sofa of quartered oak, with embossed velvet upholstery.

MR. WESLEY WENTWORTH has been appointed general manager of the Houston Electric Company, of Houston, Tex. Mr. Wentworth comes from Dallas, where for the last nine months he has been superintendent of the Dallas Consolidated Street Railway Company. Mr. Edward C. Reichardt, cashier of the Houston Electric Company, has been appointed assistant to the treasurer of the Fort Worth Street Railway and of the Fort Worth-Dallas Interurban Railway.

MR. CHARLES H. SMITH, superintendent of the Troy division of the United Traction Company, of Albany, has been promoted to be general superintendent of all the operating lines of the company. Mr. Smith has worked his way through all the grades of the service to his present position, and is now in his thirty-sixth year of continuous connection with street railways in Albany and vicinity, having closed his thirty-fifth year on Dec. 1 last. He began as a boy, at the old horse-car barns in Cohoes, and rose to foreman, next to assistant superintendent of the Cohoes line, then to superintendent of the Troy and Lansingburgh line, subsequently to the superintendency of the Troy City Railway, and for six years he has been superintendent of the Troy division of the United Traction system.

MR. C. NESBITT DUFFY, recently secretary and auditor of the Chicago City Railway Company, was elected on March 8 treasurer of the General Paper Company, with offices in the Merchants' Loan & Trust Building, Chicago. He will immediately assume the duties of this new office. Mr. Duffy was a charter member of the Street Railway Accountants' Association and has always taken a prominent part in the work of that association. He was president of that association in 1899-1900, and as chairman of the committee on standard classification and accounts has been largely instrumental in the establishment and general adoption of the form which has now come into such general use. He is also chairman of the standing committee on international form of report, and presented the report from this committee at the last convention. His many friends look upon his withdrawal from street railway work with regret, but wish him every success in his new line of activity.

MR. ROBERT T. IVORY, formerly general superintendent of the Youngstown, Park & Falls Railway Company, of Youngstown, died at his home in Pittsburg a few days ago. He had been in poor health for some time, and retired from the above mentioned position several months ago. Mr. Ivory was forty years of age, and he spent nearly half his life in the traction business, building and operating a number of roads. From 1886 to 1892 he was with A. E. Townsend, of Townsend & Brown, New York and Boston, and superintended the construction of the following roads: Pittsburg, Knoxville & St. Clairsville, Pittsburg & South Side, Pittsburg & McKees Rocks, Second Avenue line, Pittsburg; Pittsburg & Birmingham, Penn Avenue, and several other lines about Pittsburg. Later he superintended the construction of lines in Uniontown, Braddock, McKeesport, Washington, New Castle, Pa., Wheeling, W. Va., and Montgomery, Ala. After leaving Townsend & Brown, he became superintendent of construction for William Wharton & Company, of Philadelphia. In 1897 he went with Booth & Flynn, of Pittsburg, and was placed in charge of the Youngstown property.