Electric Railway Journal

A CONSOLIDATION OF

Street Railway Journal and Electric Railway Review

VOL. XXXVIII NEW YORK, SATURDAY, SEPTEMBER 23, 1911 No. 13

PUBLISHED WEEKLY BY

McGraw Publishing Company

239 WEST THIRTY-NINTH STREET, NEW YORK

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TERMS OF SUBSCRIPTION:

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, $3.00 per year; Canada, $4.50 per year; all other countries, $6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving *old* as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

NOTICE TO ADVERTISERS.

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements will be accepted up to Thursday, 9 a. m., of the week of issue.

Entered as second-class matter at the post office at New York, N. Y.

Of this issue of the ELECTRIC RAILWAY JOURNAL, 8500 *copies are printed.*

NEW YORK, SATURDAY, SEPTEMBER 23, 1911.

CONTENTS.

State Control

The address of Governor McGovern of Wisconsin before the conference of State Governors, an abstract of which is published elsewhere in this issue, is an important summary of the policies underlying the Wisconsin commission law and the results that have been accomplished. While the address presents the point of view of the regulating authority rather than of the regulated properties, it aims to set forth fairly the good ends attained for the consuming as well as the investing public. It appears that the net effect of the changes in rates brought about by the activities of the commission has been a reduction in average return, notwithstanding the increases permitted in some localities. This is generally the history of public service commissions. That a reduction in rates produces increased consumption in certain classes of commodities, such as electric light and power and gas, has been proved in many cases, not only by the Wisconsin commission, but by progressive companies. This policy, however, is not applicable to all public utilities any more than to all kinds of private service of which we may take advantage from time to time. As the amount of electric railway mileage in Wisconsin is comparatively small, and as the activities of the commission have therefore been directed chiefly to other classes of utilities, Governor McGovern has little to say about companies of this character. The address, however, merits careful consideration because it is a comprehensive analysis of the work of a commission that is one of the foremost in the country and has established a deserved reputation for thorough and painstaking investigation of all cases and constant efforts to better service.

The Burden of the Absent-Minded Passenger

To forget is human nature, although some individuals are greater offenders than others in this respect. Few people among the general public realize that a carefully planned system is put into operation whenever a conductor picks up a lost article in a street car. This system is probably one which common law and honesty compel, but it is also one which makes the careless party a direct burden upon the company. It is consistent also with certain traits of the American public that a case not infrequently occurs where the individual unsuccessful in an endeavor to recover a lost article denounces the street car company and threatens suit to cover the loss. One large city company upon which there is an elaborate system of handling lost articles has found upon looking into the matter that the direct cost in wages amounts to $6 a day, not to mention the indirect charge, which cannot be calculated. With an average of about 100 lost articles a day this meant that every article

left on the cars cost the company 6 cents, or more than was paid for fare by the absent-minded passenger. The article itself sometimes passed through as many as seven hands and engaged the attention of nine different persons. When we consider that only about 45 per cent of the articles are claimed and that a great deal depends upon the honesty of conductors, the question may well be asked whether it is to a company's interest to maintain any but a simple system which will cover the law and will insure the recovery of articles which have been turned in if they are called for. On the other hand, the argument is not infrequently advanced that railroads should go even further and should advertise daily the lost articles in the newspapers. We have never been able to see the utility of such a demand. A man who has left an umbrella, a package or a pair of spectacles on a car usually realizes the fact soon after he has left the car and he does not need the reminder of a paid advertisement. The justice of such a requirement is even more remote. The company is put to considerable expense at best in having the article returned to its lost and found department and in storing it there. Part of this expense may be recouped by the sale of unclaimed articles, but as a rule the articles thus sold are those which are of such little value that the owner does not take the trouble to recover them. On the other hand, there should be no objection to a company occasionally publishing statistics to inform the public of what it is doing at considerable expense in the interest of its absent-minded passengers.

The Field of the Gasoline-Electric Car

"The Log of a Gasoline-Electric Car," which appears elsewhere in this issue, is of unusual interest because the detailed statistics of its operating costs and performances indicate so clearly what can be expected from well-designed cars of this class. These statistics are not invalidated in the least by the fact that the storage-battery car proved to be more economical for the special conditions set forth in the article. This result could not have been anticipated, because prior to the inauguration of these experiments no makers of storage batteries were willing to sell them with a maintenance cost per mile guarantee. The pioneer work of the Third Avenue Railroad has therefore greatly simplified the problem of selecting the proper type of self-contained vehicle for a given service. One great advantage of the storage-battery car was that it could be very lightly constructed to meet satisfactorily the small stresses encountered at such low schedule speeds as 6½ m.p.h. to 7 m.p.h. On the other hand, the gasoline-electric car had to be more massively proportioned to absorb the shocks of gasoline-engine operation quite regardless of the speed of the car. Furthermore, the equipment of the storage-battery car was intended simply to satisfy the modest operating requirements of the old horse car lines, whereas the gasoline-electric car showed that it could meet much harder conditions of speeds, stops and accelerations. In short, it was too good for the purpose. While no universal dictum can properly be laid down from isolated tests of this kind, they would seem to point to the conclusion that the field of the gasoline-electric car on sparsely patronized lines is not so much a slow-speed, short-run city service, where current is cheap and ample time can be permitted for charging batteries, as upon longer runs at higher speeds under conditions more like those usually encountered in suburban and interurban operation.

TENDENCIES IN ELECTRIC POWER TRANSMISSION

The development of larger markets for the sale of hydroelectric power is bringing about many changes in transmission methods. A comparison of present practice in sections of the country where improvements are being made in the production and distribution of electricity with the ways and means of operation in vogue less than a decade ago at once discloses a new viewpoint on the part of progressive companies. The conditions differ radically from those prevailing in the populous areas served by modern central station organizations. The demand for cheap power, either from water or from coal mined near the generating plant, extends over such wide areas in those parts of the country where such service is most highly developed that the present transmission companies tend to dominate hundreds of square miles along lines similar to those followed by great railroad organizations.

In the remote regions occupied by electric transmission circuits of from 60,000 to 100,000 volts the incidental features of the work are of no small significance. The growth of the power market renders better service imperative, and standards of engineering construction which would have passed criticism five years ago are now tolerated only on old work. The cost of maintaining a staff of high technical skill in distant localities blessed with few of the amenities of life except climate and scenery is far from low, but the need of supplying consumers with constant and reliable service is so great that it has become common for the larger hydroelectric enterprises to have remarkably efficient engineering and operating organizations. This means that many industrial and social phases of life fall within the jurisdiction of these power companies, and not a few problems of transportation, intercommunication, housing and even sustenance devolve upon them. In some cases the provision of educational courses for apprentices and the establishment of scholarships in higher institutions of learning have followed the successful occupancy of a given territory by a power company. These broader human aspects of developing systems in the transmission field are of increasing interest to the engineer privileged to make an examination of such properties, for they show the efforts being made to train a more efficient class of workers in the responsible operation of highly complex aggregations of apparatus. They also emphasize the importance which these companies attach not to overlook anything which will help to solve problems of a technical or economic character in fields of great area.

In its purely technical aspects, power transmission is advancing along the parallel lines of improved mechanical construction and a larger knowledge of the properties of ultra high-voltage circuits. In both stations and lines the use of inexpensive but effective disconnecting switches is becoming general on one or both sides of oil switches which carry dangerous voltages. The installation of clock-driven recording meters on important lines and even on the premises of consumers is giving excellent results in the

shape of more accurate data regarding loads and demands. The careful study of causes of interrupted service is bearing fruit in the specification of better shapes of high-tension terminals for transformers, and the design of positive lever or switching control of line grounding has done much to render the outside man's duties safer. In not a few instances the establishment of high-voltage transmissions over mountainous regions which impose severe weather conditions upon the lines has led to the more economical use of wire through the stiffening of the tension in the spans, and the adoption of auxiliary steel messenger construction with special strain or suspension insulation, combined with the more thorough guying of poles and towers, has done much to reduce the frequency of interruptions.

The use of the oscillograph and the making of careful tests of voltage drop, charging current and other line phenomena have given a new insight into the possibilities of power transmission. Such tests can no longer be dubbed academic when one considers the importance of making large investments in equipment with the minimum loss of capacity. It is not too much to say that the means are now at hand to investigate the functions of a 100,000-volt line 75 or 100 miles in length with almost laboratory precision.

THE ILLINOIS TRACTION SYSTEM

Following the practice of previous years, the Illinois Traction System includes in its annual report for 1910 the details of gross earnings and other statistics of interest to holders of securities and operating officials and also a concise statement by the vice-president executive, Mr. Chubbuck, of the most notable events in the progress of the year. An abstract of the report was published in the issue of the ELECTRIC RAILWAY JOURNAL for June 3, 1911, page 991.

Owing to the acquisition by the company of the properties of the Topeka (Kan.) Railway, the Topeka Edison Company and the Des Moines (Iowa) Electric Company the statement of earnings is compiled in different ways. One statement shows the total gross earnings of the system as operated, that is to say, the gross earnings of the old system with those of the newly acquired properties from the date of their acquisition. The amount thus shown is slightly less than that in the table which was prepared to indicate the gross earning capacity of all the companies comprised in the system at the end of the fiscal year.

The first table mentioned may be taken for the purpose of this discussion. It shows total gross revenue of $6,106,250, comparing with $4,584,634 for the preceding year, or a gain of 33.2 per cent. As in the preceding year, the largest proportion of the revenue was furnished by the railway lines and more was contributed by the interurban system than by the local street railway properties. The proportions of the revenues contributed by the various departments were as follows: Interurban, $2,304,945, or 37.7 per cent; local street railway, $1,966,317, or 32.2 per cent; gas, $357,315, or 5.9 per cent; electric, $1,287,471, or 21.1 per cent; steam heating, $164,062, or 2.7 per cent; miscellaneous, $26,140, or 0.4 per cent.

The railway lines are shown by this compilation to have furnished 69.9 per cent of the total gross revenue from all sources. In 1909 the interurban system contributed 43.2 per cent and the local railway lines 29.9 per cent, or a total of 73.1 per cent. If the comparison is carried back two years earlier the proportions are about the same. In 1908 the interurban lines yielded 45.1 per cent and the local railway properties 31.3 per cent, or a total of 76.4 per cent. In 1907 the proportion was 42.6 per cent for the interurban and 32.5 per cent for the local street railways, or a total of 75.1 per cent.

A comparison of the operations of these two principal departments in 1907 and 1910 shows that in this period the interurban gross earnings gained 43.1 per cent and the local street railway properties 60.3 per cent. The 1910 revenues from local lines were increased materially by the inclusion of the earnings of the Topeka Railway, which was acquired in that year. As the gross revenues of that property amounted in 1909, according to the figures made public for that year, to $382,764, it appears that, allowing only for a normal rate of increase, they are now at the rate of well over $400,000 a year. A notable betterment for the interurban system was placed in operation during the year, but the bridge across the Mississippi River and the St. Louis entrance and terminal were not available until near the end of 1910 and the revenues for the period under review did not show the effect of this great undertaking.

The comparative table of earnings for two years, as published in the report, permits a showing of the gross earning capacity of all the properties embraced in the system at the conclusion of the fiscal year and of the increase in the 1910 results as compared with 1909. It should be added that the net results are harmonized with the other statement by the deduction of the net earnings of the Des Moines and Topeka properties prior to the purchase of these systems. With this rearrangement the total gross earnings are stated to be $6,218,038, which compares with $5,363,384, the total revenue for 1909 of the properties that composed the system at the end of 1910. This indicates a gain of 15.9 per cent.

While the full details of operating expenses are not stated in the report an explanatory note states that during 1910 $904,045, or 14.6 per cent of gross earnings, was expended for maintenance. This figure is appended to the statement given to indicate the gross earning capacity of $6,218,038, but it probably did not differ materially in the other statement which includes the gross returns for the Topeka and Des Moines properties from the time of acquisition instead of for the entire calendar year. Appropriations of $300,000 for depreciation and of $84,262 for bond discount of controlled companies should be mentioned because they are in addition to the operating expenses, including taxes of $3,608,023.

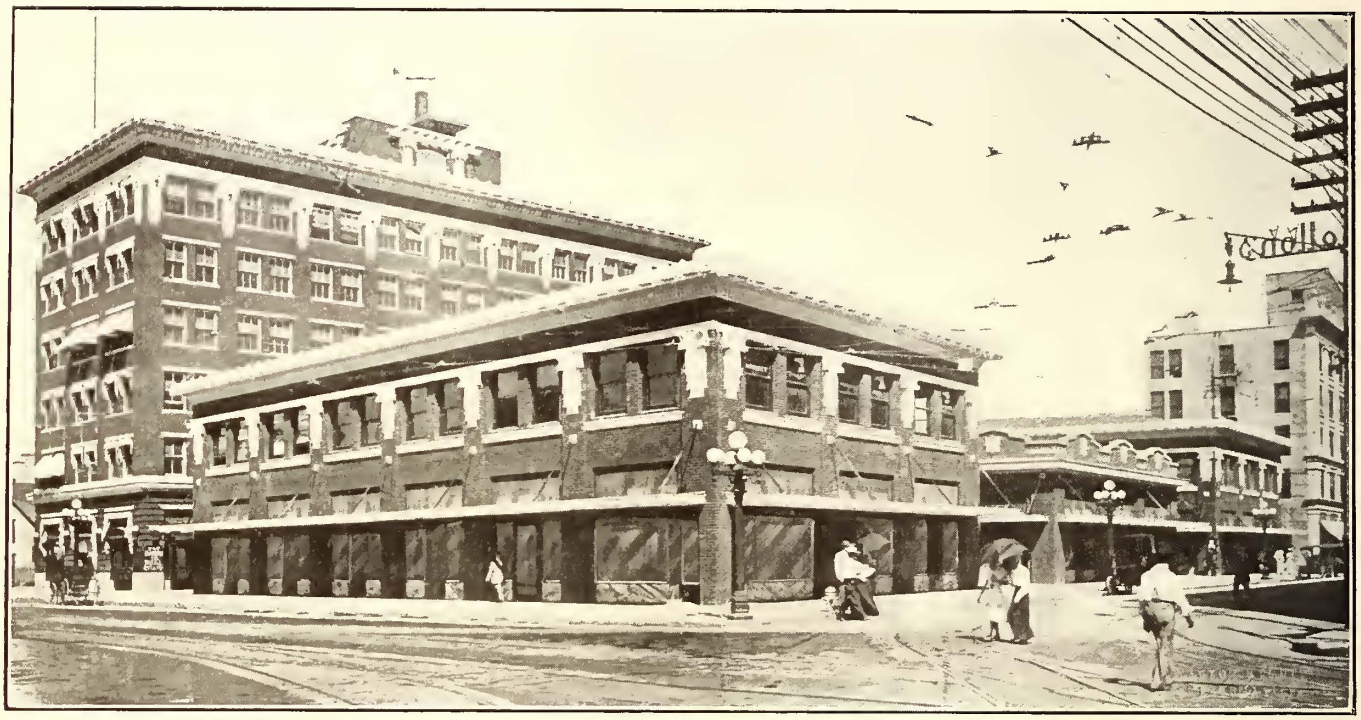
While the Illinois Traction Company is the well-known large property of the McKinley interests, it by no means measures the full activities of these owners and operators in the territory served. With the addition of the Western Railways & Light Company, which operates several railway and other public utility properties in Illinois, the gross earnings of the companies controlled in Illinois, Missouri, Iowa and Kansas probably aggregate $8,000,000.

The Electric Terminal Arcade of the Oklahoma Railway Company

This Terminal Is One of the Most Complete in the Country and Has Recently Been Finished

BY H. C. MARTIN, ADVERTISING MANAGER OKLAHOMA RAILWAY COMPANY

For its size no city in the world can boast of more pretentious or modern electric terminal facilities than Oklahoma City. The Terminal Arcade, located at the corner of Harvey Street and Grand Avenue in the heart of the business district, is just completed and represents the last word in terminal building for street and interurban railways. This terminal arcade was constructed by the Oklahoma Electric Terminal Company, a subsidiary organization of the Oklahoma Railway Company, for the use of all local and interurban cars of the railway company as well as the El Reno Interurban Railway Company, whose line connects



Oklahoma Terminal—Arcade from Southeast Corner

Oklahoma City with Yukon, 19 miles west, and will eventually extend to El Reno, 30 miles west of Oklahoma City.

The officers of the Oklahoma Electric Terminal Company have been considering proper electric terminal facilities for years. They realized that the time would surely come when Oklahoma City would have grown large enough and the electric railway system have become extensive enough to demand a terminal station convenient to the down-town district, where passengers could congregate and wait for cars without having to stand upon the street corners exposed to rain and sun.

They laid their plans well in advance and acquired the property now occupied by the Terminal Arcade, paying a high price for it in order to be prepared to meet the demands of the future. It speaks well for the progressive ideas of the company when it is known that no city in the country with a population double that of Oklahoma City has ever attempted anything nearly so adequate or elaborate.

A great deal of study and thought was devoted to the subject of proper terminal facilities before the plans were finally approved. The best ideas incorporated in terminals throughout the country were considered and special attention was paid to the terminal buildings at Indianapolis and Los Angeles.

The Terminal Arcade consists of four buildings and a train shed. One building faces south on Grand Avenue and three face east on Harvey Street.

THE TERMINAL BUILDING PROPER

The Terminal Building proper consists of six stories and basement. The materials used in its construction were reinforced concrete, faced with red vitrified paving brick and trimmed with white terra cotta. The inside finish is unique in the Southwest, the doors, window frames, baseboards and picture molding being of steel. All windows are of wired glass and every room in the building has large outside windows.

The building has its own refrigerating plant and pure, soft water is supplied by a well, 225 ft. deep, just west of the building. The water, after passing through the refrigerating plant, is distributed to all floors, where artistic marble drinking fountains are located.

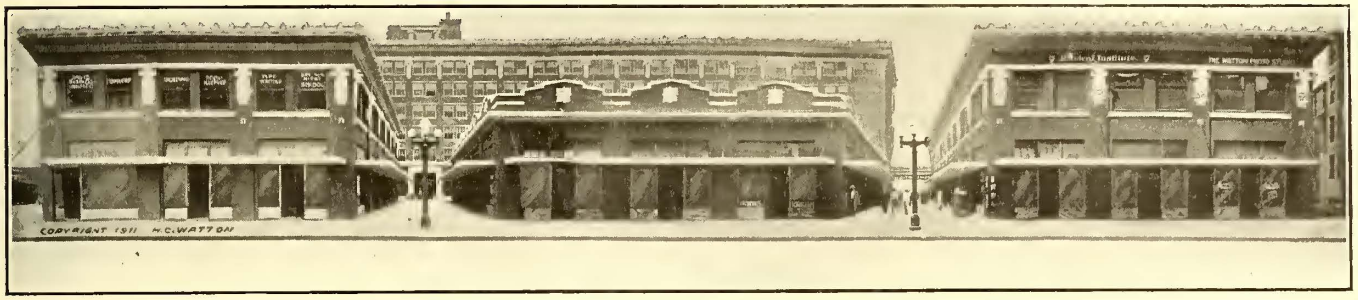
The floors in the corridors, as well as all stairways, are of marble. The stairway railings are of Vermont marble and the steps of Massachusetts marble equipped with Mason safety tread.

There are two passenger elevators of the very latest type, capable of a speed of 350 ft. per minute, equipped with the Armstrong signal system. Elevators are fitted with wired glass and steel doors. The other appointments of the building are of the very latest type, skilfully planned for the maximum of convenience to occupants.

The basement and rear half of the ground floor has been planned for an up-to-date café, with a room in basement 55 ft. x 65 ft. for tables. The first-floor room is 44 ft. x

45 ft. and is now occupied by a high-grade dairy lunch room. The kitchen is located in the basement, as are also the refrigerating and storage rooms. A tunnel leads from the basement north under building "C" to the alley. This tunnel will be used for carrying supplies to and from the basement.

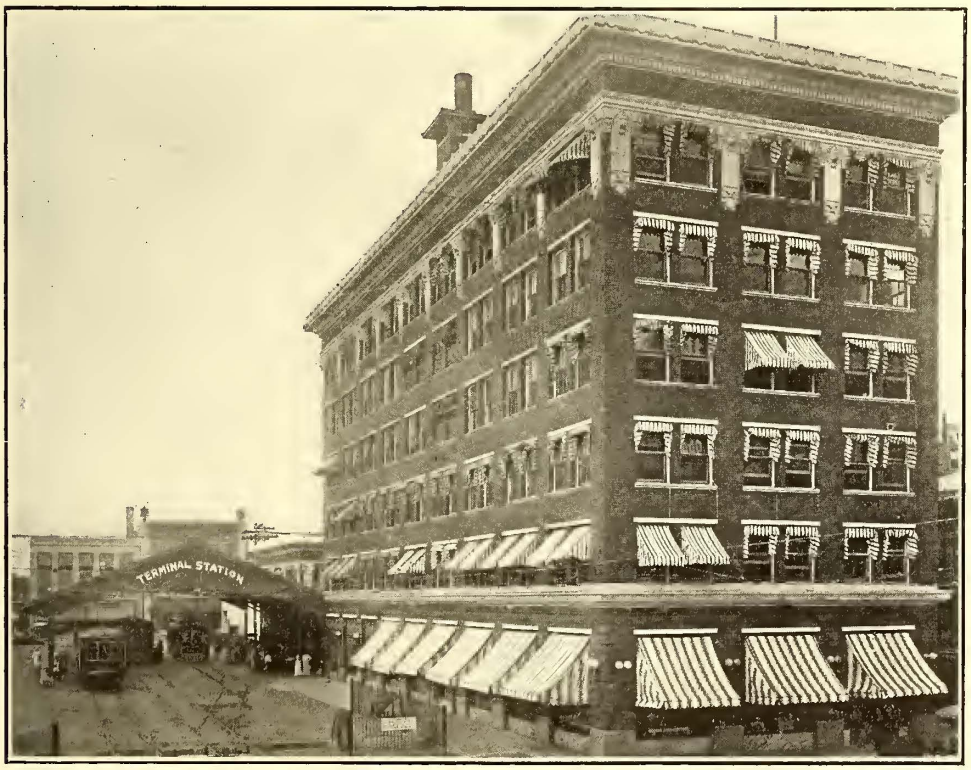
In the basement is also located the heating plant for the entire arcade, consisting of a 150-hp tubular boiler, equipped to burn either coal or gas. Steam is supplied from this boiler to every office and storeroom in the entire arcade.



Oklahoma Terminal—Group of Buildings

The first floor of the Terminal Building is occupied by the Classen Company, real estate dealer; the second floor and part of the third by the executive offices of the Oklahoma Railroad Company, and the sixth floor by the railway company attorneys. The other floors of the building are cut up into office rooms and suites and are occupied by many different and representative firms.

The three arcade buildings facing east on Harvey Street are patterned after the main building, the same general architectural scheme being carried throughout the entire arcade.



Oklahoma Terminal—Office Building and Train Shed

BUILDING "C"

Building "C" is two stories high and 156 ft. deep by 55 ft. wide. The rear of the first story has been fitted up as waiting rooms for whites and negroes, ticket offices and transfer station. An open porch faces the railway tracks on the west, over which the train shed, 60 ft. x 106 ft., extends. The train shed is built entirely of steel and iron, the beams and columns being of structural steel and the roof of corrugated iron. A picket fence incloses the terminal yards and entrance and exit are had only through the arcades leading in from Harvey Street, Grand Avenue and Main Street.

COLLECTION OF FARES

A system of turnstiles is now being installed and all passengers in waiting rooms will pay their fare upon passing through turnstiles. Thus the collection of cash fares and the making of change by conductors as regards passengers who board cars within the station will be eliminated.

When a passenger pays his fare at a turnstile he receives a check which entitles him to board any car within the station inclosure, but is not good at any other point. This check is collected by the conductor and is treated by him like any cash fare, and transfers to intersecting lines are issued upon it.

Passengers who are brought into the terminal station on cars and desire to transfer to other lines receive terminal transfers which entitle them to ride on any line except that by which transfer was issued. These transfers are good only within the station inclosure.

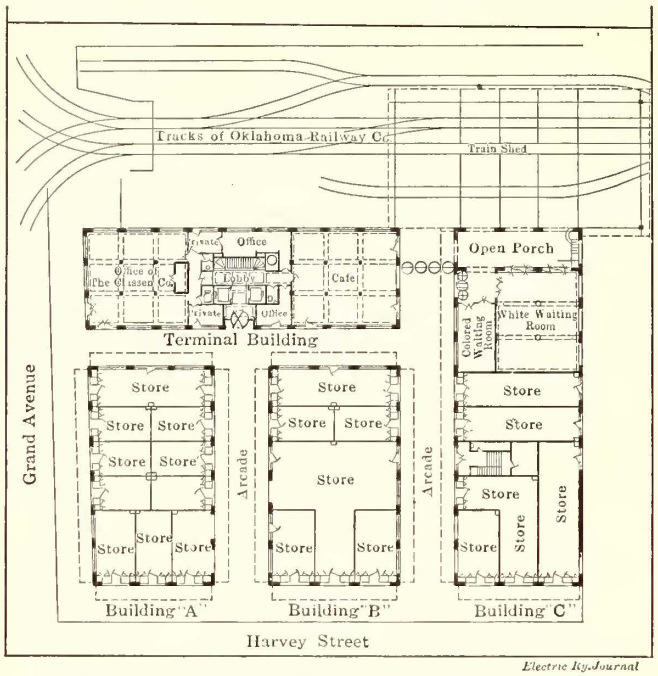
A regular transfer slip is issued to passengers who transfer at points outside the terminal station. All transfers and passenger checks of the company have the day of the month printed upon the face of the transfer in large red letters, the name of the month being punched in the margin by the transfer clerk or conductor. Line transfers for points outside the terminal are only good upon date issued, at the point of transfer, in the direction indicated and within time punched.

The waiting rooms are fitted with heavy, artistic oak settees, toilet rooms and other conveniences for the comfort of passengers. The woodwork is finished in a light green.

All cars of the company, both local and interurban, pass through the terminal station. Four sets of tracks, besides side tracks, switches and turn-outs, are provided for this service. There is an inspectors' booth with telephone and other necessary supplies in the train shed and all dispatching of cars is handled from that point.

The front portion of building "C" downstairs is occupied by small, attractive shops and part of the upper floor by

office rooms, studios, etc. The rest of the second floor of building "C" is used by the trainmen and other employees of the railway company. Here are a general assembly room



Oklahoma Terminal—Plan of Terminal Buildings

where instructions to trainmen are given, a billiard and pool room, a barber shop, shower baths and a reading and lounging room. These quarters are connected with the general offices by an overhead cement passageway which leads across the arcade to the general maneger's office.

BUILDINGS "A" AND "B"

Buildings "A" and "B" are 57 ft. wide by 95 ft. deep each. The latter is one story in height and is devoted to storerooms. Building "A," on the corner, is two stories high. The second floor consists of offices, while the ground floor is divided into shops.

ARCADES

The two passageways, 24 ft. wide, leading east to Harvey Street and the passageway leading south to Grand Avenue are paved with cement. All of the arcade buildings have heavy metal canopies which extend outward 7 ft., and thus leave only a small space in the center of the passageway not protected from the sun and rain. These canopies are hung with heavy wrought-iron chains and are studded with hundreds of electric bulbs. White Way lighting standards adorn the sidewalks on Harvey Street and Grand Avenue and illuminate the entrances to the Terminal Arcade. It is the intention to make this corner one of the most effectively lighted corners in the United States.

ARCHITECTS AND BUILDERS

William A. Wells, architect, of Oklahoma City, drew the plans for the Terminal Arcade and the Selden-Breck Construction Company, of St. Louis, was the builder.

One of the projected works at Christiania, Norway, is a tunnel for the street railways, to enable them to reach a resort on a hill 3 miles away. Consul-General Bordewich states that the company to address is Christiania Elektriske Sporvei, Valkyrie gade No. 21, Christiania.

THE POWER PLANT EXTENSION OF THE RHODE ISLAND COMPANY

BY M. H. BRONSDON, CHIEF ENGINEER RHODE ISLAND COMPANY

The power requirements of the Rhode Island Company's system are supplied from the Manchester Street power station. For some time past it has been evident to the officials of the company that additions to the generating apparatus in this station would be necessary to supply the expected demands for power during the winter of 1911-1912. Hence, a very thorough study of conditions and apparatus was made to determine the equipment which would show the greatest economy not only immediately but for as long a series of years as possible. It is the intention of this article to describe the different plans considered and give the reasons for the selection of that adopted.

Referring to the plan of the station on the accompanying inset sheet, the generators in the engine room, before alterations, had ratings as shown in Table I:

TABLE I.—PRESENT CAPACITY OF STATION.

	Normal.	Maximum.
1	2,500 kw, a.c.	3,700 kw
2	1,500 kw, a.c.	2,250 kw
3	1,500 kw, a.c.	2,250 kw
*4	1,600 kw, d.c.	2,400 kw
5	2,500 kw, d.c.	3,750 kw
6	2,500 kw, d.c.	3,750 kw
	12,100 kw, d.c.	18,100 kw

*Shown in dotted lines.

REJECTED PLANS

The first plan considered to increase the generating capacity was to build an extension to the present building

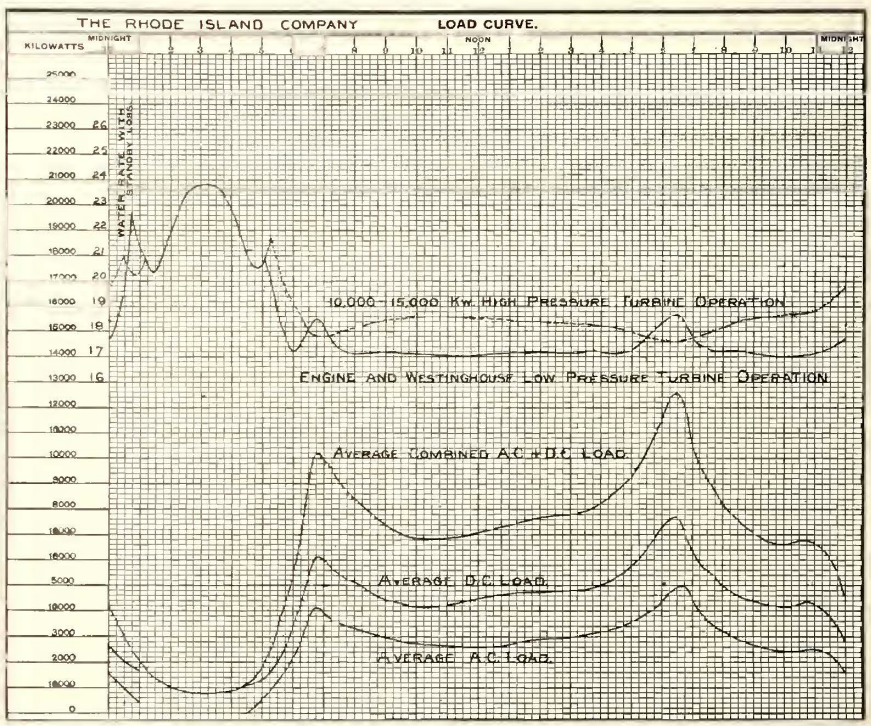


Fig. 1—Load Curve and Estimated Water Rate for High-Pressure and Low-Pressure Turbine Operation

in which would be installed turbo-units of such capacity as seemed best to fit the load conditions. This plan was abandoned on account of the cost of the building extension, because, owing to the fact that there are more than 50 ft. of mud under the ground surface, very heavy piling and other expensive construction would be required.

The second plan considered contemplated the removal of the units marked 2, 3 and 4 from time to time as the demand increased and substituting in the space made available 3000-kw turbo-units, but this plan was abandoned on

account of the cost of installation and because the operating costs would not be very materially bettered.

The third plan considered was the application of low pressure turbo-units to the existing reciprocating units. As fuel represents approximately 70 per cent of the cost of power plant operations and as the steam per kw-hour was lowest with low-pressure turbines connected to the existing units, every consideration was given to this plan. Various applications of the low-pressure turbine were considered as follows:

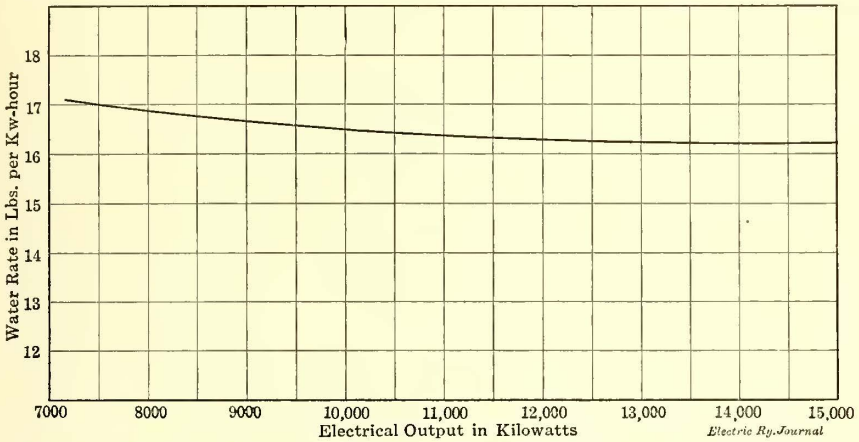


Fig. 2—Guaranteed Steam Consumption of High-Pressure Turbine at 145 lb. and 75 Deg. Superheat

(a) One low-pressure turbine to each of the existing units.

(b) One low-pressure turbine to units Nos. 2, 3 and 4 and one low-pressure turbine to units Nos. 5 and 6.

(c) Two low-pressure turbines which would receive steam from a regenerator taking the exhaust steam from engines 2, 3, 4, 5 and 6, with the exhaust piping so arranged that either or all of the existing engines could be operated condensing should it be found desirable or necessary when the low-pressure turbo-units were out of service.

The proposed application of low-pressure turbo-units was abandoned for the following reasons:

(a) The space being limited, convenient installations could not be made.

(b) The maximum output of the station would be increased from 18,100 kw (12,100 kw normal at present) to 23,070 kw, and as this output was approached, an expensive extension to the building would be necessary to accommodate further additions to the generating capacity.

(3) The necessity of continuously overloading existing generators beyond their normal rating to secure the lowest steam consumption of the combined unit.

(d) Expense of repairs to existing reciprocating units would increase owing to their increased loading.

THE ADOPTED PLAN

The fourth plan considered the use of high-pressure, condensing turbo-units in sizes of 10,000-kw normal, 15,000-kw maximum rating, one each of these turbines to occupy the space made available by the removal of existing units Nos. 2, 3 and 4. This plan, it was found, would give an installation as shown in Table II:

TABLE II.—FUTURE CAPACITY OF STATION UNDER PLAN FINALLY ADOPTED.

	Normal.	Maximum.
1	2500 kw	3750 kw
2	10,000 kw	15,000 kw
3	10,000 kw	15,000 kw
4	10,000 kw	15,000 kw
5	2,500 kw	3,750 kw
6	2,500 kw	3,750 kw
	37,500 kw	56,250 kw

This fourth plan was finally adopted for the following reasons:

(a) The cost per kw-hour at the busbars will be less by this plan than by either of the other plans, owing to the reduced cost of engine repairs, attendance, lubricants and stand-by losses.

(b) Greater reliability for continuous service.

(c) Continuous reduction in steam per kw-hour, as the load on the plant increases.

(d) By additions to the boiler plant the ultimate capacity of the engine room (56,250 kw) can be accommodated.

(e) Additions to boiler plant can be made at much lower cost proportionately than to the entire building.

INSTALLATION OF 10,000-15,000-KW TURBINE

One 10,000-15,000-kw turbo-unit has already been ordered and is being installed as shown in full lines on the plan as unit No. 4. Before the company finally decided upon the use of large sizes of high-pressure turbines, load curves were traced for a period of one year and an average curve was deducted. This curve is shown in Fig. 1. There are, of course, much higher peaks during snowstorms in the winter months, but the load curve shown on Fig. 1 was considered to be a very fair average of all the curves for one year. As a matter of fact, the turbo-unit now being installed has a maximum capacity of 17,000 kw, and it is expected that it will care for the entire load in the nineteen hours between 6 a. m. and 1 a. m. during upward of 300 days per year and until such time as the average peak load exceeds the maximum capacity of this machine. Should it be found economical or desirable to place one of the other existing units in operation to help over the peaks, these existing units will be ready for the purpose.

During the five hours from 1 a. m. to 6 a. m. one of the smaller existing reciprocating units will be operated.

The corresponding estimated steam per kilowatt is shown directly over the load curve on Fig. 1, both for high-pressure and low-pressure turbo-operation.

It will be noted that the steam requirement is less with the low-pressure unit than with the high pressure unit. It will be noted also that the steam requirement drops down as the load increases, and it will be a matter of a few years only before the regular demand will be such that the steam consumption curve of the high-pressure turbine will approximate the steam curve of the low-pressure turbo-unit. But, as already stated, the estimated cost of current per kw-hour is lower with high-pressure turbines than with low pressure turbines, owing to lower charges for attendants, repairs, lubricants, supplies, stand-by losses, etc.

Fig. 2 shows a curve of the guaranteed steam consumption of the 10,000-15,000-kw high-pressure turbo-unit, based upon 145-lb. gage pressure, 75 deg. F. superheat and 28-in. vacuum. It is the intention of the company to operate this unit with 160-lb. gage pressure and 150 deg. F. superheat, which will reduce this steam requirement about 7 per cent.

ESTIMATED COST OF STATION EQUIPPED WITH HIGH-PRESSURE TURBINES

It is the writer's belief that ultimately power will be generated by large a.c. units in plants of large capacity, situated where tidewater deliveries of fuel can be made, with an abundance of fresh water for boiler and other purposes. The alternating current will be distributed to transformer stations by high-tension lines at 10,000 to 50,000 volts, or higher. A power plant of this type, properly designated and located, should be built for $75 per kilowatt and should generate busbar current at less than 4 mills per kw-hour, at points along the Atlantic coast, where coal will be delivered at from $3.10 to $3.25 per ton alongside.

The Log of a Gasoline-Electric Car

Complete Operating and Transportation Statistics Are Presented of a New York City Experiment with This Type of Self-Contained Car.

In November, 1909, the Third Avenue Railroad, New York, placed a gasoline-electric car in passenger service. With but one important interruption, this car was in operation until the middle of September, 1910. It was then removed from the line and its motive apparatus applied to a snow sweeper as described at the end of this article.

The purpose of this installation was to compare the operating and maintenance costs of sample gasoline-electric and storage-battery cars in order to determine which of the two was more suitable for the replacement of this company's horse cars. The performance of both types was better than expected, but the storage-battery car was chosen eventually because under the conditions, which were somewhat unusual, the storage battery car was cheaper than the gasoline-electric car in first cost, in energy expenses and in general maintenance. Furthermore, the upkeep of the storage batteries was taken over by the battery manufacturer on a basis of guaranteed cost per mile. Consequently, it was needless for the Third Avenue Railroad to add special mechanical facilities or to employ special help, as would have been necessary had the gasoline-electric car been adopted. These factors are dealt with in more detail in the paragraphs immediately following.

FIRST COST

The first cost of the gasoline-electric car was practically double that of the storage-battery design, partly on account of the heavier car body and truck and partly on account of the more complicated power equipment. The actual weight per seated passenger was 857 lb. for the gasoline-electric car assuming a capacity of 28, but only 557 lb. for the storage-battery car on a capacity of 26 and a weight of 14,480 lb. when completely equipped. The nonstressing character of the all-electric chain drive was demonstrated by the fact that old horse cars were found serviceable for accumulator service merely by installing new trucks and overhauling the car bodies without altering the main framework. The principal body changes were the addition of vestibule doors, the substitution of open-end bulkheads for the body doors and the construction of battery crates under the longitudinal seating. The truck manufacture and body work, including painting and the installation of equipment, was done in the railway company's shops for about $375 per car. The same trucks and motive apparatus were applied also to twenty-five new car bodies, making a total of thirty cars. More recently thirty-five additional storage-battery cars have been ordered from The J. G. Brill Company. It is plain from the foregoing that first-cost considerations certainly were greatly in favor of the storage battery.

ENERGY COST

The cost of gasoline alone per revenue mile, as shown in the accompanying tables, was never less than 4.61 cents. On the other hand, the cost for electrical energy was exceptionally favorable because the total energy requirements of the accumulator cars constituted but a negligible factor at the power station. The only items which could properly be posted in figuring the cost per kw-hour supplied were coal, attendance and charging-station equipment. The energy consumption of these cars averaged 75 watt-hours per ton mile, or 450 watt-hours per car mile. Assuming a charging loss of 50 watt-hours for every car mile operated and an estimated total energy cost of two cents per kw-hour, the cost of energy will be not more than one cent per car mile, or at least one-fourth of that for the gasoline-electric car.

MAINTENANCE COST

The third factor in favor of the storage-battery car was lower maintenance. It was taken for granted that the upkeep expenses for the motors and controllers of both types would be practically equal. The serious problem was whether the gasoline engine or the storage batteries would require the higher maintenance charges. In any event, the care by the railway of either of these items would have burdened it with an extra shop and stockroom, as well as with especially skilled workmen. A very satisfactory solution was found by making a contract with the storage-battery manufacturer who equipped the first thirty cars whereby the latter for a fixed price per car mile guaranteed to keep the cells in a condition equivalent to at least 75 per cent of their rated output. The maintenance cost guarantees of this manufacturer and of the second battery company, which is equipping the thirty-five new cars, are actually less than the cost of gasoline alone. The rest of the equipment on the storage-battery cars requires no extraordinary maintenance measures.

TRIAL CONDITIONS

Although the storage-battery and gasoline-electric-battery cars were competitors for the modernization of the horse car routes, they were tried out under very diverse conditions. The storage-battery car was placed in service on the same tracks over which the horse cars were operated, and it was not required to average more than 6.5 m.p.h. to 7 m.p.h. schedule speed, including about nine stops per mile. The gasoline-electric car was placed in service, on the electrically operated 125th Street cross-town line, where it was run in regular turn between standard cars on two and one-half minute headway for 15 hours a day without lay-overs on a route 2.1 miles long, averaging seven to ten stops per mile and at a schedule speed of about 8 m.p.h. In addition to this regular passenger service, in which it operated most satisfactorily, from both the engineering and transportation standpoints, the gasoline-electric car was subjected to a large number of special tests in order to determine its possibilities to the utmost. These tests demonstrated clearly that there is a field of economical usefulness for a car of this type under conditions where grades, higher average speeds and electric-energy costs are more important factors than on the recent animal traction lines of the Third Avenue Railroad. The conditions which so greatly favored the storage battery have already been dwelt upon at length.

DESCRIPTION OF EQUIPMENTS

It may be well to describe both types of cars briefly before presenting the detailed log of the gasoline-electric car. The first accumulator car (see Electric Railway Journal, page 735, April 23, 1910) was 17 ft. 10 in. long over the corner posts and had 4-ft. platforms, making a total length of 25 ft. 10 in. over all. The truck was home-made of commercial riveted angles. The batteries were of the Gould Storage Battery Company's type, T. H. pasted design, composed of 29 plates per cell and 44 cells per set, rated 520 amp-hours at 84 volts. The two chain-driven motors were of the GE-1029 automobile type, 5-hp, 1200 r.p.m. The controllers were of the S 34-D type. The current-saving features installed were roller bearings in the journal boxes, ball bearings in the armature bearings and tungsten lamps for inside lighting and headlights. This car averaged 83⅓ watts per ton mile when running at an average speed of 6.33 m.p.h., including 9.62 stops per mile. The remainder of the first thirty cars were 26 ft. 5 in. long

over all, but have 4½-ft. instead of 4-ft. platforms. The storage batteries were of the same type, but were increased in number from 44 to 58 cells. The motors were of the same general design, but of 7½-hp capacity each instead of 5-hp. The only important change in the storage-battery cars as embodied in the last order, and also to be incorporated in the present cars, is the use of gearing instead of chains.

TABLE I—SHOWING OPERATING COST OF GASOLINE CAR, THIRD AVENUE RAILROAD

Date	Gasoline per Revenue Mile, Gal. Price	Gasoline per Revenue Mile, Amount. Gal.	Gasoline per Revenue Mile, Cost	Cylinder Oil per Revenue Mile, Gal. Price	Cylinder Oil per Revenue Mile, Amount	Cylinder Oil per Revenue Mile, Cost	Gasoline per Mile of Gross Miles, Amount	Gasoline per Mile of Gross Miles, Cost	Cylinder Oil per Mile of Gross Miles, Amount	Cylinder Oil per Mile of Gross Miles, Cost	Platform Expenses per Mile of Gross Miles.	Motor Grease per Mile of Gross Miles
1 Two days of October and first 15 days of November, 1909	18	.553	9.95	45.5	0.01	0.50	.53	9.60	.01	.49	$7.29	
2 Last 15 days of November, 1909	11.75	.513	6.02	45.5	0.01	0.61	.50	5.80	.01	.59	7.47	
3 First 7 days of December, 1909	11.75	.411	4.83	45.5	0.011	0.48	.40	4.70	.01	.47	7.51	
4 Next 2 days of December, 1909	11.75	.392	4.61	38.5	0.008	0.30	.38	4.47	.008	.29	7.48	
5 Thirty-one days, January, 1910	11.75	.536	6.29	38.5	0.018	0.68	.52	6.11	.02	.66	7.79	
6 Twenty-eight days, February, 1910	11.75	.533	6.27	38.5	0.014	0.54	.52	6.10	.014	.53	7.72	
7 Twenty-one days, March, 1910	11.35	.556	6.31	38.5	0.013	0.51	.54	6.14	.013	.49	7.46	0.36
8 Thirty days, April, 1910	11.35	.427	4.85	38.5	0.016	0.63	.42	4.73	.016	.61	7.09	.0002
9 Nine days, May, 1910	11.35	.462	5.24	38.5	0.016	0.62	.45	5.09	.016	.60	7.63	

	Platform Expenses per Revenue Mile	Motor Grease per Revenue Mile	Miscellaneous Expenses per Revenue Mile	Total Expenses per Revenue Mile	Miscellaneous Expenses per Mile of Gross Miles	Total Expenses per Mile of Gross Miles	Total Revenue per Revenue Mile	Total Revenue per Mile of Gross Miles
1	$7.55		$2.57	$20 57	$2.48	$19.86	$32.62	31.50
2	7.70		1.40	15.73	1.36	15.26	35 40	34.40
3	7.70		0.71	13.72	0.69	13.37	30.97	30.19
4	7.70		7.16	19.77	6.95	19.18	29.73	28.84
5	8.01		1.30	16.28	1.26	15.72	31.85	30.92
6	7.93		1.46	16.20	1.42	15.76	30.37	29.55
7	7.67	0.3630	1.50	16.35	1.46	15.91	29.99	29.17
8	7.26	.0002	1.20	13.94	1.17	13.61	28.56	29.88
9	7.47		1.08	14.41	1.05	14.38	30.31	29.48

The gasoline-electric car (see ELECTRIC RAILWAY JOURNAL, page 988, Nov. 6, 1909), was of the single-truck type, with drop sash and vestibules. It was 19 ft. long over the body and frame, 26 ft. long over all and had 4½-ft. platforms. The total weight was 12 tons, as against 7 tons for the storage-battery car. The generating equipment, which was mounted on one truck of 7 ft. 6 in. wheelbase, consisted of a four-cylinder, four-cycle engine direct-connected to a generator and exciter. The gas engine ran at constant speed, the car being operated electrically with P-15 controllers. The tungsten lamps on this car were supplied with current from the exciter. The car was heated by the cooling water of the engine. The truck was built by the American Locomotive Company, but the power equipment was furnished by the General Electric Company.

LOG AND PERFORMANCE OF THE GASOLINE-ELECTRIC CAR

From Oct. 29, 1909, to May 9, 1910, inclusive, a detailed daily record was kept by the engineers of the Third Avenue Railroad of every important operating feature in connection with the gasoline-electric car. As shown in Table I, this log gave the amount and cost of the gasoline, cylinder oil and motor grease per revenue and gross mile; likewise the platform expenses, miscellaneous charges and revenue per revenue and gross mile. The total figures on which the foregoing unit costs are based are printed in Table II. A study of the figures in these tables should prove interesting.

TABLE II—SHOWING OPERATING STATISTICS OF GASOLINE CAR, THIRD AVENUE RAILROAD

Date	Revenue Fares	Transfers and Passes	Revenue Miles	Dark Miles	Gasoline in Gallons	Cylinder Oil in Gallons	Motor Grease	Platform Expenses	Other Expense.
Two days of October and 15 days of November, 1909	6,289	1,638	964	34	532.0	10.75		$72.77	$24.77
Last 15 days of November, 1909	5,938	1,447	839	26	430.0	11.25		64.62	11.76
First 7 days of December, 1909	3,345	944	540	14	222.0	5.75		41.60	3.82
Next 2 days December, 1909	773	238	130	4	51.0	1.00		10.02	9.31*
Thirty-one days, January, 1910	12,758	3,343	2,003	58	1,072.5	35.50		160.48	25.97
Twenty-eight days, February, 1910	10,969	3,310	1,806	50	963.0	25.50		142.62	26.28
Thirty-one days, March, 1910	12,084	3,833	2,015	56	1,121.0	26.50	7.32	154.54	30.25
Thirty days, April, 1910	13,352	3,853	2,372	58	1,013.0	38.75	0.42	172.24	28.51
Nine days, May, 1910	3,862	1,192	637	18	294.0	10.24		47.60	6.90
One hundred and seventy days			11,306	318					

* From Dec. 19, 1909, to part of Jan. 1, 1910, inclusive, car out of service for overhauling.

In the first place it was assumed that this car would be capable of operating 30,000 miles per annum. The record shows that a total of 11,624 miles (11,306 revenue and 318 dark miles) actually was run in 170 days. This is equivalent to practically 25,000 miles per annum. The assumed mileage could have been easily attained, as the heating records show that the car could have been operated without trouble for 20 per cent longer every day. On this maximum mileage basis the expenses per car mile were estimated as 3.1 cents for the fixed charges and 2 cents for the maintenance. Depreciation was figured at 8 per cent.

Referring now to Table I, it will be noted that the gasoline consumption was very low indeed. Despite the fact that this car weighed 12 tons, the amount of fuel required never exceeded 0.553 gal. per revenue mile, and it was always less than 0.5 gal. under favorable weather conditions. The first grade of gasoline tried cost 18 cents per gallon, but more economical results were secured with two lower grades, costing in turn 11.75 cents and 11.35 cents per gallon. As shown in Table I, the cost of gasoline per revenue mile varied from 4 cents to 6 cents. The cost of cylinder lubrication added about 0.5 cent per revenue mile, but that for motor lubrication was negligible. The foregoing charges, plus platform and miscellaneous expenses, make the total expenses per revenue mile range from 13 cents to 16 cents, the difference depending mainly on weather conditions. The number of dark or non-revenue miles did not increase these costs materially, as the car was stored within one-quarter mile of its route.

Table I also shows that the total gross earnings per revenue car mile varied from 28.5 cents to 35.4 cents. Roughly speaking, the gross earnings per car mile were about twice the operating expenses, excluding 3.1 cents for fixed charges, 2 cents for car maintenance and 0.25 cent for track maintenance. It is interesting to add that the earning power of this twenty-eight-passenger, single-truck car proved to be practically as high as those of the regular

double-truck cars on this route. However, the earnings over the storage-battery routes would have been so much less that the gasoline-electric car would have been operated at a heavy loss.

A footnote in Table II states that the gasoline-electric car was out of service from Dec. 10, 1909, to Jan. 1 following. This long interruption was due to the breakage of a defective shaft. Otherwise this car operated as smoothly as could be desired.

Some very interesting and instructive tests were made jointly by the engineers of the General Electric Company and T. F. Mullaney, chief engineer of the Third Avenue Railroad, to determine the characteristics of the gasoline-electric equipment. These tests uniformly were favorable and in some cases the results were even better than the builder's guarantee. Thus the car actually climbed an 8

Table III—Showing Energy Consumption of Gasoline Car, Third Avenue Railroad

Duration of Trips	Total Power, Kw-Hours	Kw-Hours per Car Mile	Watt-Hours per Ton Mile
No. 1 28½ minutes	5.20	1.30	108.0
No. 2 28½ minutes	4.88	1.22	101.7
No. 3 28½ minutes	5.14	1.29	107.5
No. 4 28 minutes	4.87	1.22	101.5
Average performance		1.26 guarantee	104.5
Total gasoline consumed.....8.0 gal.		....	
Gasoline per car mile.....0.5 gal.		0.6	
Schedule speed, m.p.h.....8.45		7.0	

Table IV.—Showing Acceleration Test Made with Gasoline Car Feb. 17, 1910

Run	Grade per Cent	Time in Seconds	Distance in Feet	Acceleration M.P.H.P.S.
No. 1 Down....	0.65	7.40	50	1.25
No. 1 Down....	0.72	11.40	100	1.05
No. 2 Up.....	0.78	8.60	50	0.92
No. 2 Up.....	0.72	12.50	100	0.87
No. 3 Down....	0.65	7.80	50	1.12
No. 3 Down....	0.72	11.70	100	1.00
No. 4 Up.....	0.78	8.40	50	0.97
No. 4 Up.....	0.72	12.80	100	0.83
No. 5 Up.....	0.83	8.80	50	0.88
No. 5 Up.....	0.77	13.30	100	0.77
No. 6 Up.....	0.83	8.30	50	0.99
No. 6 Up.....	0.77	12.80	100	0.83

Note: Tests were made on Hancock Place, between St. Nicholas and Morningside Avenues.

Table V.—Showing Temperature Test Made with Gasoline Car, March 4, 1910

West End, Leave	East End, Arrival	No. of Stops	Schedule Speed, M.P.H.	Time Blocked, Minutes	East End, Leave	West End, Arrival	No. of Stops	Schedule Speed, M.P.H.	Time Blocked, Minutes
12.09	12.265	21	6.86	..	12.28	12.47	18	7.06	02
12.48	1.02	18	8.27	..	1.03	1.19	20	7.27	..
1.20	1.37	22	7.06	..	1.39	1.55	22	7.50	..
1.55	2.14	25	7.27	02	2.14	2.31	21	7.06	..
2.32	2.50	23	6.66	..	2.50	3.08	23	6.66	..
3.09	3.28	22	6.32	..	3.28	3.44	22	7.74	..
3.44	4.06	18	6.85	04	4.06	4.24	23	6.85	..
4.24	4.41	17	7.05	..	4.42	5.02	22	6.66	02
5.03	5.21	21	6.48	..	5.22	5.39	28	6.85	..
5.40	5.57	23	7.06	..	5.58	...	..	...	..

Engine stopped at 6:09 p. m. at Eighth Avenue, as gasoline in tank was entirely consumed. Car was taken directly to the carhouse for the temperature readings.

	Temperatures, Motor No. 1	Motor No. 2	Generator	Exciter
Armature coil	..	..	72	68
Armature winding..	55	69	74	67
Field	42	51	68	73
Commutator	65	77	72	61
Air, outside	12	12	12	12
Air, inside	15	15	15	15

Motor No. 2 near engine muffler.

per cent grade, although 5 per cent was the assumed limit.

Table III gives some particulars of a fuel and power consumption test made on Feb. 11, 1910, over the 125th Street line between the Hudson and East Rivers. The run began at 1:15 a. m. and ended at 3:08½ a. m. In the interim of 1 hour 53½ minutes the car ran four round trips of 4 miles each and made eight 5-second stops per mile. The gasoline consumption per car mile under these conditions was only 0.5 gal., compared with a guarantee of 0.6 gal. At the same time the schedule speed was 8.45 m.p.h., an excess of 1.45 m.p.h. over the guaranteed speed for such service. The wattmeter in this test showed an average power consumption of 104.5 watt-hours per ton mile, compared with 83.3 watt-hours per ton mile for the storage-battery car, which was equipped with anti-friction journal and armature bearings.

Table IV gives the data on acceleration experiments made on Feb. 17, 1910, over some light grades. In these runs the car showed such excellent accelerations as 1.05 m.p.h.p.s. when going down and 0.83 m.p.h.p.s. when going up a grade of 0.72 per cent.

Table V is the record of a test made on March 4, 1910, to determine the temperature rise after six hours' running as per the schedule given in the table. However, the car actually was in service for 11 hours 25 minutes, during which time it operated 84.68 miles and carried 689 passengers. The schedule speed varied from 6.66 m.p.h. to 7.74 m.p.h. Temperature readings were taken with a Centigrade thermometer at the motors, generator and exciter. The temperature specification called for a heating limit of 65 deg., but it was exceeded in this test because the car was making nine to thirteen stops instead of the eight stops per mile upon which the 65-deg. specification was based, and, furthermore, the readings were taken at the end of a much longer run than six hours. The higher temperatures occurred in motor No. 2 near the muffler.

RE-USE OF GASOLINE EQUIPMENT

The equipment of the gasoline-electric car is now in place on a snow sweeper which was formerly drawn by eight to ten horses upon the 110th Street storage-battery line. The sweeper consisted originally of a flat car on which the gasoline engine, generator and exciter were mounted, after which a housing was built about them. The radiators are built into the side of the housing. The motors are placed on the axles.

RAILROAD WITH SPIRAL SHAFT

At the meeting of the British Association for the Advancement of Science, Aug. 30-Sept. 7, W. Yorath Lewis described a novel type of motive power designed specially for subways. The cars engaged with a roller grip a shaft which extended the entire length of the line and was provided with a spiral thread. The speed of the cars would be proportional to the pitch of the spiral engaged. To give low speed at station points the pitch would therefore be close, and to enable high speeds to be obtained between stations the pitch would be six or eight times greater while the necessary acceleration and deceleration were obtained by a graduated pitch. The return of over 80 per cent of the kinetic energy of the cars during deceleration was claimed and that the use of brakes and signal apparatus and other accessories essential to existing forms of electric traction would be obviated. The shaft was carried in cradle roller bearings of the anti-friction type which while providing for the clear passage of the engagement would enable the energy consumption of shaft rotation to be kept low.

Driving motors were to be inserted at intervals of a quarter of a mile, and the construction of the spiral thread was the only part of the system presenting any real difficulty. Such a system was no doubt more adapted to straight and level routes than to routes having curves and changes of grade. At the ends of the route a semi-circle of small radius would be provided and the cars would be picked out of engagement with the last spiral of one shaft and put into engagement with the first spiral of another shaft.

It was proposed to employ five-seat cars which when loaded would weigh only one ton, and the pressure between engaging rollers and the edge of spiral on guiding shaft would be under 20 lb. in all uniform low and high-speed sections. In the accelerating and decelerating sections the pressure would be gradually increased to a maximum not exceeding 600 lb.

Chicago Meeting of Illinois Railways Association

At This Meeting the Principal Subjects Discussed Were Publicity and Its Relation to Electric Railway Traffic Promotion.

Forty railway and associate members of the Illinois Electric Railways Association met at the La Salle Hotel in Chicago on Sept. 15 to discuss publicity and its relation to electric railway traffic promotion. H. E. Chubbuck, president of the association, was in the chair. The morning session began with the roll call, which showed that a majority of the electric railway properties in the State were represented at the meeting by one or more officials. The various committees then reported. E. C. Faber, chairman of the executive committee, stated that no meeting of that committee had been held since the last association meeting. Richard Breckenridge reported for the membership committee that Will Arnold, the chairman of that committee, recently sailed for a year's travel in Europe. Joseph O'Hara, Chicago, Aurora & DeKalb, was appointed acting chairman of the committee and Robert E. Belknap was appointed a member of the committee. Secretary Flenner read a letter of application for associate membership from George Keummerlein, Jr., superintendent of the Milwaukee Electric Railway & Light Company.

L. E. Gould, ELECTRIC RAILWAY JOURNAL, reported for the block signal committee that it had held no meetings recently and was awaiting the report of the joint committee on block signals of the American Electric Railway Engineering and Traffic & Transportation Associations.

Mr. Chubbuck called attention to the continued use which his company was making in its advertising matter of the safety feature of its 100 miles of automatic block signals. He showed a record of the monthly report of the block signal department and called attention to the remarkably small number of failures of the signals. During August the 94 signals installed had made 143,904 movements and there had been but 38 failures; thus the signals operated 99.973 per cent perfect. Sixty trains were delayed a total of 146 minutes by the signal failures during August. The signals made 3787 movements per failure and 2398 movements per train stop and 986 movements per minute of train delay. Of the 38 signal failures during the month 24 were caused by lightning storms, which burned out fuses and in two cases broke the line wires. Nine so-called failures were caused by power being shut off from the transmission system. Three failures were creditable because they had been reported as failures, although trains were in the block, and two failures were caused by grounds in lightning arresters.

Mr. Flenner announced that Chester Willoughby, assistant secretary Illinois State Electrical Association, Mayer Building, Peoria, Ill., had for distribution copies of the laws affecting public service corporations passed by the last Legislature.

A general discussion was held on the desirability of having carefully compiled statistics of the electric street and interurban railway properties in Illinois. The president stated that notwithstanding the proportionately large amount of advertising done by the Illinois roads the general public had no real idea of the immensity of the electric railway investments in the State. He also spoke of the value of newspaper advertising. He said that the newspapers were the best medium for publicity. As a matter of interest the Illinois traction sleeping cars during one month handled more than 5000 people.

Fred Buffe, Illinois Traction System, suggested that the association compile data on the electric railway industry in Illinois, have it published in pamphlet form and placed on file at each newspaper office for reference purposes. The association then instructed the president to appoint L. E. Gould, Western editor ELECTRIC RAILWAY JOURNAL, statistician with authority to collect electric railway statistics under the guidance of and for the use of the executive committee. The association also voted that a subcommittee on publicity of the executive committee be appointed by the chairman of the executive committee.

ELECTRIC RAILWAY ADVERTISING

A paper on "Electric Railway Advertising," by Fred G. Buffe, manager publicity department Illinois Traction System, was read by the author. This paper is printed in abstract on pages 495 and 496. Following the reading of his paper Mr. Buffe distributed among the members samples of advertising matter and exhibited an eight-sheet poster which had been displayed recently to advertise the Illinois Traction System and its service to the Illinois State Fair, at Springfield. These posters showed a large map of the system and pictures of automatic block signals in addition to the reading matter. The cost of 500 of these posters was about $240. In larger lots the cost would be approximately 30 cents each. The rental for billboard space was 18 cents for each poster displayed in St. Louis for one month.

Mr. Buffe also described the large painted billboard signs which his department had installed at St. Louis. The tracks of the Illinois Traction System extend for a distance of thirty-nine blocks into the center of the city and at nearly all curves adjoining property had been purchased to reduce the curvature of the track by cutting across the street corners. At these corners where space was available signboards about 40 ft. x 10 ft. in size had been built. These were covered with galvanized iron and displayed advertisements of the Illinois Traction service painted in bright colors. Mr. Buffe had found that these signboards could be erected at about the cost of renting similar poster display space in St. Louis.

Mr. Buffe described a plan tried last year of publishing a monthly advertisement of the theatrical bookings along the line in connection with the timetables. While this advertising matter brought good results from the traffic standpoint, it had to be discontinued because of the impossibility of obtaining early information from the theater managements. The Illinois Traction System carried no announcements on the outside of its cars, but reserved space on the interior, in the sign racks.

George Quackenbush, traffic manager Illinois Traction System, described a new theater-ticket-selling scheme now being handled by his station agents. The theater managers of Peoria, Springfield and some other cities had agreed to give a 50 per cent reduction in the cost of seats if the Traction company would sell theater ticket coupons in connection with the regular local tickets. This was being done and brought forth considerable additional evening riding at no promotion expense for the road.

Mr. Buffe mentioned the permanent building of the Illinois Traction System on the State Fair Grounds at Springfield. This building was new and a duplicate of a standard passenger depot. During the fair last year the publicity department distributed from its headquarters about 250,000 pieces of advertising matter, of which the colored picture postal cards were most in demand. This year 200,000 postal cards will be available for distribution. Mr. Chubbuck said that if other Illinois roads desired to furnish the Illinois Traction System with supplies of their publicity matter these would be placed for distribution from the Illinois Traction building on the fair grounds.

TRAFFIC PROMOTION

Richard Breckinridge, general freight and passenger agent Aurora, Elgin & Chicago Railroad, read a paper on

"Traffic Promotion," which will be found in abstract below. In the discussion E. C. Faber, Aurora, Elgin & Chicago, said that at certain times his company displayed from the Chicago billboards twenty-four-sheet posters. As many as 200 of these posters, which cost $4.80 apiece for printing, had been displayed at one time. Mr. Flenner mentioned that the Aurora, Elgin & Chicago was successful in the use of advertising space of from one-quarter page to full pages in the Chicago daily papers. Several members complimented the Aurora, Elgin & Chicago for the excellence of its illustrated folders, which contained a large lithograph map of the route. Mr. Faber said that the plates for this map cost about $450.

J. J. Rockwell, manager special service department Electric Railway Journal, was to have made an address on "Publicity," but was unavoidably absent.

The president then introduced Ralph H. Beach, Federal Storage Battery Car Company, who described the storage-battery cars built according to his designs which were now in operation on several steam and electric roads. The fastest car yet built had just been placed in service on a road at Muskogee, Okla. This car ran 38 m.p.h. and consumed 650 watt-hours per car mile. A 21-ft. car designed for city service with a speed of 9 m.p.h. and a capacity for running 100 miles per charge would cost about $6,500. The low energy consumption of these cars was due to their light weight and the design of their running gear. Each wheel rotated on its axle and had Rollway roller bearings. The motors drove the cars through chains instead of gears, because Mr. Beach had found the chains to be about 10 per cent more efficient. The chains used had a life of about 100,000 miles.

INSPECTION TRIP

Thirty-five members of the association were the guests of C. N. Wilcoxon, general manager Chicago, Lake Shore & South Bend Railway, during the afternoon and were taken in a special car over the 6600-volt single-phase road to the headquarters and repair shop at Michigan City. On this trip a sustained speed of a mile a minute was made for a distance of 22 miles. Mr. Wilcoxon stated that because of the very high-speed characteristics of the motive-power equipment the engineers of the Westinghouse Electric & Manufacturing Company were now installing on all motor cars of this road a special-limiting device which would open the line-control switch when the car attained a speed of 58 m.p.h. The excursion party returned to Chicago at 6 o'clock.

President Chubbuck announced that the next meeting would be held on Jan. 19. This will be the annual meeting. The November meeting is to be omitted, because of several other conventions and meetings which will be held during October and November.

Abstracts of the papers read by Messrs. Breckinridge and Buffe follow:

TRAFFIC PROMOTION

BY RICHARD BRECKINRIDGE, TRAFFIC AGENT AURORA, ELGIN & CHICAGO RAILROAD

Advertising on the Aurora, Elgin & Chicago Railroad is under direct supervision of the general manager and current publicity is discussed freely at the weekly traffic meetings, at which he presides and which are attended by various interested officials. To these gentlemen is due the chaste and esthetic style which characterizes our work. The execution and details only are left to the traffic department of the road.

The basic ideas of our advertising are as follows: We believe the foundation of good railroad advertising is a good railroad, and, although good advertising may sell poor transportation, our problem is more to keep the advertising standard up to the road's standard and to bring out its features and those of the territory which it serves. Granting that we have a good road furnishing good service to a good territory, the next step is to acquaint the public with the fact. To do this a good map is absolutely essential, and we issue a rather elaborate folder, one-half of which is given up to a comprehensive map, lithographed in several colors, showing our lines and connections, with terminals and principal points boldly displayed. The rest of the folder is given to the cover design and half-tones of scenes along the line, with the necessary descriptive text. This folder is supplemented by many lesser ones, covering our parks, excursion trips, principal cities, side trips, etc. These are of more or less conventional form and need not be described in detail.

After the prospective patron has learned where the road runs and where trains may be taken the next essential is a time card. This want is supplied chiefly in the form of a large folder of standard steam railroad size and design showing every train and car we run, with notes calling special attention to limited trains, dining cars, etc., and the usual pages devoted to general information and rates. These timetables are distributed at all ticket offices and are also placed in Chicago hotels, railroad stations, information bureaus, etc. We also issue about twenty forms of pocket time cards between Chicago and principal points, and a quarter-sheet printed in two colors on heavy cardboard. These cover all principal points and are placed in public places throughout our territory.

With regard to publicity, some is good, but more is bad. There is nothing that brings us results like newspaper space, particularly in a few Chicago papers. We wait until weather and other conditions are favorable, then strike hard, using anywhere from a quarter-page to a full page. The copy is enlivened with pictures of scenes along our line and the text briefly outlines trips or suggests outings and mentions prominently the location of our terminal. The scenes used nearly always include a picture of our standard three-car trains. We seldom issue any advertising literature without this cut, which we use fully as much as we do our trade-mark and with much greater effect. Sometimes we use with good effect a map of the line in place of the pastoral scenes. We have a beautiful outing country along our line and try to make all Chicago enjoy its beauty and incidentally increase our passenger receipts.

When we have a special event in any of our towns we usually use small spaces stating only the event, place, date and time of trains. The copy is usually all type. In our advertising we avoid extravagant claims, bizarre effects and anything sensational, believing that what might be good advertising for a brewery would be bad for a railroad company and that it would cause unfavorable comment rather than sell tickets.

After newspaper advertising in importance and benefit comes billboard space. During the past season we have used twenty-four-sheet bills, lithographed with a colored design of a three-car train passing a wooded and watered scene and also the name of the road and the location of the terminal in Chicago. Following these, we use a large number of one-sheet posters containing nothing but type. These are placed at railroad platfoms and stations in Chicago and refer usually to special events. Consequently they are changed frequently. When there is a special attraction in Chicago, such as an aviation meet, military tournament, land and stock show, we put cars and posters or handbills in all cars, both interurban and city, and in all stations and at platforms. The printed matter is nearly always furnished without charge by the promoters of the event. In some cases this form of advertising undoubtedly helps traffic to a marked extent, but generally speaking we can cover our territory most completely and effectively by the use of space in the Chicago newspapers.

Our advertising has made famous locally at least not only the road, but the Fox River Valley. It helped to build towns along the line and has turned farms into thriving sub-

divisions. We have done good in getting people from the discomforts of the city to the country, some for a day, some for a permanent home. While our methods may not be perfect from an advertising point of view, they have put passengers on our cars, and we are reasonably satisfied.

ELECTRIC RAILWAY ADVERTISING

BY FRED G. BUFFE, MANAGER DEPARTMENT OF PUBLICITY ILLINOIS TRACTION SYSTEM

In its application to the electric railway business advertising covers a broad field. It presents problems which ordinary advertising work does not have to consider. Being so intimately related to the policy of the company and including in its scope so much more than the creation of business, it deserves the most rigid personal attention of the management. Because of these things electric railway advertising should be considered from the broader standpoint of publicity. This not only includes straight advertising but the many other important things which arise in the relations between an electric railroad and the public.

Electric railway advertising resolves itself into an effort to make the public along the lines partners with you in the enterprise. This does not mean that your advertising merely attracts business, but it also influences that intangible and most powerful factor—public opinion—in your favor.

DIFFERENCE IN RELATION WITH PUBLIC OF ELECTRIC RAILWAY AND STEAM RAILROAD

The electric railway occupies a peculiar position in transportation circles. It is closer to the people than are the steam roads. There is a more intimate connection between the farmer and the local car that picks him up at his cross-road station than there is between him and the long train of Pullman cars that dashes through his farm. The officials of the steam railroad are to him an unknown quantity. He knows there is a president and a general manager, but an acquaintance with the foreman of a section gang is generally the only one which he has with railroad official life. With the electric line it is different. Its officials live in his neck of the woods. He sees them often, and these things make a personal connection between an electric road and its patrons not found elsewhere.

The preservation of this sentiment is in a large measure up to the publicity department. Through its advertising and publicity the management is addressing its patrons. It is holding and preserving this interest.

You are advertising service—not breakfast food. The man who rides in your cars does not give a rap whether or not Blank Shredded Sawdust serves up to the printed word, but the failure of the line on which he rides to do so becomes with him a personal affront. Successful advertising will popularize the line. It makes the people know that they and the management are friends.

The publicity department for these reasons should be under the close surveillance of the general manager. Companies have made the mistake of giving the advertising department a desk at the end of a hall, telling it to spend so much money and then being satisfied with a dodger stating that on such and such a date a low rate will be in effect for a picnic at Jim's Grove. While this is necessary it is but a small part of the work.

THE WORK OF THE PUBLICITY DEPARTMENT

The work of a publicity department may be roughly divided into two divisions—permanent, carefully planned twelve-months-in-the-year advertising and the special work demanded for rate and attraction announcements. In the first division come the booklet, timetables and newspaper work planned to place the name of the road in the minds of the people every day in the year. It does not take into account excursion rates and special trains, but is continually hammering away at the excellence of the service, the improvements being made, and the enterprise and resourcefulness of the line.

In the other division will be found the fliers, posters, window cards and newspaper advertising, telling of special rates and events, special car service, etc. The more thorough the work has been in the permanent advertising the more effective will be the business-getting ads of this kind. Keeping still about the good things you do and letting the other fellow tell about the mistakes is not only keeping your light under a bushel but is putting out the light. People won't know what you are doing if you don't tell them.

ILLINOIS TRACTION ADVERTISING MATTER

On the Illinois Traction we have secured good results from standardizing in a way our permanent advertising matter. I mean by this that certain features are worked up in all our advertising. When you see an Illinois Traction "ad" you may always expect the map, the slogan and some suggestion of safety and service.

Two years ago we adopted for a slogan "The Road of Good Service," and we have kept putting this before the people in small convenient packages sugar-coated and tied with pink ribbon until it stands for something. We have tried to make the words "Illinois Traction System" and "convenient, frequent, fast, clean and safe service"—"good service"—mean the same thing.

In our last issue of timetables we followed a new scheme which has worked out most successfully. Instead of placing the trains one after the other in the sequence of their arrival and departure we have placed all the limited trains on

Typical Newspaper Advertisement—Illinois Traction System

one side of the names of the towns and the local trains on the other. This is on the theory that the two classes of service are used by two different classes of customers. The traveling man who makes jumps from terminal to terminal does not care to be bothered with local trains, and an arrangement of this kind prevents him from making the mistake of riding on a local. In our timetables we attempt to impart the necessary information so that it can readily be understood. The location of stations in all terminals is given; the names, titles and addresses of officials, station index and miscellaneous information are also included. These tables are not elaborate and are of convenient size to carry in the pocket. I think a mistake is made when a road's official timetable is included with descriptive matter, advertisements, pictures, etc. These things make it bulky and cumbersome and for this reason it will be thrown away. It is a timetable's business to tell the arrival and departure of trains, necessary information for a traveler and nothing else.

OUTSIDE ADVERTISING SCHEMES

In this connection on the Illinois Traction we have adopted a policy of keeping clear of outside advertising schemes. I do not think a day passes without some fellow coming into my office for permission to issue a timetable free of charge, a booklet of some kind or an illustrated write-up of towns along the Illinois Traction. I believe these things do more harm than good. The merchants along

your line must surely get tired of the importunities of these solicitors, and they have the right to think that the Illinois Traction or any other road is big enough to get out its printed matter without the help of outsiders. We get out our own printed matter, design the sketches, write the copy and sign the vouchers, and our timetables are not made a medium for a miscellaneous bunch of advertising secured from the business men upon whom we depend.

DESIRABLE PLANS

Another good feature which may be worked out successfully is a booklet calling attention to the attractions to be found in the cities and parks along the line. This should be well printed and well illustrated and with no more reading matter than is necessary to tell the story. It should contain a condensed limited timetable and should have in it pictures of the equipment.

Another advertising feature which we find very successful is the souvenir postal card. These should be well printed and the subjects should be appropriate. Last year at the State Fair we had a booth from which we distributed advertising matter, and I had a good opportunity of observing the attractiveness of various forms of advertising matter. As an experiment we would offer the postal cards at intervals, and while the people would take our booklets, timetables, etc., they would mob the booth when the postal cards were offered. This year I intend to give them what they want and have ordered 200,000 of these cards for use at the fair.

Once a year we have a big newspaper edition, and this is perhaps our biggest advertising stunt. An eight-page section of the newspaper is devoted entirely to the Illinois Traction System. It is full of illustrations, and the reading matter is all straight information with the advertising feature eliminated. It is the kind of stuff that any paper is glad to print in its news columns. Arrangements are made with about fifty of the leading papers down the State and these sections are furnished them with their heading and date for circulation in their regular edition. Last year we circulated 186,000 of these papers at a cost of about $2,300.

After a great many different trials we finally hit upon a terminal time card which we think fills the bill. It is well printed on heavy cardboard and shows the trains one after another with the leaving time in large figures and after that the arrival of the train at the various terminals. One can run his finger down the leaving-time column, find the train he wants and after that its arrival at his destination.

During the year we get out cards devoted to freight and express service. These cards are for the convenience of shippers and besides the map and leaving times of the various fast freight trains show prominently the station list.

PERMANENT NEWSPAPER CAMPAIGN

Backing up this line of permanent advertising we keep up a continual newspaper campaign. Any time we do anything that we think is pretty good we are not at all modest about it and are not afraid to toot our own horn. These stories are written in newspaper style and are mailed to the various papers with a request to run them or not as they see fit. Not a day passes but the Illinois Traction System will be found in headlines in down-state papers.

SPECIAL ADVERTISING

Our special advertising follows the usual forms and we get out dodgers and posters and use newspaper space. We also find window cards very effective for excursion work. I think that in this advertising, as well as all others, attractiveness should not be sacrificed to economy. A few more dollars spent on designs and printers' ink will make your fliers read where an unattractive smudgy dodger will go in the discard. In all this work we try to make our advertising lively. For instance, in a recent excursion in connection with a steamboat trip on the Illinois River the ad was headed with the following jingle:

"Know electric travel joys;
See the Upper Illinois."

In our copy we also run little catchy lines like the following:

"The Illinois Traction is the road of satisfaction."
"Travel is perfection under I. T. block protection."
"Traction parks for summer larks."
"Traction trip leaves pleasant memories."

If possible, in our "ads," we run a cut or some design. We also keep impressing the people with the comfort and cleanliness of electric travel. In all our advertising matter we convey the idea of safety by a block signal cut. Once a year for the State Fair at Springfield we have a billboard campaign of a month. This takes in all the towns on the line and we practically cover the lower part of the State. Eight-sheet posters are used, got up in colors. These posters carry the map and a signal picture and not only serve the purpose of advertising the State Fair, but also impress the idea of safety, which is the real object aimed at.

RELATIONS WITH NEWSPAPERS

This brings us to the last but to my mind the most important part of the publicity man's work, and that is the newspaper. We have contracts with over 300 papers. These are on a mileage basis. I am inclined to think that this is about the only way to handle the newspaper advertising. In most cases newspapers have no difficulty in securing passes, and in issuing mileage you get something in return.

I think there is no doubt that the newspaper is the most valuable medium. Too much cannot be said upon the relations between the company and the press. The newspaper men anywhere want to be fair, and if they are met half way these relations redound to the benefit of the company. Don't forget for a minute that a reporter is paid to get and print the news. The measure of his success lies in the stuff that he prints, not in the excuses he makes. The best asset any road can have is the friendship and co-operation of the boys along the line. Some managers take the stand that the reporter is a pest, prying into things that do not concern him. They resent his visit and wave him aside as a person of no consequence. You cannot expect the reporter to entertain any too friendly feelings after treatment of this kind. He comes into your office doing the work for which he is paid. It is his business to get the news. Treat him with consideration and you will find his friendship can be depended upon at all times. I believe that the newspaper boys are the lowest paid, the brightest, most energetic and enthusiastic workers we have.

Don't overlook the fact that the reporter works while you sleep. He may be a cub getting $10 a week, but when he talks he does so to ten, twenty or thirty thousand people. His good will is worth having. He is the one person on earth that is not impressed by wealth, power or position. The story is the thing, and when he is on the hot end of a good yarn all look alike.

The newspaper boys along the Illinois Traction are our friends. We do everything possible to help them in their work. If we have trouble they know that the details will be given out at headquarters as readily as if the story was a favorable one. You cannot expect a newspaper fellow to help you out printing stories of good things you do and then when a real big story breaks thank you for attempting to suppress the news. This is the most important work of the publicity department, and it is something which the steam roads seem entirely to overlook.

Electric railway advertising sums itself up in keeping everlastingly at it with good snappy printing matter, telling of the advantages of electric travel, letting the people know, through the press, what you are doing for their benefit, and in never forgetting that your success is measured by the esteem in which you are held by the people along the line. If they like you they will boost and ride.

Conference of Governors of States

The Proceedings at the Closing Sessions Included an Address by Governor McGovern of Wisconsin on State Control of Public Utilities

Governor Hadley of Missouri and Governor Aldrich of Nebraska delivered before the Governors in conference at Spring Lake, N. J., on Sept. 14, addresses on "The Right of the States to Control Intrastate Commerce." These papers, with miscellaneous business, occupied all of the morning session. At the afternoon session Governor McGovern of Wisconsin spoke on "State Control of Public Utilities." In the ensuing discussion the subjects of intrastate commerce regulation and state control of public utilities were treated together.

This discussion centered around a proposal made by Governor O'Neal of Alabama that a committee of the Governors be appointed to argue before the Supreme Court of the United States the right of the states to regulate commerce within state borders. The Minnesota rate case, in which Judge Sanborn, of the Federal Circuit Court of Minnesota, held that the states had no right to regulate rates, on the ground that such regulation would interfere seriously with the regulation of interstate commerce, and similar litigation affecting other states, will reach the Supreme Court of the United States at an early date. The discussion showed that the Governors were practically unanimous in their support of Governor O'Neal's motion. Under an amendment offered by Governor Stubbs of Kansas and accepted by Governor O'Neal, the motion that the committee should consist of Governors Harmon of Ohio as chairman, Hadley of Missouri and Aldrich of Nebraska was carried with only one dissenting vote. The meeting was united, however, in its belief that if the states are denied the right to regulate commerce within their respective borders they will be without one of the most important powers inherent in government, and that all powers not specifically granted by the Constitution to federal authority should be retained by the individual states.

STATE CONTROL OF PUBLIC UTILITIES

The address of Governor McGovern of Wisconsin on "State Control of Public Utilities" was in part as follows:

"The basic legal principles underlying governmental regulation of public utilities, however novel may be their application to present industrial conditions, are as old as the common law. They are founded upon the very elementary distinction between a public and a private calling. One is clothed with a public use and interest, while the other is not; and this public interest has always in the eye of the law justified regulation in behalf of the people as a whole. The nature and character of the business of utilities is such that competition is inoperative in determining service or rates, and the only choice left to the public is between regulated and unregulated monopoly. It goes without saying that the right of the state to supervise monopolies is as ancient as it is obvious.

"But it may be urged that the exercise of this power, the enforcement of this right, is a legislative function which cannot lawfully be delegated to an administrative board or commission. This is very true; it does not, however, militate against the practical utility of these commissions. Most assuredly it is the Legislature and not the commission that has power to regulate. It is the Legislature that does regulate. It is the Legislature that creates the commission, defines its powers, establishes rules for its guidance and determines the entire policy to be pursued. The commission merely ascertains the facts of each case as it is presented, and applies to these facts the law already laid down by the Legislature. It is purely an administrative body with administrative functions only, although these functions have become so immensely difficult and important that we sometimes conceive them to be either legislative or judicial in nature, or both. Upon the other hand, the rule laid down by the Legislature is often a very simple and elementary one; in the case of Wisconsin utilities merely that the service and facilities furnished shall be reasonably adequate and the rates charged shall be reasonable and just. Manifestly the difficulty here is not in formulating a rule of action, but in applying it.

THE COMMISSION

"The Wisconsin commission is appointive, not elective; its members hold for a term of six years, and receive annual salaries of $5,000 each and expenses; they are required by law to be experts in the business committed to them, and are strictly forbidden from engaging in any other work or becoming interested directly or indirectly in any utility it may be their duty to supervise. Employed under them are about one hundred clerks and engineers, some of whom receive salaries equal to those of the commissioners themselves. The engineering staff, upon whom the members of the commission rely for all field and laboratory work, as well as for expert and technical examinations, is divided into groups, each working along some special line under the direction of an experienced chief. These men, wherever possible, co-operate with the members and employees of the tax commission, and when convenient do their laboratory work in conjunction with the scientists at the University of Wisconsin. Thus organized and supported, this staff is considered by many one of the most efficient ever organized for work of this kind.

"The Wisconsin law makes no distinction between privately and publicly owned utilities. Both are amenable to the same regulations. Both report their financial condition in the same manner and according to the requirements of a uniform system of accounting. This seems reasonable, for the patrons of municipal plants are entitled to the same protection against inefficient management as those of private plants, and a comparison of results obtained under these different systems of ownership has been of real assistance in the regulation of both.

INDETERMINATE PERMIT

"The mere fact of regulation of public utilities contains the implication that they are virtual monopolies; otherwise, supervision of them might not be expedient or even justifiable. The Wisconsin statute goes farther and frankly recognizes this condition by providing for the so-called indeterminate permit. Considering that where effective regulation exists competition is neither necessary nor desirable, the Wisconsin law provides that the short-lived franchises held by existing utility companies when it was enacted may be surrendered for intermediate permits. This enabled the utility to secure a monopoly of the territory it occupied, during good behavior or until the plant should be acquired by the public at a fair valuation. In this way unnecessary duplication of equipment, unnecessary augmentation of fixed charges and cut-throat competition are prevented, and a more economic and satisfactory service is secured. By doing away with short-time franchises, moreover, a speculative element is eliminated from public utility investments, and the cost of financing enterprises of this sort is reduced.

"Thus commission control is protective as well as regulatory—protective of the utility, I mean. The requirement that every person desiring to start a new utility shall first obtain from the commission a certificate of public convenience and necessity further exemplifies this policy. In order that each existing company, so long as it properly serves the public, may be free from fear of invasion of its

field by rivals possibly more powerful than itself, it is provided that every utility having an indeterminate permit shall have an exclusive monopoly of the business in which it is engaged, except in those rare cases where the commission after hearing may determine that public convenience and necessity require a second utility to divide the field or to supplement inadequate or defective service. 'Sandbagging' and 'paralleling' are thus very properly and effectively outlawed.

"The last report of the Railroad Commission shows that seventy-two corporations representing 37 per cent of the gross earnings from utility business in Wisconsin, immediately upon this law going into effect, decided to exchange their franchises for indeterminate permits. Many others came in afterward. Stability in investments was thus obtained, as appears from the fact that the securities of utilities operating under a permit as a rule command a higher price in the market than those that operate under the old-time franchises. The period within which utilities might thus exchange limited-time franchises for indeterminate permits was at first definitely prescribed by the Legislature, then extended from time to time, and the last session made the indeterminate permit universal and compulsory. At present, therefore, there are no special franchises in Wisconsin.

STOCK AND BOND LAW

"Another important feature of the Wisconsin law is control of stock and bond issues. The capitalization of utility companies is limited to the actual value of the property used in the public service. The reason for this requirement is obvious. Stock watering is always and everywhere an evil of far-reaching and especially baneful significance, but nowhere is it more mischievous than in the case of public service corporations. Wisconsin has abolished it, so far at least as public utilities are concerned. Besides, experience teaches us that to be effective public regulation must be complete. It cannot be complete without control of the issue of corporate securities. In determining what is adequate service or a just rate account must be taken in every case of the value of the plant. The value here spoken of is, of course, the actual, true value. There is no reason in the world why with complete control this value should not correspond with the stock and bond value, taking these securities at par. If so, control will be facilitated, the interests of inexperienced investors safeguarded, and the utility placed on a stable and conservative basis.

PROCEDURE

"Should a court review of the order of the commission be desired the statute provides for a speedy hearing. The aggrieved party must begin his action within ninety days, and all such actions are given precedence over any civil cause of a different nature pending in court. Up to the present time only seventeen orders of the Wisconsin commission have been called in question in this way, and in no case has any order been reversed.

RATES

"What now is the basis of a just or equitable rate? Some railway managers and superintendents of public-utility plants contend that it is the value of the service to the shipper and consumer. But this method of fixing rates at 'what the traffic will bear' has become so odious and is so manifestly a cloak merely for extortion, discrimination and favoritism that extended discussion of it is no longer profitable. It involves so many elements, some subjective and some objective, and so varies with differences in person, time, place, commodities and other conditions, as to afford really no scientific basis whatever for rate-making. Entirely aside from its whimsicality and the favoritism it invites, it is too indefinte and uncertain to be formulated into a workable basis for rate-making in even a majority of cases. Practically every commission, legislature and court which has seriously considered the subject has rejected this criterion for the more definite and scientific idea of the cost of service. This basis is definite, fair, ascertainable and economically justifiable. It bears out the same relation to rates that the cost of production does to the price of commodities; and just as the cost of production of wares and merchandise determines their normal value which market price constantly approximates, but with which it seldom coincides, so the cost of service rendered by public utilities determines normal rates toward which actual schedules should steadily be made to approach.

VALUATION

"Many interesting and highly important data have been gleaned as to the relation under varying conditions of production of fixed investment or 'overhead charges' to variable or current expenses, and the ratio of each of these in turn to the value of the product. First of all, the owners of utilities are entitled to a fair return upon the reasonable value of the property devoted to public use. This calls at once for a valuation of the physical property of the plant. But this is not all. To it must be added something for the 'going value' of an established concern and possibly something also for outlays and services expended in the past in upbuilding the plant.

"The Wisconsin law requires the commission to value 'all the physical property' and 'all the property used and useful for the convenience of the public' belonging to every public utility in the State. As there are more than a thousand of these plants and the commission has appraised only about one hundred, it is evident that this is work that cannot be quickly dispatched. But it should be understood that among the one hundred valuations made are included all the steam railroads, the Milwaukee Electric Railway & Light Company and many of the more important among the minor utilities of the State. Indicative of how well this work has been done is the fact that no appeal has ever been taken, either by a utility or a municipality, from any valuation made by the commission, and in some instances the utilities admitted that the inventories prepared by the commission were the best that had ever been taken.

UNIFORM ACCOUNTING

"With accurate information as to the value of the plant and proper distribution of the cost of the service according to modern systems of accounting it is possible to make rate schedules that are equitable to all classes of consumers, that yield a reasonable rate on the investment and that eliminate waste while promoting the maximum usefulness of the plant.

"When this act went into effect the commission called upon the utilities to submit a statement of their financial condition. The naïveté of the response has been so well described by F. L. Holmes, of Madison, that I take the liberty of quoting from his account of it. 'The returns,' he says, 'were amazing and amusing. Some companies kept no books; the accounts of others were mere memoranda or check-book stubs which meant nothing. The bookkeeping affairs of one municipal plant were recorded in a vest-pocket account book, tied with a woolen string. Often the owner and manager carried the affairs of the corporation in his head. Few plants carried a depreciation account, and fewer managers understood the purpose of such a fund. Where several utilities had been merged one general account was maintained for credit and another for debit. Business system was unknown. A majority of municipal plants received no credit for the service rendered the city. The revenue went into the general fund, and when there was any expense the city made an appropriation. Often city employees attended to the detail labor of the plant, but the salary for services was paid out of the general fund.'

"As required by law the commission put an end to this rule-of-thumb work and prescribed a uniform system of cost accounting for all the utilities of the State. The result was most gratifying. By introducing system where chaos reigned and compelling uniformity both public and private plants were for the first time placed upon a basis of

efficiency and economy, and an enduring foundation was laid for intelligent future supervision. It should be some satisfaction to the commission after all this educational work has been done to know that its classification of accounts has since been voluntarily adopted by utilities in other states, in Canada and even in Mexico.

RESULTS

"It is interesting to contrast the predictions of disaster made by the opponents of railway and public utility regulation with the actual results of the operation of these laws. 'Radical,' 'populistic,' 'revolutionary' were some of the mildest terms used. It was pointed out that the entire country, and especially the State of Wisconsin, had prospered under the *laissez faire* régime of earlier days, and it was said that any such restriction of commercial liberty as these laws proposed would result in a system of bureaucratic control, which must inevitably disorganize business and destroy prosperity.

"In striking contrast to these lugubrious forecasts stand the actual results of commission control. Most emphatically has it been a good thing, not only for the public, but for the utilities also. The public has made an immense financial gain, just how much it is difficult to state with entire accuracy, for many orders of the commission concerning rates lowered some and raised others. But it has been conservatively estimated that in the matter of freight rates alone there has been an average annual saving of at least $1,200,000, in passenger fares of not less than $800,000, and in other forms of public service a proportionately large amount.

"This, of course, is not all clear gain. The commission has done a great deal of work, most of it of an expensive sort, and this cost has been borne in large part by the public. In the regulation of railway rates it has been necessary to separate State from interstate traffic, freight from passenger service, and to apportion the gross cost of transporting freight among the various commodities and classes of merchandise submitted for shipment. Substantially the same sort of analysis and discrimination has been necessary in the case of the other utilities. It is work that calls for a very high order of ability and expert training. In round figures the cost of maintenance of the commission, including the expense of hearings, of furnishing transcripts of the proceedings free of charge to all interested parties, of appraisals, of publications and of service and accounting inspections, is about $100,000 a year.

"A large outlay, an expensive commission, you will say; but in view of the fact that the railroads and other utilities are invariably represented at every important hearing by the very ablest engineers and experts the State cannot afford to indulge in cheap or short-sighted economy.

"But hereafter at the prescribed rate of $1 for each $1,000 of the face value of corporate securities thus issued the revenue derived from the operation of the stock and bond provision alone will in all probability be sufficient to defray the entire cost of the commission.

"Hand in hand with reduction in rates has gone an equally important improvement in service.

"The genuinely constructive and enduring character of this method of control is best demonstrated, however, by the fact that while the people have thus gained enormously, the utilities have not suffered. On the contrary, under this system they have prospered as never before. Lower rates have not been followed by diminished income, but by inviting larger patronage have resulted instead in an actual increase in revenues. To the utilities, therefore, the net outcome has been a gain. As evidence of this prosperity the last annual report of the Wisconsin commission shows that during the year the operating revenues of electric utilities increased 20 per cent, their net income 29 per cent and new construction for the year 145 per cent. The operating revenues of water utilities meanwhile increased 7 per cent, their net income 13 per cent and new construction 24 per cent. Gas utilities increased their operating revenues 8 per cent, their net income 15 per cent and new construction 24 per cent. Telephone utilities increased their operating revenue 11 per cent, their net income 9 per cent and construction for the year 14 per cent. Railway and traction lines on the average increased their operating revenues 13 per cent, their net income 8 per cent and construction an equal amount.

"All utilities in Wisconsin are in a more flourishing condition now than ever before, and are planning to extend their operations far into the future. What Brandeis and Emerson have been doing for private corporations and the railways of the country, the Wisconsin commission has done for the utilities of its State.

"Taking a longer period, as we may in the case of railway regulation, which was begun earlier, the results are even more striking. For the fiscal year ended June 30, 1905, the total mileage of railroads in Wisconsin was 6,931 and the total operating revenue $50,144,702. This was the year immediately before commission regulation of railroads began. Five years later, or during the fiscal year ended June 30, 1910, the total mileage had increased to 7209, an increase of 278 miles, and the total operating revenues amounted to $65,055,928, an increase of nearly $15,000,000. Thus, notwithstanding the decrease in transportation rates and improvement in service enforced by the Railroad Commission, the operating revenues of the railroads of Wisconsin increased approximately 30 per cent. As an indication of the general prosperity of the State meanwhile, it may be worth mentioning that under these new policies the deposits in commercial and savings banks in Wisconsin increased in round numbers during this five years from $187,000,000 to $276,000,000, or 51 per cent.

DISCRIMINATION ABOLISHED

"Not only have rates been lowered as a whole to the advantage of both the people and the utilities, but discrimination among patrons has been abolished. Nothing could be more desirable. Speaking of the condition of affairs when these laws went into effect, Prof. B. H. Meyer, formerly chairman of the Wisconsin commission, but recently appointed member of the Interstate Commerce Commission, has said: 'The whole State of Wisconsin was streaked and plastered with discrimination in the rates of utilities,' and he mentioned thirty-two telephone companies, every one of which gave at least eight subscribers out of every 100 either free or reduced-rate service. It goes without saying that the cost of this service was not borne by the telephone companies, but by the subscribers who paid full rates. When the Wisconsin law went into effect it was estimated that discrimination and rebates to favored customers of telephone, water, heat and light companies amounted to as much as $2,000,000 annually. Even as late as August, 1909, 52 per cent of the telephone companies, 60 per cent of the water plants, 35 per cent of the gas companies and 58 per cent of the electric lines admitted they still maintained discriminatory rates.

"Since then there has been a change. All schedules and rates are now on file with the commission, and these are the only rates that can be collected. Discrimination is absolutely forbidden, and the law in this respect is well obeyed. The effect of this change upon industrial and commercial enterprise and the elevation in moral tone of the communities where these abuses formerly existed cannot easily be exaggerated. Peace, contentment and self-respect have taken the place of suspicion, injustice and guerilla warfare.

WHOLESOME EFFECT UPON PUBLIC LIFE

"Times were in Wisconsin when the railroads ran or tried to run the government of the State and the minor utilities frequently sought to boss the cities, towns and even villages. They contributed liberally to campaign funds, urged their supporters and lobbyists to become candidates for public office, and in close election districts colonized voters

in the old conventional way. Now, one and all, they are in this sense absolutely out of politics. There is indeed no reason now why public service corporations in Wisconsin should wish to dabble in public affairs. Their relations to the people of the State have been definitely and finally determined. They no longer have anything to gain or lose by intermeddling in politics, and apparently they have decided to retire for good. What the elimination of public service corporations from participation in political campaigns signifies in the purification of public life no one here needs to be reminded.

MAKES INVESTMENTS SECURE

"The operation of the stock and bond law, the indeterminate-permit provision and other cognate requirements of the public utilities law have encouraged investment in the securities issued by these corporations. Most gratifying of all is the recent tendency toward local investment in these securities and consequent local support of the utilities. The natural result is the establishment of better and friendlier relations between the utilities and the public. That the operation of the Wisconsin law has brought additional stability to investments of this sort is shown by the fact that practically every trust company and dealer in stocks and bonds engaged in selling the securities of plants located in Wisconsin advertises regularly in the financial journals the fact that these securities are issued under state regulation. The whole tendency of commission control is to remove public utility securities from the field of speculation and place them upon the solid basis of conservative and staple investments.

CONCLUSION

"A product of constructive legislation somewhat novel in conception, the system has, nevertheless, worked admirably. It is comprehensive, effective, prompt and progressive—a demonstrated practical success. It proceeds upon the theory that these corporations are the servants, not the masters of the people. As servants it has protected, encouraged and instructed them in all matters of economy and efficiency, just as it has summarily suppressed all assumption on their part to the rôle of masters. But in relentlessly enforcing fairness to the people it has not forgotten to be fair to the utilities. It has made the monopoly of each company within its appropriate field even more secure than it was before. It has systematized methods of accounting, and so given to the most backward the advantages of the very latest improvements in management. By control of stock and bond issues it excludes opportunity for wild-cat speculation and the altogether too familiar methods of 'frenzied finance.' It compels the maintenance of each utility at the point of maximum efficiency, and so safeguards legitimate investment. While protecting the citizen against extortionate rates and inadequate service, it insures to capital a reasonable return and to labor a fair wage. In a word, it has transformed what were formerly speculative ventures bent on exploiting the public into safe and conservative business establishments operated for the benefit and convenience of all."

LARGE SIGNS ALONG ILLINOIS TRACTION SYSTEM

The "Associated Retail Stores of St. Louis," sixty in number, have erected large signboards at intervals of 1 mile along the right-of-way of the Illinois Traction System for a distance of 20 miles north of St. Louis. Each signboard is about 8 ft. x 30 ft. in area and carries a painted announcement that any St. Louis retail store belonging to the association will refund the round-trip fare of passengers making substantial purchases and traveling less than 20 miles in each direction.

Work on the subway in Buenos Aires will begin some time in September. The tube will be constructed three blocks at a stretch in order to reduce the disturbance of street traffic to a minimum.

HEARING ON TRANSFERS IN NEW YORK

At the continued hearing on the rates of fare upon connecting or intersecting street railways in the borough of Manhattan, held before the Public Service Commission of the First District of New York on Sept. 19, 1911, Newton M. Hudson, who is auditor of the Second Avenue Railroad Company, placed the total value of all the property used in the operation of the Second Avenue Railroad at $4,048,663, and submitted in evidence an itemized statement showing the individual values which went to make up this total. For the six months ended June 30, 1911, the interest on this valuation at 6 per cent was $121,458, and upon this basis the proportion of the cost of transporting each passenger was 1.1 cents on the Second Avenue division, 1.76 cents on the First Avenue division and 1.81 cents on the Eighty-sixth Street division. On the whole system the cost per passenger was 1.39 cents. Adding the operating expenses, taxes and the interest on the value of the property employed in operation, the average cost of transporting a passenger on the Second Avenue main line for the six months ended June 30, 1911, was 5.06 cents; for the First Avenue division, 6.78 cents; for the Eighty-sixth Street division, 6.84 cents, and on the Second Avenue Railroad as a whole, 5.79 cents. A similar statement for the period previous to the receivership had not been prepared because the books of the company were not available.

Edward A. Maher, president and general manager of the Third Avenue Railroad, was recalled. He said that so many factors entered into an exact determination of how much it costs to carry a passenger a mile that it was impossible to determine the cost. Short-haul passengers were vital to the life of a street railway system under a flat rate of fare. The transfer system tended to reduce the number of short-haul passengers. Even carrying passengers for the proposed 3 cents for one transfer and 2 cents for a second transfer would result in loss of revenue to the company, but should be done as a matter of policy.

Mr. Maher said that the present rate of fare was inadequate to yield a fair average return upon the value of the property actually used in the public service. The conditions that exist to-day compared with conditions a few years ago in respect to cost of operation, wages paid and various other items entering into maintenance and operation left the margin of profit very slight, except in cities where traffic was dense and the mileage small. As soon as the universal system of transfers was abolished in the Bronx the receipts of the Union Railway increased and the abolition of the free transfer system between the Union Railway and the Westchester Electric Railway and the Yonkers Railroad resulted in an increase in receipts. The greatest abuse of the transfer privilege was on Sundays and holidays by people whose purpose was pleasure riding. It was not infrequent before the abolition of the transfers for a fourteen-bench open car carrying sixty passengers to leave Yonkers with only two cash passengers.

Asked what in his opinion would be the result of a free transfer system instead of the proposed 3-cent and 2-cent joint rate, Mr. Maher said:

"It would be most disastrous, not only to the company, but to the public. It would mean a very large decrease in the net earnings. The company could not keep up its equipment and property as it is now doing and the wages of the employees would have to be decreased. The greatest sufferers would be the public. The present system, which the Third Avenue Railroad has built up, with its lines carrying people 13 miles or 14 miles for 5 cents, is doing all that it ought to be asked to do. The company ought to be encouraged to continue the competition that it has energetically worked up since the appointment of the receiver."

The hearing was adjourned until Sept. 21, 1911.

The platform guards of the Union Elevated Loop in Chicago use megaphones for announcing trains.

RESULTS WITH TANTALUM LAMPS IN CHICAGO

The engineering department of the Chicago Railways Company has completed a twelve months' investigation of the life and service of tantalum lamps on its cars. An article describing the methods followed in studying the behavior of tantalum lamps on Chicago Railways cars was presented on page 1189 of the ELECTRIC RAILWAY JOURNAL for Dec. 17, 1910. The results of twelve months of study confirm the information obtained during the test period and presented in the earlier article. In general these results are that the renewals on 32-cp lamps are 272 per cent per year and the renewals on 16-cp tantalum lamps are 100 per cent per year. These average results are based on 10,350 car months and 27,708 lamp renewals during the period from May 23, 1910, to May 31, 1911.

At the beginning of the test period the lamp installation consisted of five 32-cp clear, pear-shaped globes placed two on the platforms, three along the center of the upper deck and two lamps in the headlights, and twenty 16-cp lamps with clear, pear-shaped globes placed nine on each side of the deck rail and two in the sign boxes. The type of lamp used is rated at 2.3 watts per candle on 115 volts and is manufactured by the Bryan-Marsh Lamp Company. It has a standard winding. The lamps used first were rated at 35 watts for 16 cp and 70 watts for 32 cp, but the heavier filament has since been adopted. During the year of observation and after 644 cars had been equipped the 32-cp lamps in them gradually were replaced by 16-cp lamps, which show longer life. Previous to the replacement these 32-cp lamps were operated, seven to a car, for 4350 car months, during which time 6956 renewals were made. A summary of the data obtained follows:

Columns 5, 6, 7 and 8 show the progress of replacement of 32-cp lamps by 16-cp lamps. Columns 5 and 6 indicate the number of cars in which 32-cp lamps were replaced by 16-cp lamps each month and show that the replacements in 495 cars were made by the engineering department and in eighty-seven cars by the carhouse foremen. Column 7 is the total for columns 5 and 6. Column 8 gives the car months equivalent to the fractions of months which the cars carrying 32-cp lamps operated before 16-cp lamps were substituted. Columns 9, 10, 11 and 12 show the car months and the renewals of 32-cp lamps. Thus a total of 6956 renewals was made on 32-cp lamps during 4350 car months of operation with the original installation of seven lamps per car. Columns 13, 14 and 15 refer to 16-cp lamps. Column 13 shows the number of car months during which 16-cp lights were used only for the side and sign lighting. Column 14 shows the number of car months during which all the lighting was done by 16-cp lamps and column 15 shows the 16-cp lamp renewals for each month. Thus column 4 = column 12 + column 15, and column 3 = column 9 (or column 13) + column 14. It is noted that columns 9 and 13 are the same because each covers the same period for the mixed installation of 32-cp and 16-cp lamps.

In connection with column 15, if it is desired to divide this by column 13 + column 14 in order to get the renewals on a full-car basis, the figure taken from column 13 first should be multiplied by $20 \div 27$, there being but twenty 16-cp lamps out of a total of twenty-seven lamps on the cars with mixed equipment.

RESULTS OF YEAR'S OBSERVATION

Referring again to the table, it will be noted that the total of column 4 divided by the total of column 3, that is, $27{,}708 \div 10{,}350 = 2.64$, or the number of mixed renewals per car month, also that the total of column 12 divided by the total of column 9, $6956 \div 4350 = 1.60$, or the number of renewals per car month for 32-cp lamps with seven installed on each car. Similarly using the totals of columns 14 and 13 with the factor as earlier noted, $6000 + 20/27 \times 4350 = 9222$ full car months, and the total of column 15, $20{,}752 \div 9222 = 2.25$ lamp renewals per car month, or twenty per car year.

Presented in another manner, a mixed installation of lamps, that is twenty 16-cp and seven 32-cp lamps installed in each car, would require renewals as follows:

Renewals of 16-cp lamps = 20/27 of 2.25 = 1.67 renewals per car month, or twenty per car year.

Renewals of 32-cp lamps, as earlier shown, require 1.60 renewals per car month or nineteen per car year.

A full 16-cp lamp installation of twenty-seven lamps on one car would require, as earlier derived, 2.25 renewals per car month, or twenty-seven renewals per car year, or 100 per cent per car year; and the nineteen renewals on the seven 32-cp lamps in a car are equal to 272 per cent.

The present investigations showed that the average burning was close to 1500 hours per car per year and former investigations showed that with 64-watt carbon lamps the renewals were about four per car month as compared with 2.25 per car month for tantalum lamps. A comparison of the energy saving by the use of 37-watt tantalum lamps, as compared with 64-watt carbon lamps with twenty-seven lamps in a car, shows the energy demand during the burning hours to be 729 watts less for the tantalum than for the carbon lamps. With 1409 cars equipped the reduction in average demand during the burning period is 1027.16 kw; and for a year of 1500 hours the total energy saving is 1,540,741 kw-hours. At 1 cent per kw-hour, which is a low figure because the lamps are burned during the hours of peak load when energy is the most expensive, the yearly saving is $15,407.41, or approximately $11 per car per year.

Some tests have also been made with Mazda lamps. These tests were made during the three summer months and thus do not cover the period of heavy burning. During 394 car days with twenty-seven Mazda lamps in a car but twenty lamps had to be renewed. These lamps were 20-cp, 25-watt rating and most of the time were installed on six cars. The results so far indicate that the renewals with Mazda lamps will be twenty per car per year with twenty-seven lamps installed on a car.

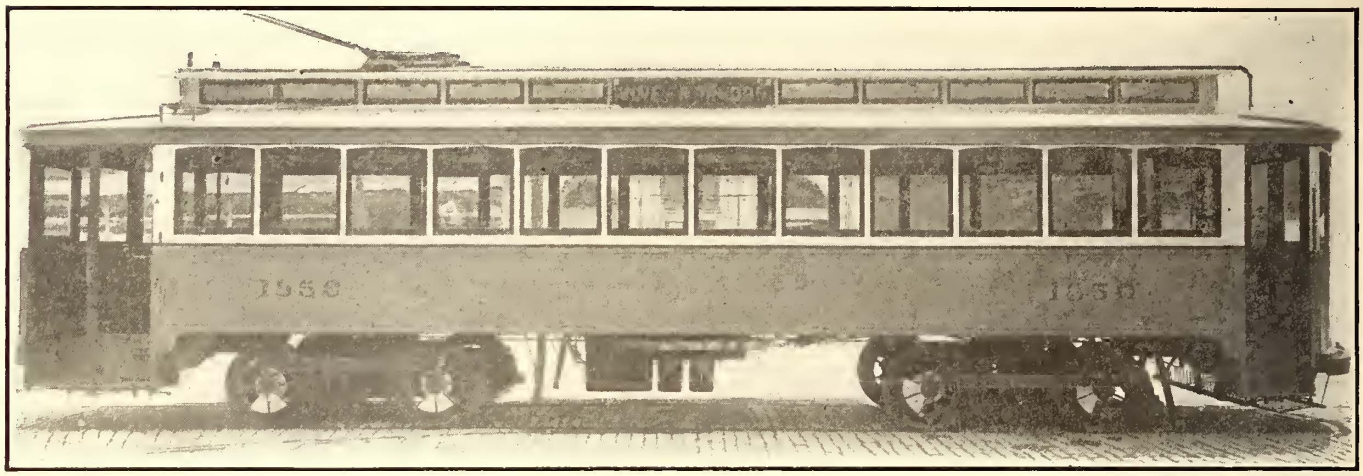
SUMMARY FOR 1910-11 TANTALUM LAMP INSTALLATION CHICAGO RAILWAYS COMPANY.

	Period, 1910-1911	Cars Equipped.	Car Months.	Total Renewals.	No. of Cars on Which 32-Cp. Center and Headlight Lamps Were Replaced by 16-Cp. Lamps: By Eng. Dept.	By Foreman.	Total.	Equiv. Car Mo. 32-Cp.	Renewals 32-Cp. Lamps: Car Months	Center.	H. Light.	Total 32-Cp.	Car Months 16-Cp. Lamps: Side and Sign Equip. Only	Whole Car Equip. 16-Cp.	Renewals, 16-Cp.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1910	5/23— 8/1	647	558	1,218	...	..	...	..	558	510	267	777	558	0	441
	8/1 — 8/31	649	644	1,109	...	..	...	..	644	431	258	689	644	0	420
	9/1 — 9/30	650	644	1,230	...	..	...	..	644	523	244	767	644	0	463
	10/1 —10/31	829	689	1,781	20	..	20	7	631	576	324	900	631	58	881
	11/1 —11/30	895	878	2,330	116	..	116	58	576	659	292	951	576	302	1,379
	12/1 —12/31	1,016	950	2,940	139	..	139	46	415	577	283	860	415	535	2,080
1911	1/1 — 1/31	1,073	1,004	3,707	59	19	78	21	312	529	241	770	312	692	2,937
"	2/1 — 2/28	1,179	1,080	3,382	63	19	82	33	242	307	152	459	242	838	2,933
"	3/1 — 3/31	1,276	1,244	3,614	96	19	115	66	160	192	157	349	160	1,084	3,265
"	4/1 — 4/30	1,356	1,300	3,098	2	..	2	1	93	154	51	205	93	1,207	2,893
"	5/1 — 5/31	1,409	1,359	3,289	...	30	30	13	75	169	60	229	75	1,284	3,060
	Total.....	....	10,350	27,708	495	87	582	255	4,350	4,627	2,329	6,956	4,350	6,000	20,752

LIGHT-WEIGHT SIDE-ROD CAR AT CINCINNATI

The Cincinnati Car Company has just completed for the Cincinnati Traction Company the first of fifty cars that embody several features of particular interest. Six of these cars will have trucks with connecting rods, thus utilizing the single motor on each truck for driving both axles. This feature of construction will be given a trial before any large number of cars are equipped with it. The cars here described were designed by Thomas Elliott, chief engineer of the Cincinnati Traction Company. The cars are of the pay-within type, the first to be constructed for the Cincinnati lines, and are light weight. Those cars with connecting-rod drive are equipped with two 75-hp motors instead of four 40-hp motors, with which the other double-truck cars in Cincinnati are operated. The bodies are arranged for single-end operation.

The general dimensions of these new cars are as follows:



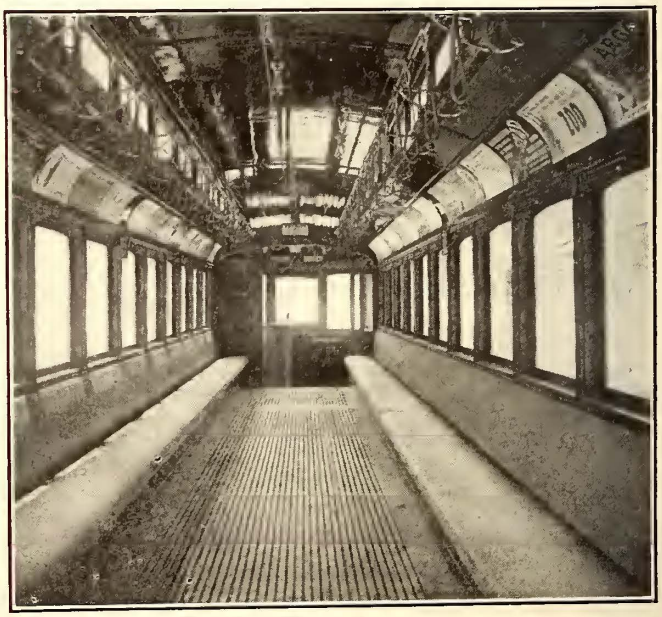
Side View of Cincinnati Side-Rod Car

The bottom frame of car body is of steel construction. The side sills are formed of 4-in. x 3-in. x ⅜-in. steel angles, extending for the full length around the sides and ends of the car body. The side walls are formed of 5/32-in. x 32-in. steel plates. The end sills are formed of 3/16-in. x 12-in. steel plate reinforced with 3-in. x 3-in. steel angle at the bottom, forming a bearing for the platform floor. The cross joists are made of 2½-in. x 3-in. steel angle, with wood filler to receive the flooring. The platforms are supported by two outer knees formed of 7-in. x 3½-in. x ½-in. steel angle.

There are twelve windows on each side of car, all arranged to drop into pockets clear of the sash rail. The roof is of the regular monitor deck pattern with removable type hoods at each end. Both ends of the car are vestibuled and the vestibules are inclosed on the devil-strip side of car. The step opening of the rear vestibule is provided with two sets of swinging doors forming exit and entrance, and these doors are operated by the conductor. The front vestibule step opening is provided with one set of swinging doors controlled by the motorman.

The interior finish of car body is of mahogany, including the headlining, which is of mahogany veneer. There are no end bulkheads at either end of the car. Seats are of the longitudinal type, on each side of car, upholstered with

View of Truck



Interior View

General Dimensions:

Length over corner posts	33 ft.	0	in.
Length over bumpers	44 ft.	0	ft.
Length of rear vestibule	6 ft.	0	in.
Length of front vestibule over dash	4 ft.	6	in.
Width over side posts	8 ft.	0	in.
Height from bottom of sill to top of roof	8 ft.	5½	in.
Height from rail to underside of sill		36½	in.
Truck centers	21 ft.	0	in.
Wheel base of truck	5 ft.	4	in.
Diameter of wheels		33	in.

rattan. The car is heated by means of the Peter Smith No. 3-P forced-ventilation hot-air heater, located on the front platform on the devil-strip side. The body bolsters are formed of steel channels.

The trucks, as will be seen from the engraving, are equipped with side connecting rods, dispensing with the ordinary journal boxes. Each truck is equipped with one Westinghouse No. 318 interpole 75-hp motor which is mounted on the rear axle. The type of control used is the K-40, single end. All the control wiring is run in iron conduit under car floor. The air brakes are the National Brake & Electric straight air, with 11-cu.-ft. compressor and 10-in. brake cylinder.

The weight of car body, exclusive of electrical or air-brake apparatus, is 14,486 lb. The weight of the car body complete, with electrical and air-brake apparatus, is 17,600 lb. Weight of two trucks with gears, 11,920 lb. The weight of the two Westinghouse No. 318 motors and gear is 6500 lb.

The weight of car complete and ready to run is 36,020 lb.

HEARING ON BRAKES AND HEIGHT OF CAR STEPS IN NEW YORK

Further testimony on the subjects of power brakes and heights of car steps was given before Commissioner John E. Eustis, of the Public Service Commission of New York, First District, at hearings on Sept. 18 and 20, 1911.

POWER BRAKES

Counsel for the Coney Island & Brooklyn Railroad called as a witness the company's instructor of motormen, who expressed the opinion that motormen take more chances with power brakes than with hand brakes and the percentage of accidents on hand-brake cars was less than with cars equipped with power brakes. He thought cars weighing less than 30,000 lb. could be operated with hand brakes more safely than with power brakes.

S. W. Huff, president Coney Island & Brooklyn Railroad, said all of the company's cars weighed 25,100 lb. or less with the exception of twenty, which weighed approximately 32,000 lb. He was willing to equip these twenty heavy cars with air brakes.

W. G. Gove, mechanical superintendent of the Brooklyn Rapid Transit Company, was next called. He testified that his company operated 500 double-truck closed cars weighing 25,100 lb., 630 double-truck open cars weighing 26,460 lb., 120 double-truck open cars weighing 23,070 lb. and 563 double-truck semi-convertible cars weighing from 28,000 lb. to 35,000 lb., all of which were equipped with hand brakes only. In addition the company operated 452 semi-convertible cars weighing from 48,000 lb. to 52,000 lb. which were equipped with air brakes. He estimated the cost of equipping hand-brake cars with air brakes at $400 per car. If all double-truck hand-brake cars were so equipped the total cost would be about $730,000.

E. G. Connette, transportation engineer of the commission, was put on the stand at the opening of the hearing on Sept. 20. He described the method of arriving at the weight of 25,000 lb. which was proposed for the limiting weight of cars equipped with hand brakes. Accident statistics of all lines in the city for 1909 and 1910 had been compiled and classified by the weights of the cars involved in the accidents and the types of brakes. An undue preponderance of accidents had been reported to cars equipped with hand brakes and weighing more than 25,000 lb. The average number of accidents per 100 hand-brake cars in service on all lines was 32.4 and per 100 air-brake cars 25.2. He referred to a test made on Sept. 19 with a car weighing 38,000 lb. and equipped with air brakes and Peacock hand brakes. From an initial speed of 17 m.p.h. the car was stopped with the air brakes in 128 ft. and with the hand brake in 144 ft. He thought if all hand-brake cars were equipped with as efficient a hand brake as this the conditions would be improved materially. With regard to the motormen taking chances with air brakes he thought this was a matter of discipline. There was no use in making improvements in any detail if the men themselves were not kept up to the same standard of efficiency. With the maximum traction trucks used in New York he thought that hand brakes probably were as efficient as air brakes.

Commissioner Eustis when asked if the commission proposed to draw the line absolutely at 25,000 lb. weight said that reasonable latitude would be allowed.

Several operating officials of the Second Avenue Railroad were put on the stand and all testified that in their opinion cars weighing less than 30,000 lb. could be operated through the congested districts traversed by that road more safely with hand brakes than with air brakes. The average schedule speed was about 7½ m.p.h. and there were numerous grades. Air brakes which were powerful enough to hold loaded cars in descending these grades would cause the wheels to skid on level track with an empty car if applied with full force. It was instinctive on the part of a motorman to apply the brakes with full force in an emergency.

On the completion of this testimony the hearing was closed.

HEIGHT OF CAR STEPS

On Sept. 20 the subject of height of car steps was taken up.

W. G. Gove, mechanical superintendent Brooklyn Rapid Transit Company, produced a statement of height of steps of the closed cars of that company. The only cars in which the height of the first step exceeded 15 in. were 452 semi-convertible cars which had steps 15⅝ in. high. He said these steps could be dropped easily by substituting longer hangers.

C. S. Banghart, general superintendent New York & Queens County Railway, was asked about the height of steps of the cars of that company. Most of these cars had steps exceeding 15 in. in height, the maximum being 16½ in. The New York & Long Island Traction Company had four cars with double steps which were 13 in., 9¾ in. and 8¼ in. respectively from the ground. The witness thought that double steps could be applied to most of the cars of the New York & Queens County at a cost of from $60 to $75 per car.

The hearing on this subject was adjourned until Sept. 27, 1911, at which time the matter of folding steps and platform doors will be taken up.

CONVENTION BULLETIN OF MANUFACTURERS' ASSOCIATION

The exhibit committee of the Manufacturers' Association has sent out a final bulletin relating to the arrangements for the Atlantic City convention. About 74,000 sq. ft. of exhibit space has been assigned to date, and applications have been made for 300 ft. of track space for cars.

EXHIBITS

The offices of the association will be on the left of the main entrance to the Pier, and will consist of the following: Registration, executive committee, president and secretary, vice-president in charge of exhibits, finance and entertainment committees; an information bureau in charge of competent clerks, who will take care of all incoming and outgoing mail, telegrams and wireless messages; messenger boys, or anything else from calling a taxi to ordering a dinner at the hotel, which can be done from the booths. It is the intention to have sufficient pages and maids to give good service. All mail, cards and telegrams will be delivered at the booths as they arrive at the office. Badges for employees should be secured for all employees. They may be obtained from the exhibit committee on the payment of $1, which will be returned on receipt of badge after the convention.

Owing to the large increase in exhibits, which means a corresponding increase in electric signs, special lighting, rugs, furniture and decorations, including plants and flowers, to say nothing of the call for help of all kinds and the rush at the last minute, caused by delays in transit of shipments, or possible bad weather previous to opening, it is most important to place all orders for any of these items at once, and not wait until arrival at Atlantic City. The exhibit committee has done everything in its power to have everything ready for the exhibitors, but the exhibitors can do much for themselves if they will look ahead and do all they can in the way of making prompt and early shipments and placing orders now for everything needed. The director of exhibits will open his office on the Pier Sept. 26, after which all correspondence should be sent there.

CONVENTION OF LUBRICATION EXPERTS

The twentieth annual convention of the mechanical experts of the Galena-Signal Oil Company was held at the company's general offices at Franklin, Pa., Sept. 11 to 15, inclusive. The company makes a practice of bringing to these meetings its representatives from all parts of the world, and this year more than one hundred of its experts and salesmen were in attendance. As in previous years, the discussions were confined to specific questions relating to lubricating methods and practices. These questions for the most part were submitted by the experts themselves for the purpose of eliciting information from others regarding their experience in handling particular lubrication problems. The Galena-Signal Oil Company has specialized on railway lubrication for the past forty years, and these annual conventions have proved of great value to the representatives who attend them, not only in the exchange of information on the floor of the convention, but also in the informal conversations after the meetings have adjourned.

At the convention this year a total of 102 questions were submitted for discussion. These were divided into five groups, as follows: Locomotive lubrication, car and coach lubrication, power house machinery lubrication, electric-car journal and motor lubrication, and miscellaneous lubrication problems. Some of the representative questions discussed under these headings included the following: Why is more trouble experienced from a hot box when it originates at either end of the journal than when it originates in the center? What improvement has been made in the lubrication of railway motor cars? What lubrication troubles have been experienced in turbine power stations with different types of turbines? What is the best method of lubricating internally the air end of dry vacuum pumps? Has any new appliance been found to be better for use on railway motors than the Galena oil cup? What has been done to prevent water getting into oil cups? What progress has been made in economical and efficient lubrication of gears, and is there any device for using oil on gears? What is being done to prevent wear on bearing shells and housings of old and new-type motors? What have been the developments regarding the lubrication of roller and ball bearings? Has a limit been placed on the oil supply by any electric road similar to that in vogue on most steam lines, and if so with what success? Are hot journals frequently caused by improperly hung brakes, and how can it be determined if the brakes are causing the trouble?

During the convention many of the representatives in attendance took advantage of the opportunity to visit the oil field on Point Hill, across the river from Franklin. This field is about ½ mile wide by 2 miles long and produces a grade of crude petroleum known as Franklin heavy oil, which is found nowhere else in the world. The Galena-Signal Oil Company has a standing contract for the entire output of this field. The oil taken from this field is much heavier than the ordinary Pennsylvania oil, and it is said to be the finest natural lubricant produced by any oil field in the world. It is this heavy crude petroleum oil which is used in conjunction with other lubricating materials in compounding the oils made by the Galena-Signal Oil Company.

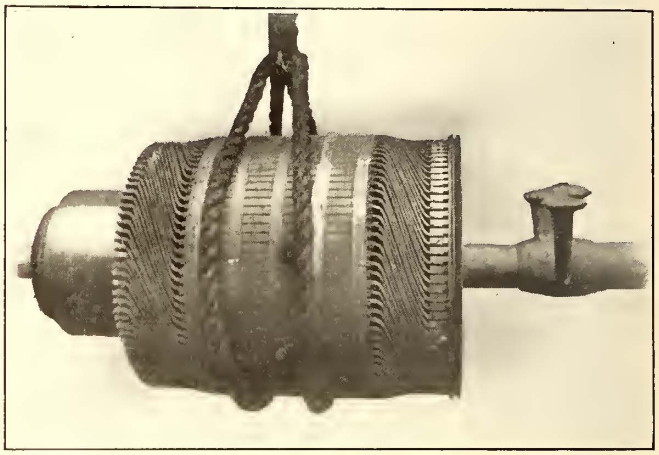
COMMUNICATION

WELDING ARMATURE SHAFT

New York, Sept. 18, 1911.

To the Editors:

I note in your issue of Sept. 2 an editorial on the subject of welding armature shafts in which mention is made of the methods followed in San Francisco and also of the fact that the oxy-acetylene process might possibly be adapted to this class of repair work. No mention was made of the Thermit process and I thought you might be



Welded Armature Shaft

interested in knowing that this process is not only adapted to the work but has been used very extensively and with marked success.

The accompanying illustration shows a Thermit weld on a 3-in. armature shaft used in the motor of a 50-hp electric hoist on a 50-ton Shaw electric crane. Welds on armature shafts of trolley motors have been made in the same manner and at slight cost with a very considerable saving in time. The surplus metal around the weld, shown in the illustration, is easily machined off where necessary.

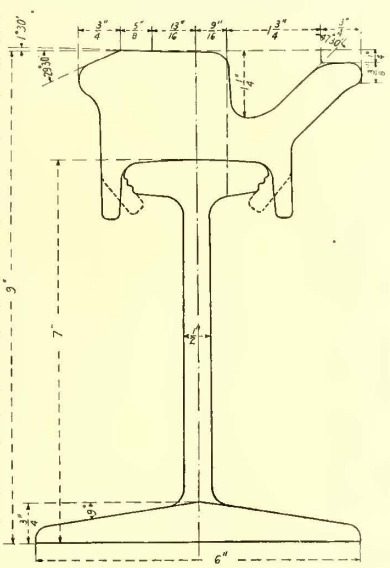
Goldschmidt Thermit Co.,
Wm. C. Cuntz, General Manager.

In a report to the Bureau of Manufactures of the Department of Commerce and Labor of the United States Church Howe, consul at Manchester, England, says that the corporation of Manchester, which controls the tramways in that city, grants one week's holiday each year with pay to each employee, provides uniforms, gives free rides on cars to and from duty and half pay during sickness for a period of one month, after which each case is considered on its merits. A bonus of 25 cents per week is paid to each motorman who for thirteen consecutive weeks has been free from blamable accidents and whose current-consumption records have been satisfactory during such period. These concessions cost the department about $278,363 per year. Taking into account the privileges described, the wages of motormen average about $8.70 per week, while conductors average $8.45. In describing the freight and express business of the lines Mr. Howe said that its operations extend 8 miles to 10 miles from the center of the city in all directions on and between all routes of the system. Approximately 1,000,000 parcels per year are handled.

ROMAPAC COMPOUND RAIL TO BE TRIED IN CHICAGO

The Board of Supervising Engineers of Chicago Traction has approved the installation of 4 miles of Romapac rail, which in October and November will be laid by the Chicago Railways Company and the Chicago City Railway. The design of the rail, which is of the two-part type, is illustrated. The upper contour of the head and the size of the base and web are identical with those of the present rails prescribed by ordinance in Chicago. The contours of the upper part of the base and the lower part of the head where the union is made will follow the designs of the Romapac system. This type of rail with its renewable head is being introduced into this country by Walter Del Mar, of London, England, who represents the English interests controlling the patents. An American company, known as the Continuous Rail Company, of New York, with offices at 17 Battery Place, New York, has been formed to promote the use of the rail in this country.

The Romapac rail is designed to effect a considerable saving in renewals. It consists of two parts, as shown in the illustration—a lower base and an upper head with flanges which are crimped about the enlargement at the top of the base section. Rails of this type are in use in Leeds, England, and were described at the time, with the machine used for applying the rail heads, on page 361 of the STREET RAILWAY JOURNAL for March 3, 1906. The rails in Leeds are said to show no signs of corrugation after five years of service. The composite rails laid in Leeds weigh 121 lb. per yard, and since they were put down in 1906 have carried 1,350,000 axles weighing 12,300 lb. each, at speeds up to 18 m.p.h., in addition to exceptionally heavy truck traffic. It is said that they are good for another five years of service before it will be necessary to renew the heads. Two curves have been built of this type of rail on the Paris tramways system—one on the subway and one on the surface lines—and the rails there are said to show excellent wearing qualities.



Romapac Compound Rail

The chief feature of the Romapac rail is the renewable head. As designed for use in Chicago this head will weigh 81 lb. per yard and the base will weigh 77 lb. per yard. The combined weight of 158 lb. thus exceeds the weight of the present Chicago rail, 129 lb., by 29 lb. per yard, and the first cost for steel is increased accordingly. However, when a renewal has to be made only the head of the Romapac rail need be renewed. With the present type of girder rail it is necessary to renew the entire rail weighing 129 lb. per yard. With the Romapac type the renewed portion will weigh only 81 lb. and thus there will be a saving on renewals of 48 lb. per yard.

Another large saving expected is that for paving work at the time of renewal. The Chicago work contemplates that if the foundation at the time of renewal is in good condition it will not be disturbed. Only the head of the Romapac rail will be renewed and this can be done with a minimum disturbance of the pavement. Only the stretcher blocks will have to be removed during the renewing process. An estimate made by the Board of Supervising Engineers shows that the total cost of renewal with the Romapac rail will be $8,000 less per mile than the cost of renewing with the present track rail.

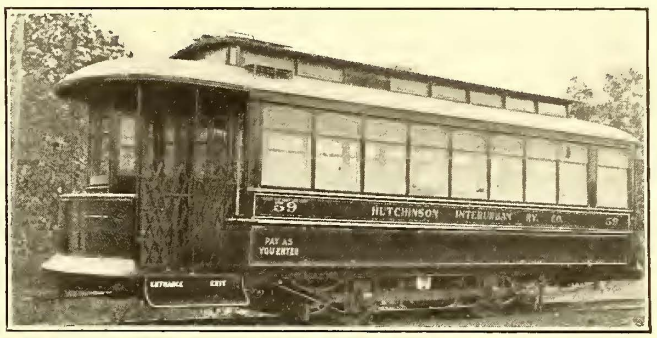
The Carnegie Steel Company is now making rolls to supply this rail, and the Chicago City Railway and the Chicago Railways have each ordered 250 tons of base and 263 tons of head, a total of 4 miles of single track.

The flange head of the Romapac rail is applied to the base by cold rolling. This work is done by a steam-driven machine carrying rollers which bend the lower flanges of the head securely into place about the bulb on the base. The rolling machine operates under its own tractive power and makes several passes over the rail head to perform the cold-bending process. The capacity of the machine is about 700 ft. of rail per hour and the rolls operate on one rail at a time. The cost of operating one of these machines is estimated at 56 cents per hour.

When renewal is made the rollers on the machine are replaced by rolling cutters which make a V-shaped groove on the side of the head at the point of maximum bend. The lower flange is then broken off by claws attached to the rolling machine and thus the head is released and the base made ready for the addition of a new head section.

PREPAYMENT CAR FOR HUTCHINSON, KAN.

The Hutchinson (Kan.) Interurban Railway has recently received from the Danville Car Company the single-truck pay-as-you-enter car shown in the accompanying illustration. The striking features of this car are the use of completely inclosed platform cabs for the motorman and conductor and wire screens instead of sheets of metal for the dashers. The principal dimensions are as follows: Length of the car over all, 32 ft.; length of the car body over the end panels at the sill, 21 ft.; width of car at sill, including panels, 7 ft. 9½ in.; width of car body over posts above the belt rail, 8 ft. 2 in. The bottom framing consists of 4¾-in. x 7¾-in. long-leaf yellow pine covered with ⅜-in. x 8-in. plate; 3¼-in. x 5-in. white oak end sills, and 4½-in. x 6¾-in. white oak center cross-joists. The body framing consists of 3¾-in. corner posts and 2¼-in. side posts. The sweep of the posts is 2¼ in. The roof is a monitor deck, strengthened by ⅝-in. concealed steel rafters. The doors at each end of the car are of the double sliding type.



Cab-on-Platform Car for Hutchinson, Kan.

The platforms are each 5 ft. 6 in. long and are furnished with wire screens. They have the usual dividing rail for entering and leaving passengers and can be closed by folding gates as shown. The right-hand diagonal corner of each platform is inclosed to form a cab for the platform man. The entrance to this cab is from the platform. The cab door has a sliding opening, through which the conductor can make change in bad weather. The fare box, therefore, is arranged to be hung from the cab window when necessary. In that portion of the bulkhead which separates the cab from the main passenger compartment an iron screen door pocket is used in place of glass. Through this opening the conductor announces streets while he is standing in the cab.

News of Electric Railways

Interurban Terminal in Cleveland

Warren Bicknell, of the Warren Bicknell Company and the Cleveland Construction Company, Cleveland, Ohio, is in charge of plans for the construction of a large interurban railway terminal at the southwest corner of Ontario Street and Prospect Avenue, Cleveland. Most of the land needed is under option and work on the plans for the building is under way. In connection with the terminal, a new high-speed electric railway will be built from the city limits through Kingsbury Run and the Cuyahoga River valley to the terminal to give an entrance to the cars of the Northern Ohio Traction & Light Company, the Cleveland, Youngstown & Eastern Railway and the Cleveland, Painesville & Eastern Railway, all of which now use the tracks of the Cleveland Railway. The roads operating into Cleveland from the west will probably enter the terminal through West Third Street.

Mr. Bicknell stated that the finances had been arranged and that work on the improvement would probably be begun before spring, but he would not make known the names of those who are interested in the terminal. A train shed with capacity for a dozen interurban lines will be built and there will be ample provision for waiting rooms, ticket offices, baggage rooms, etc. Mr. Bicknell denied that the station will be a steam railroad depot as well as an interurban terminal. The Kingsbury Run high-speed line was mentioned in the Electric Railway Journal some months ago, when the Shaker Heights Land Company was preparing to expand. The new terminal will be only a short distance from the Public Square and the business portion of the city.

Statement by C. S. Mellen

C. S. Mellen, president of the New York, New Haven & Hartford Railroad, the Connecticut Company and other controlled companies, on Sept. 14, 1911, authorized the following statement:

"Some day last week there was received by Mr. Mellen through the road's press department an article from a newspaper which for reasons that will occur to all he does not wish to name, full of insinuation and innuendo regarding his connection with the New York, New Haven & Hartford Railroad, and stating that his early retirement from the presidency was a foregone conclusion, or words to similar effect. This article was presented to him with the request from the paper that he affirm or otherwise the report of his retirement. He wrote upon the request that he was to retire, but the date was not yet fixed. He believed this was a statement the real meaning of which was perfectly transparent, as in the very nature of things he must retire some time. Mr. Mellen further says that he was on the road, extremely busy, and nettled at the article, which he regarded as malicious, and the request for a statement under the circumstances he deemed impertinent. He regrets if people have been misled, for it was far from his disposition to be party to any deception.

"Mr. Mellen sees no reason in anything that has happened up to the present time why consideration should be given the matter of New York, New Haven & Hartford Railroad dividends. The dividend of Oct. 1, 1911, has been declared, and has been amply earned. Unless something occurs more than he believes is likely to happen, that is, some cataclysm in business impending which he cannot see, the question of a reduction should never be raised. Business is slow and the approach of the presidential election always makes for caution, but the property should, with careful handling, weather such conditions without endangering dividends, and subsidiaries which are now under construction will soon be earning something to help pay the burden the New York, New Haven & Hartford Railroad has heretofore been carrying without return. The only reason he has for feeling cautious about a too positive statement regarding this matter is the uncertainty regarding future legislation and the labor question. With these two things no worse than at present he is confident of maintaining fairly and honestly (and serving the public with equal facility) the present rate of dividend. The matter of a reduction of the dividend has never to his knowledge been considered by the directors of the New York, New Haven & Hartford Railroad, and has never been discussed with him by any of the directors."

Thomas P. Fowler, president of the New York, Ontario & Western Railway, issued a statement in which he said:

"Charles S. Mellen has been severely criticised of late for acquiring electric railways and other railway properties. So far as the purchase of the stock of the New York, Ontario & Western Railway is concerned, it has not only thus far been a profitable investment for the New York, New Haven & Hartford Railroad, but has protected a rate situation which saves many thousands of dollars annually to the New York, New Haven & Hartford Railroad, as well as to coal consumers throughout the New England territory. The New York, New Haven & Hartford Railroad would have failed utterly to meet modern requirements, or to serve properly the growing needs of the section of country in which its lines are located, had Mr. Mellen not had the ability and courage to do what he has done. In the end his stockholders will reap a benefit instead of meeting disaster, which would inevitably have followed old and narrow methods, had they been persisted in. Within the last few years thousands of miles of railway lines have been constructed and hundreds of millions expended in the development of Pacific Coast traffic and in the construction and extension of transcontinental lines, while we in the East have been oblivious to the fact that the population of Westchester County and the Boroughs of Manhattan and the Bronx far exceeds that of the entire Pacific slope. What will the value of the Westchester lines be in another decade? And suppose that Mr. Mellen had sat still and not developed his property, its connections and the territory which it serves—then surely the press and the public would have had reason for criticism."

Terms of Proposed Los Angeles Franchise to Be Changed

Unable to agree on the proposed general franchise ordinance to govern the granting of franchises in Los Angeles, members of the Board of Public Utilities, the legislative committee of the City Council and representatives of the street railways have practically determined to have an entirely new ordinance drafted for their consideration. E. O. Edgarton, secretary of the Municipal League, recommended that an entirely new ordinance be drawn to embody all of the suggestions and ideas that had been advanced, and the plan was agreed to tentatively.

At a conference of the members of the committee on legislation of the City Council of Los Angeles, Cal., the members of the Board of Public Utility Commissioners of Los Angeles and the representatives of the street railways of Los Angeles on Sept. 7, 1911, W. E. Dunn, of the Los Angeles Railway Corporation, urged the appointment of City Engineer Hamlin, Chief Engineer Kuhrts, of the Los Angeles Railway Corporation, and a business man as a commission to visit the principal cities of the country where the girder rail is installed to study its utility and cost, the expense of the commission to be divided between the company and the city. Paul Shoup, vice-president of the Pacific Electric Railway, suggested the establishment of a girder rail district, including the business and industrial sections. He is quoted as follows: "As I have studied the reports on the girder rail which have been made to me it seems to me to be a matter of the district where the rail is used. In the business districts, particularly the industrial districts, where the traffic justifies the use of a very heavy rail laid on a good foundation, the girder rail meets with approval. In outlying districts it has been a failure. If a girder rail district could be established it would give us better streets where the traffic is heavy without preventing extensions into new residence territory on account of the increased cost of construction."

In a statement which he issued in connection with the

discussion of franchise conditions H. E. Huntington, president of the Los Angeles Railway Corporation, said in part:

"In the first place, the policy of the Los Angeles Railway has, I believe, been more liberal as to extensions than that of any other railroad system with which I am familiar in the country. There has never been a time since I have owned the road when any section of the city has been neglected as to transportation facilities.

"The carrying out of this policy has resulted, of course, in lessened earnings per mile, and the company even under very favorable climatic conditions is operating on a percentage of its gross earnings much greater than in any city with which I am familiar. In the future there are but two policies which may be pursued: The first, to which I am inclined, is the building of additional lines under franchise requirements which will protect both the investor and the public. The second is to adopt the Eastern plan and force the building up of the city within its present limits. Los Angeles is bound to grow, and it is merely a question as to whether or not the growth shall be along the lines of expansion or congestion. Personally, I prefer expansion, as I believe that the attractive feature of outlying homes is one of the advantages which the Easterner finds in Southern California which is not offered in any other section of the country.

"I have been quoted as saying that I would build no more lines in Los Angeles if the ordinance as originally drawn becomes a law. It is hardly necessary to comment on this, as your committee is already changing the impossible features of the ordinance, with a view of getting it into a workable form. The statement I made was perhaps not diplomatic, but it was certainly a statement of fact, and I think that the members of your committee will now agree with me that it would be impossible to build extensions under the draft of the ordinance as published.

"A franchise is made up of a chain of provisions covering the rights of each party. This chain is only as strong as its weakest link, and the franchise is only as fair to the investor as the most confiscatory clause which it may contain. One such clause may bring the whole enterprise to destruction, and certainly will cause an investor to hesitate before advancing his money in that direction. It may not be amiss for me to call attention to the fact that the president of the Board of Public Utilities stated that, as an attorney, he would advise a client against the purchase of securities issued for construction under a franchise that contained some of these clauses. Your committee has, I believe, felt the same way about the clauses particularly referred to, and I understand they are being changed. It is my belief that your committee will work out a carefully considered ordinance which will be fair both to the companies and to the people, as their interests are identical in this particular. Unnecessary and improper restrictions in regard to operations must in the end redound to the disadvantage of our patrons as well as ourselves.

"If the franchise ordinance is to be a success, its framers should bear in mind the fact that Los Angeles is in its infancy as compared with the cities most frequently used for examples, and that many of the quoted conditions in these cities do not obtain in Los Angeles."

Railway Line Desired in Euclid Avenue, Cleveland

Councilman Samuel E. Kramer has prepared a resolution to be presented to the City Council of Cleveland instructing G. M. Dahl, street railway commissioner, to communicate in writing with all the property owners on Euclid Avenue between East Twenty-second Street and East Fortieth Street asking them to consent to the construction of a street railway along that portion of the street. This was formerly one of the most exclusive sections in the city, and as the Cleveland Railway could not secure consents, it was compelled to divert cars by way of Prospect Avenue. Business houses are encroaching on this section to some extent, and Mr. Kramer believes that the property owners will now allow the company to build on the street, as the new line would permit the company to reduce the time to the eastern part of the city.

C. E. Ruthenberg, candidate for Mayor on the Socialist ticket, challenged Newton D. Baker, the Democratic candidate, on Sept. 14 to debate the amendments to the Tayler franchise which were adopted by the City Council some time ago. Mr. Baker declined the challenge, stating that such a debate would only intensify differences of opinion upon questions of methods rather than questions of principle.

Workmen said to number about 10,000 are preparing to petition for a belt line through "the flats," a lumber and factory district along the Cuyahoga River, which they claim is inadequately served.

The statement of operation of the Cleveland Railway for August shows a deficit of $59,512.25.

The Steinway Tunnel

William R. Willcox, chairman of the Public Service Commission of the First District of New York, has asked T. P. Shonts, president of the Interborough Rapid Transit Company, whether that company was still ready to consider the turning of the Steinway tunnel between Forty-second Street, Manhattan, and Queens to public use on the terms he proposed fifteen months ago. At that time Mr. Shonts expressed willingness to open the tunnel to traffic and construct a connection between it and the subway at the Grand Central Station without charging passengers to and from Long Island City more than the regular 5-cent fare. The offer of the Interborough Rapid Transit Company with regard to the Steinway tunnel to which Mr. Willcox refers was part of a proposal for the third-tracking extensions and also new lines along Jerome Avenue and Webster Avenue, in the Bronx. It was sent on June 10, 1910, and negotiations proceeded along the line laid down by Mr. Shonts till the whole matter was put in abeyance by the question of the new subways. Then everything was subordinated, but after the Brooklyn Rapid Transit Company had obtained the award, the Interborough Rapid Transit Company requested that the third tracking and the Bronx extensions be taken up separately.

Important changes in the proposed new charter for New York City are announced by Chairmen Cullen and Foley, of the joint cities committees of the Legislature, which have been sitting in New York since Sept. 7. The Mayor and other elective officers are made removable by the Governor. No change is announced of the provision affecting the Mayor's veto power over franchises. Ten-year revocable privileges to be granted by the Board of Estimate are to be stricken out. In a letter addressed on Sept. 19, 1911, to Corporation Counsel Watson, Mayor Gaynor declared that he did not wish the much-discussed veto power over subway construction contracts, and he made a suggestion as to the terms on which the operation contract of the new subways should be granted to the Brooklyn Rapid Transit Company. He also suggested that the Brooklyn Rapid Transit Company should grant transfers to its Manhattan subways not only to passengers on its elevated lines, but also to those on its surface cars.

Conference on Toledo Fare Ordinance

A special committee of the City Council of Toledo, Ohio, has been appointed to confer with a committee of the Toledo Railways & Light Company in regard to the Schreiber 3-cent fare ordinance, which has been approved by the Council committee of the whole. This committee will consist of Mayor Whitlock, City Solicitor Schreiber, Councilman Merrill, chairman of the committee of the whole; Councilman Spitzer and Councilman Robson. Attorney Rathbun Fuller, representing the company, has agreed to the plan, and he and Albion E. Lang, president of the company, will probably be members of the committee representing the company. Mr. Fuller in addressing the Council said that the lines could not be operated successfully at a fare of 3 cents and universal transfers. The committees will seek information from the books of the company as to a rate of fare that will allow the company a proper return on the money invested. Nothing further will be done with the ordinance until the committees report, it is said. Mr. Fuller stated that the average fare in Cleveland is 3⅛ cents, as change is not given when a passenger presents a nickel in payment of fare. The figures of the Toledo Railway & Light Company taken from the report of Nau, Tanner & Rusk for 1909 show this rate to be impossible. During 1909

32,748,055 passengers were carried. The income at a 3-cent fare would have been $982,441.65, while the operating expenses, not including interest, were $1,880,155. At present the operating expenses are $3.94 per car mile, which would make the proposed low rate impossible.

On the evening of Sept. 12 T. J. Mulligan, contractor, on the authority of the Village Council of Perrysburg, tore up about 150 ft. of the track of the Maumee Valley Railways & Light Company at a street crossing in the town. The Toledo Railways & Light Company had neglected to pay what the village claimed was its portion of the paving expenses at the street crossing. The tracks in question were abandoned a year ago after being damaged by a flood. The Maumee Valley Railways & Light Company is a subsidiary of the Toledo Railways & Light Company.

Annual Convention of Railroad Commissioners.—The annual convention of the National Association of Railway Commissioners will be held at Washington, D. C., beginning Oct. 10, and will continue for five days. The meeting will be held in the hearing room of the Interstate Commerce Commission.

Condemnation Proposed in Seattle.—An ordinance has been introduced in the City Council of Seattle, Wash., providing for the purchase under condemnation by the city of that part of the Seattle, Trenton & Southern Railway within the city limits. This is in accordance with the plan of the city to operate the property as a municipal line.

Pittsburgh Subway Ordinance.—Members of City Council of Pittsburgh, Pa., sitting as the committee on public service on Sept. 15, 1911, approved a subway ordinance that allows any company to bid for the franchise. The measure was to be acted on finally at the meeting of the Council on Sept. 19, 1911. Reference to the new ordinance was made in the Electric Railway Journal of Sept. 16, 1911, page 472.

Des Moines Arbitrators Named.—The Des Moines (Ia.) City Railway has named N. T. Guernsey, of Guernsey, Parker & Miller, formerly counsel for the company, to represent it as a member of the board of arbitrators which is to consider the differences between the company and its employees. A. L. Urick, president of the State Federation of Labor, has been named to represent the men. The third arbitrator has not yet been chosen.

Additional Powers Proposed for Los Angeles Board.—In response to a communication of the Board of Public Utilities of Los Angeles, Cal., and in direct line with the message of the Mayor of that city, sent to the City Council recently, the committee on legislation of the Council has directed the city attorney to prepare an ordinance to vest the Board of Public Utilities with power to ascertain the amount of money invested by the street railways which operate in Los Angeles and the earnings of the companies, and, if necessary, to fix fares.

Opening of Wentworth Institute.—Wentworth Institute, which received an endowment of about $3,500,000 from Arioch Wentworth, of Boston, will be officially opened on Sept. 25, 1911. It is located on Huntington Avenue, Boston, Mass., directly opposite the Museum of Fine Arts, and its aim is to teach trades and to train young men to be foremen in building construction and in manufacturing business. There will be electrical and power laboratories and one and two-year courses. The tuition fees are $6 per term for day students and half that rate for evening students. The principal is A. L. Williston, for twelve years head of the School of Science and Technology at the Pratt Institute, Brooklyn, N. Y.

PROGRAM OF ASSOCIATION MEETING

Kansas Gas, Water, Electric Light & Street Railway Association

It was arranged to hold the annual meeting of the Kansas Gas, Water, Electric Light & Street Railway Association at the Carl Leon Hotel, Independence, Kan., on Sept. 21 and 22, 1911. The program contained three papers of interest to street railway officials, as follows: "Relation of Public Utilities to Public Utility Commission," by Carl C. Witt, Topeka; "Laws Relating to Public Utilities," by Attorney Hyatt Parsons, and "Better Insulation," by L. G. Martin, Chicago.

Financial and Corporate

New York Stock and Money Market

September 20.

Prices declined in the early trading on both Monday and Tuesday, rallying toward the close. Rumors of federal action against the Steel Corporation and possibility of lower wages at its mills furnished sufficient material for a heavy selling movement to-day. Steel common dropped to 67⅞ and preferred lost 3⅛ points from yesterday's close. Foreign labor troubles and unsettled conditions upon European exchanges assisted in the downward trend.

New York banks have loaned large amounts during the week to German interests. Rates in the money market to-day were: Call, 2⅛@2½ per cent; ninety days, 3½@3¾ per cent.

Other Markets

Fractional losses were registered on Monday in Philadelphia Rapid Transit and Union Traction. Trading to-day was in small volume, but prices were well sustained.

Local issues in Chicago are showing signs of weakness. There has been little interest shown in public utilities.

In Boston trading has been narrow and prices generally firm.

The Baltimore market is dull and, aside from an advance of nearly a point in United Railways 4s on Tuesday, the list has shown a downward tendency.

Quotations of traction and manufacturing securities as compared with last week follow:

	Sept. 13.	Sept. 20.
American Light & Traction Company (common)	a300	a298
American Light & Traction Company (preferred)	a107	a107
American Railways Company	a44	a44
Aurora, Elgin & Chicago Railroad (common)	a43½	a43½
Aurora, Elgin & Chicago Railroad (preferred)	a87	a87
Boston Elevated Railway	a127½	a127¼
Boston Suburban Electric Companies (common)	a1¼	a1¼
Boston Suburban Electric Companies (preferred)	75	a75
Boston & Worcester Electric Companies (common)	a13	a12
Boston & Worcester Electric Companies (preferred)	a52	a51
Brooklyn Rapid Transit Company	73	73¼
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	83¾	84
Capital Traction Company, Washington	a130¾	a130
Chicago City Railway	a190	a190
Chicago & Oak Park Elevated Railroad (common)	a3	a3
Chicago & Oak Park Elevated Railroad (preferred)	a7	a6
Chicago Railways, ptcptg., ctf. 1	a97	a95
Chicago Railways, ptcptg., ctf. 2	a30	a30
Chicago Railways, ptcptg., ctf. 3	a11¼	a10½
Chicago Railways, ptcptg., ctf. 4	a7	a6
Cincinnati Street Railway	a132½	a132
Cleveland Railway	a101	a100
Columbus Railway (common)	83	a83
Columbus Railway (preferred)	95	a95
Consolidated Traction of New Jersey	a76	a75
Consolidated Traction of N. J., 5 per cent bonds	a104½	a104
Dayton Street Railway (common)	a25	a25
Dayton Street Railway (preferred)	a101	a101
Detroit United Railway	a70	a70
General Electric Company	149	149
Georgia Railway & Electric Company (common)	a158	a158
Georgia Railway & Electric Company (preferred)	a93	a93½
Interborough Metropolitan Company (common)	14⅛	13¾
Interborough Metropolitan Company (preferred)	41⅜	41¼
Interborough Metropolitan Company (4½s)	79	78½
Kansas City Railway & Light Company (common)	a19	a18
Kansas City Railway & Light Company (preferred)	a42	42
Manhattan Railway	134⅛	137
Massachusetts Electric Companies (common)	18¼	a17
Massachusetts Electric Companies (preferred)	a88	a88¼
Metropolitan West Side, Chicago (common)	*27	*27
Metropolitan West Side, Chicago (preferred)	*75	*75
Metropolitan Street Railway, New York	15	15
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	65¾	65½
Northern Ohio Light & Traction Company	58	a57
Northwestern Elevated Railroad (common)	30	*30
Northwestern Elevated Railroad (preferred)	70	*70
Philadelphia Company, Pittsburgh (common)	a51	a50
Philadelphia Company, Pittsburgh (preferred)	a42½	42½
Philadelphia Rapid Transit Company	22¼	a21¾
Philadelphia Traction Company	a85⅜	82
Public Service Corporation, 5% col. notes (1913)	*94	*94
Public Service Corporation, ctfs.	a106	a104
Seattle Electric Company (common)	a109	a110
Seattle Electric Company (preferred)	a105	a101
South Side Elevated Railroad (Chicago)	*95¼	*95¼
Third Avenue Railroad, New York	9	8½
Toledo Railways & Light Company	a6½	6½
Twin City Rapid Transit, Minneapolis (common)	a106	a106¾
Union Traction Company, Philadelphia	a50	a49½
United Rys. & Electric Company (Baltimore)	a17¾	17¾
United Rys. Inv. Co. (common)	32	29
United Rys. Inv. Co. (preferred)	57½	56
Washington Ry. & Electric Company (common)	a43½	a43½
Washington Ry. & Electric Company (preferred)	a89	a89
West End Street Railway, Boston (common)	a86½	a87
West End Street Railway, Boston (preferred)	a100½	a101½
Westinghouse Elec. & Mfg. Co.	61½	60⅛
Westinghouse Elec. & Mfg. Co. (1st pref.)	a118	a118

aAsked. *Last sale.

ANNUAL REPORT.

Brooklyn Rapid Transit Company.

Earnings of the Brooklyn Rapid Transit Company for the year ended June 30, 1911, compare with the preceding year as follows:

Revenue from Operation.	1911	1910
Transportation	$21,716,486	$20,746,876
Miscellaneous	270,057	232,639
Total	$21,986,543	$20,979,515
Operating expenses:		
Maintenance of way and structure	$1,423,108	$1,384,581
Maintenance of equipment	2,125,580	2,070,814
Operation of power plant	1,339,552	1,498,712
Operation of cars—trainmen's wages	3,714,683	3,451,414
Operation of cars—other expenses	1,584,180	1,543,049
Damages	750,854	656,502
Legal expense in connection with damages	232,616	198,906
General law expenses	60,115	66,130
Other general expenses	707,369	689,522
Freight and mail expenses	227,004	174,289
American Railway Traffic Company—expenses	1,306	3,192
Total	$12,166,367	$11,737,111
Net revenue from operation	$9,820,176	$9,242,404
Income from other sources	297,524	278,814
Total income	$10,117,700	$9,521,218
Deductions:		
Taxes	$1,465,535	$1,454,213
Interest and rentals (net)	5,503,686	5,455,410
Total	$6,969,221	$6,909,623
Net income	$3,148,479	$2,611,595
Special appropriations	88,535	108,560
Surplus from operation for the year	$3,059,944	$2,503,035
Profit from real estate disposed of	.....	69,185
Total surplus for year	$3,059,944	$2,572,220
Surplus at beginning of year	4,781,035	4,387,229
Total	$7,840,979	$6,959,449
Of this amount there has been appropriated:		
Old accounts written off	3,610	636
Additional reserves for taxes prior years	49,855	232,917
Adjustment of expenses prior	.....	13,281
Supersession and depreciation	105,609	.....
Refunds applying prior years	11,821	.....
Dividend on Brooklyn Rapid Transit Company stock outstanding	2,242,690	1,906,287
Total appropriations	$2,413,585	$2,178,414
Balance sheet surplus	$5,427,394	$4,781,035

The statement of President T. S. Williams includes an account of the rapid transit developments of the year. This in part is as follows:

"No basis of agreement with the interurban company having been reached by the committee during negotiations extending over several weeks, the Brooklyn Rapid Transit Company submitted to the joint committee a proposition under date of March 2, 1911, which was not intended to conflict with any rapid transit plans in the boroughs of Manhattan and the Bronx, but to furnish comprehensive and adequate transit facilities for the borough of Brooklyn and a large part of the borough of Queens, with the eventual extension thereof to the borough of Richmond.

"The plan which was proposed included, as an essential accompaniment of improved local transit in these boroughs, a suitable distribution subway system in Manhattan. Nearly two millions of persons reside in these two boroughs and a large proportion of them visit Manhattan daily for business or pleasure. Upon this daily human influx, increasing as rapidly as conditions will permit, depend to a large extent the stability and growth of Manhattan's material prosperity. It is the rising tide of suburban population, contributing to the commercial, financial and intellectual activities of a great city, creating increasing demands for employment and consumption, which marks the evolution of a metropolis. It is the opportunity for cheap homes amid healthful surroundings which relieves unwholesome congestion and stimulates the moral, physical and political welfare of a cosmopolitan community. Not without adequate transit, reaching from its municipal heart like great arteries to its outlying sections, can New York realize its best and richest development, and even the appreciation of material values in Manhattan, the business heart, must depend mostly upon the facility with which the resident population of the neighboring boroughs is brought into its territory. Until now this great outside army of residents has been brought only to the gateways of Manhattan. The handicap of double fares, change of cars and constricted terminals has been a retarding influence on municipal growth and public welfare. No system of transportation can be adequate which does not carry people quickly, safely and cheaply between their homes and the districts of their daily vocations.

"Your company, recognizing these considerations and its obligations toward them as the only public service corporation through which, by reason of its existing facilities, improvement of transit conditions in Brooklyn and Queens can be most promptly and effectually accomplished, proposed through its communication of March 2, not only new lines and enlargement of existing lines in those two boroughs, but a distributing subway line in Manhattan, from the Battery to Fifty-ninth Street, located mostly on Broadway, with suitable connections with the East River bridges and a new tunnel under the river.

"The plan of transportation thus proposed received instant and general public approval. It did not involve the use of any thoroughfare in Manhattan covered by negotiations between the city and any other railroad company. It did not conflict with any plans for the development of rapid transit in Manhattan and the Bronx nor in part of Queens. During the negotiations and conferences, however, it became evident that the city might not be able to agree with the Interborough company as to desired rapid transit lines in Manhattan and the Bronx if the Brooklyn company was to be allowed a distributing line for its passengers on Broadway. The joint committee therefore requested your directors to consider whether the company would include in its proposition all of such Manhattan and Bronx lines (with the exception of a line on Seventh Avenue south of Forty-second Street) and certain additional lines in Queens and Brooklyn. Assurance to this effect was furnished in the company's communications of April 25 and May 2.

"The Rapid Transit Act requires a certain procedure to be followed, including a public invitation for proposals, and these formalities are now to be undertaken by the Public Service Commission. Upon their completion and upon the award, if made in accordance with the declared policy and expressed sentiment of the two official bodies (the Board of Estimate and Apportionment and the Public Service Commission), your company, through the instrumentality of a new corporation to be organized for that purpose, and with the co-operation of existing railroad companies, will be furnished with the necessary authority to undertake the execution of a much larger plan of transportation than it originally proposed—involving the expenditure of much additional money and operation over a much wider territory. Your company, through its new instrumentality, while procuring its distribution line in Manhattan and the enlargements asked for in Brooklyn and Queens, will no longer be a local corporation, serving the people of two boroughs, but a Greater New York corporation, serving the people of five boroughs.

"The conditions which have brought about this situation have not been of our seeking, but the responsibility which it involves will not be evaded and the opportunity which it affords for public service will not be ignored. In the disinterested purpose and intelligent consideration which marked the precedent official conferences, and in the subsequent declaration of principles upon which the city's representatives acted, a new chapter was written in the history of municipal transit and a new standard of official conduct and performance was established. Your directors conceive it to be their paramount duty to insure, so far as the obligation rests upon them, the complete and satisfactory carrying out of the city's comprehensive and far-sighted policy for a unified transportation system, capable of indefinite expansion, constructed and equipped in accordance with the most improved methods and operated with the highest attainable efficiency and for a single fare.

"The radical safeguards to be embodied in the proposed contract for the protection of the city's interests make the terms severe. The rewards of successful operation are to be shared equally by the city and the operator, and the privilege of recapture after ten years is a financial handicap to the operator—but so much does the proposed new system offer for the development and welfare of the city that it would be an extremely short-sighted policy for an existing

transportation company, from motives of temporary expediency or profit, to refrain from co-operating for the accomplishment of these great results—in which, with the city and its people, the operator, so long as it fulfils its obligation faithfully and renders to the public the service called for, may be participant both as to pride and profit.

"Under the terms of the proposed contract the operator will be called upon to expend approximately $75,000,000 in construction and equipment. This money your directors have already arranged for. The plan of financing will be announced at the proper time.

"The system of transportation comprised in the proposed contract will traverse sections aggregating substantially nine-tenths of the area of Greater New York and will serve seven-tenths of the population. The only important section not covered is that which would be served by the construction of a rapid transit line on Seventh Avenue from Forty-second Street south, passing the Pennsylvania Railroad station. In the event that such a line should not be constructed and operated as a natural extension of the existing rapid transit railroad, it could be made a part of the new system with a northerly extension on the west side of Manhattan, which within a few years will probably be necessary for the relief of that growing population. It should be borne in mind, however, that without any extension on Seventh Avenue the lines already comprised in the new rapid transit system will bring within short distance of the Pennsylvania station several millions of people of Greater New York who now cannot reach it at all by rapid transit except with change of cars and for two fares. The train platforms in the Pennsylvania station will be only 500 feet farther from the proposed Broadway subway than the train platforms in the new Grand Central Station will be from the present subway station at Forty-second Street."

Total charges for maintenance and new construction during the year aggregated $4,848,077. Among the matters to which reference is made in this part of the report are the following:

"Two parlor cars were reconstructed as 'pay-as-you-enter' cars and two closed passenger cars as 'pay-within' cars and placed in operation for experimental purpose.

"Twenty-six snow sweepers and forty snow plows were completely overhauled and re-equipped; 1766 surface passenger cars, or 69 per cent of the total equipment, and all of the 928 elevated passenger cars were put through the shops, overhauled and revarnished; seventy salt and sand cars used on the surface lines and thirty-three elevated cars of miscellaneous types were also completely overhauled and repainted.

"Much progress was made in the substitution of rolled-steel wheels for cast wheels on the surface cars, and at the end of the fiscal year 73 per cent of the total number of wheels had been thus changed at considerable cost."

Traffic statistics for the last two years compare as follows:

	1911.	1910.
Per cent of increase in passenger earnings over preceding year	4.28	7.44
Passengers carried	571,881,446	569,438,773
Revenue mileage	79,619,831	77,984,651
Increase over preceding year, percentage	2.10	5.10
Earnings per revenue mile, cents	26.8	26.3
UNITS PER PASSENGER—CENTS.		
Passenger earnings	3.73	3.60
Miscellaneous earnings	.16	.14
Total earnings	3.89	3.74
Operating charges	2.14	2.08
Taxes	.26	.26
Interest and rentals	.96	.96
Total	3.36	3.30
Surplus	0.53	0.44
CHARGES PER CENT OF OPERATING EXPENSES.		
Repairs and renewals	16.21	16.53
General operating	34.59	35.21
Damages	3.43	2.66
Legal expense	1.34	1.75
Total operating	55.57	56.15
Taxes	6.69	6.96
Interest and rentals (net)	23.36	24.40
Special appropriations	.40	.52
Surplus	13.98	11.97
	100.00	100.00

The assessments of real estate, tracks and special franchises have been increased during the current year by $11,455,000. Attention is called to the fact that the charge to taxes represents over 14.6 per cent of the net income after deducting operating expenses and amounts to a sum equal to nearly one-half the net profits.

Annual Meeting of Philadelphia Rapid Transit Company and Union Traction Company

The annual meeting of the stockholders of the Philadelphia (Pa.) Rapid Transit Company was held on Sept. 20, 1911. Charles E. Ingersoll and C. S. W. Packard were re-elected to serve on the board four years. Charles O. Kruger was re-elected president when the board reorganized. Alexander Rennick was re-elected vice-president. E. T. Stotesbury was made chairman of the board of directors, and the following executive committee was elected: E. T. Stotesbury, Charles E. Ingersoll, C. S. W. Packard, Horatio G. Lloyd and T. E. Mitten, who was made chairman of the committee. The following statement of earnings for August, 1911, was made public:

	August, 1911.	Two Months to Aug. 31, '11.
Gross passenger earnings	$1,712,222	$3,488,243
Receipts from other sources	82,767	163,562
Gross receipts	$1,794,989	$3,651,805
Operating expenses	1,126,217	2,270,984
Net earnings from operation	$668,772	$1,380,821
Fixed charges	736,683	1,473,972
Deficit	$67,910	$93,151

The stockholders of the Union Traction Company also ment on the same day. All the directors were re-elected. They were to meet on Sept. 22, 1911 to organize. The receipts and disbursements of the Union Traction Company for the year follow:

RECEIPTS.		
Balance June 30, 1910		$1,517
Amount received from P. R. T. for fixed charges	$6,207,839	
Rental	1,800,000	
Maintenance of organization	5,000	
Real Estate Holding Company (awarded in condemnation proceedings Pattison Avenue property)	17,500	
Settlement of receivers for Guarantors' Liability Indemnity Company	507	
P. R. T. equipment trust certificates	1,500,000	
P. R. T. rental	150,000	
Interest	715	
		9,681,564
		$9,683,081
DISBURSEMENTS.		
Fixed charges	$6,207,839	
Dividends paid	1,800,000	
Maintenance of organization	5,102	
Investment on account of Union Traction stock	18,850	
P. R. T. equipment	1,500,000	
P. R. T. certificates of redemption	150,000	
		9,681,792
Balance		$1,289

The report of Jeremiah J. Sullivan, president of the Union Traction Company, was adopted. Mr. Sullivan said that the company had given consent to the extension for fifty years of the 5 per cent mortgage of the Union Passenger Railway, amounting to $500,000, and the 5 per cent mortgage of the People's Passenger Railway, amounting to $285,000, both to be hereafter on a 4 per cent basis. The report added that payments to the company had been made promptly by the Philadelphia Rapid Transit Company and that the properties were in good condition.

An abstract of the annual report of the Philadelphia Rapid Transit Company for the year ended June 30, 1911, was published in the Electric Railway Journal of July 22, 1911, page 170.

Boston (Mass.) Elevated Railway.—The directors of the Boston Elevated Railway, at a special meeting held on Sept. 13, 1911, voted to accept the legislative act providing for the construction of the Boylston Street subway, a subway from Park Street to the South Station and thence to Andrew Square, Dorchester, and the extension of the East Boston tunnel beyond Bowdoin Square to the vicinity of Lynde Street. The act also provides for the extension of the leases of existing subways and tunnels to July 1, 1936. There remains only the acceptance of the act by the City Council of Boston and the Mayor. The Boston Transit Commission will, upon acceptance by the Council and Mayor, proceed to the active construction of the tunnels and subways by asking for bids for the work.

Chicago (Ill.) Railways.—The Merchants' Loan & Trust Company, Chicago, trustee, has purchased for the Chicago Railways sinking fund approximately $273,000 par value

of the corporation's consolidated mortgage and sinking fund twenty-year 4-5 per cent bonds, series C, under the provision which calls for the expenditure of $250,000 per annum in the retirement of these bonds. The average price paid by the Merchants' Loan & Trust Company was 91½. After Feb. 1, 1912, the series C bonds outstanding carry 5 per cent interest as against 4 per cent prior to that date. On June 1, 1911, the net obligation of the Chicago Railways on account of these bonds was $2,731,273, now to be reduced to $2,458,273.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—Judge Peter S. Grosscup, Samuel Insull, president of the Commonwealth-Edison Company, and W. O. Johnson, receiver of the Chicago & Milwaukee Electric Railroad, inspected the lines of the company on Sept. 15, 1911. A decree for the sale of the road is expected to be entered this month. It is said that the reorganization will be effected on the following terms: A new corporation will issue $4,000,000 of first mortgage 5 per cent bonds, $4,000,000 of 4 per cent first income bonds, $5,000,000 of 4 per cent second income mortgage bonds, and $6,000,000 of stock, all of one class. New first mortgage bonds will be used to retire $1,000,000 of 5 per cent receivers' certificates, to retire the $1,080,000 underlying first mortgage bonds of the Chicago & Milwaukee Electric Railway, and to provide new capital. The underlying first mortgage bonds are callable on any interest date at 105 and interest. Other new securities will be distributed as follows: $4,000,000 of first income bonds exchanged dollar for dollar for $4,000,000 of first mortgage 5 per cent bonds of Illinois division of Chicago & Milwaukee Electric Railroad; $5,000,000 second income bonds exchanged for $10,000,000 Wisconsin division bonds. Holders of bonds of the Wisconsin division will also receive the entire issue of $6,000,000 stock.

Cincinnati, Georgetown & Portsmouth Railroad, Cincinnati, Ohio.—The following new officers have recently been elected by the Cincinnati, Georgetown & Portsmouth Railroad: President, Robert B. Hackney; vice-president, Judge Jesse Thompson, Georgetown, Ohio; secretary and treasurer, George W. Nichols, Cincinnati; general manager, E. W. White. Mr. White has been operating the road for some years. The Ohio River & Columbus Railway and the Felicity & Bethel branch, owned by a separate corporation, have been merged with the Cincinnati, Georgetown & Portsmouth Railroad.

Georgia Railway & Power Company, Atlanta, Ga.—The Georgia Railway & Power Company has applied for incorporation in Georgia, presumably to purchase or lease the property of the Georgia Railway & Electric Company and the Georgia Power Company. The company will be capitalized at $27,000,000, of which $15,000,000 will be common stock, $2,000,000 first preferred stock and $10,000,000 second preferred 4 per cent non-cumulative stock.

Hattiesburg (Miss.) Traction Company.—The property of the Hattiesburg Traction Company has been purchased by H. L. Doherty & Company, New York, N. Y.

Haverhill & Amesbury Street Railway, Merrimac, Mass.—The petition of the Haverhill & Amesbury Street Railway for authority to issue additional stock and bonds to the amount of nearly $400,000 was heard by the Railroad Commission on Sept. 20, 1911. Judge Samuel W. Emery, of Amesbury, counsel for the company, stated that it desires to make a bond issue of $110,000 and a stock issue of $260,000 to pay the cost of certain improvements, a complete schedule of which he presented. The commission took the matter under advisement .

Interborough Rapid Transit Company, New York, N. Y.—The Interborough Rapid Transit Company has applied to the Public Service Commission of the First District of New York for authority to make a new bond issue of $11,400,000, to be considered as part of the bond issue already authorized. The proceeds are to pay off outstanding notes of $10,000,000, incurred during the period of the construction of the subways, and $1,400,000 for contracts for installation of side doors on express trains, and to pay for outstanding contracts for side-door installation already ordered on local subway trains, and for additional machinery at the power stations.

International Traction Company, Buffalo, N. Y.—The Public Service Commission of the Second District of New York held a hearing at Albany on Sept. 14, 1911, on a plan of reorganization of the International Traction Company. A new corporation, to be known as International Traction Railways, proposes to purchase the securities of the International Traction Company, and aims ultimately to acquire all the latter's stock and that of subsidiary companies and to merge them. Only formal evidence was taken on Sept. 14, 1911, by the commission and the case was adjourned to Buffalo on Oct. 9, 1911.

Metropolitan Street Railway, New York, N. Y.—The sale of the property of the Metropolitan Street Railway under foreclosure has been postponed until Nov. 24, 1911. The plan for the reorganization of the company is still pending before the Public Service Commission of the First District of New York.

Middlesex & Boston Street Railway, Newtonville, Mass.—The Middlesex & Boston Street Railway has petitioned the Railroad Commission for authority to issue $1,483,000 refunding bonds. The proceeds of the issue will be used to refund the bond issues of subsidiaries of the Middlesex & Boston Street Railway, which amount to $1,015,000, as follows: $100,000 South Middlesex Street Railway first mortgage bonds, due Feb. 1, 1915; $40,000 Westborough & Hopkinton first mortgage bonds, due Nov. 1, 1922; $500,000 Newton Street Railway first mortgage bonds, due July 1 1912; $100,000 Waltham Street Railway first mortgage bonds, due Dec. 1, 1915; $75,000 Commonwealth Avenue Street Railway first mortgage bonds, due Feb. 1, 1916; $200,000 Newton & Boston Street Railway first mortgage bonds, due July 1, 1912, and for the payment of the company's floating indebtedness which amounts to $468,000. The company will issue the $468,000 refunding bonds immediately.

Mississippi Valley Interurban Railway, Springfield, Ill.—Application for the appointment of a receiver for the Mississippi Valley Interurban Railway has been made in behalf of the bondholders of the company.

New Hampshire Electric Railways, Haverhill, Mass.—A hearing on a petition to dismantle the Portsmouth & Exeter Street Railway, the securities of which are held by the New Hampshire Electric Railways, was given by Judge William M. Chase, A. S. Batchelder and Burns P. Hodgman, sitting as masters, in the United States Court at Portsmouth, N. H., on Sept. 15, 1911. The road, which is now being operated by receivers, is 12 miles long and was constructed and equipped at a cost of $350,000. Witnesses testified that the road was operated at a loss and that a large sum would have to be expended for improvements. D. A. Belden, president of the New Hampshire Electric Railways; Franklin Woodman, general manager of that company, and A. H. Hodges, of the Boston & Northern Street Railway, declared that the road could not be operated at a profit.

St. Johns Light & Power Company, St. Augustine, Fla.—The property of the St. Johns Light & Power Company, which includes 10 miles of electric railway, will be sold under foreclosure at St. Augustine on Oct. 2, 1911.

Scioto Valley Traction Company, Columbus, Ohio.—The annual meeting of the stockholders of the Scioto Valley Traction Company will be held on Sept. 26, 1911. The annual report of Frank A. Davis, president of the company, which accompanied the notice calling for the meeting, shows that during the year ended June 30, 1911, the company carried 1,352,691 passengers, an increase of 101,499 over the preceding year. Earnings per passenger were 26.83 cents, a decrease of 1.28 cents. The passenger car mileage was 1,025,854, an increase of 4488 miles. Earnings per passenger car mile were 35.28 cents, an increase of 8.5 mills per mile. During the same period the road carried 63,859,213 lb. of freight, an increase of 6,729,454 lb., and the receipts per 100 lb. were 8.68 cents, a decrease of 2.4 mills. Earnings per freight car mile were 35.61 cents, an increase of 2.08 cents per mile. The strike on the local lines in Columbus resulted in a loss of business to this company last summer. An accident also entailed the payment of $6,000 in damages. The passenger revenue for the year was $361,932, an increase of $10,190. The freight revenue was $55,418, an increase of $4,483. Power sales amounted to $14,873, an increase of $1,158; rent of buildings, $1,288, a decrease of $1.83; miscellaneous revenue, $4,596, a decrease of $636. The total revenue was $438,109, an increase of $15,194. Expenditures show $34,176 for maintenance of way and structures, an in-

crease of $2,860, and maintenance of equipment, $39,062, an increase of $9,825. Operating expenses were $116,676, an increase of $4,538. Miscellaneous expenses aggregated $64,640, an increase of $3,182. The net earnings were $185,551, a decrease of $5,311. Deducting bond interest of $80,000, taxes amounting to $14,437, federal corporation tax of $861 and dividends of $75,000, there remained $15,252 for the common stock, a decrease of $5,518. The reserve fund showed a balance of $25,542, while the total surplus was $58,834, and total surplus and reserve fund, $84,377.

Dividends Declared

Capital Traction Company, Washington, D. C., quarterly, 1½ per cent.

Chattanooga Railway & Light Company, Chattanooga, Tenn., quarterly, 1¼ per cent, preferred.

Cleveland (Ohio) Railway, quarterly, 1½ per cent.

Halifax (N. S.) Electric Tramway, Ltd., quarterly, 2 per cent.

Lake Shore Electric Railway, quarterly, 1½ per cent, first preferred.

Manila Electric Railroad & Lighting Corporation, Manila, P. I., quarterly, 1¼ per cent.

New York State Railways, Rochester, N. Y., quarterly, 1¼ per cent, preferred; quarterly, 1½ per cent, common.

Northern Ohio Traction & Light Company, Akron, Ohio, quarterly, 1½ per cent, preferred.

Omaha & Council Bluffs Street Railway, Omaha, Neb., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.

Ottawa (Ont.) Electric Railway, quarterly, 2½ per cent.

Seattle (Wash.) Electric Company, preferred, 3 per cent; quarterly, 1¾ per cent, common.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., quarterly, 1¼ per cent, preferred.

Toronto (Ont.) Railway, quarterly, 2 per cent.

Union Railway, Gas & Electric Company, Rockford, Ill., quarterly, 1½ per cent, preferred.

Union Utilities Company, Morgantown, W. Va., preferred, 3½ per cent; quarterly, ½ of 1 per cent, common.

Washington Water Power Company, Spokane, Wash., quarterly, 2 per cent.

West End Street Railway, Boston, Mass., $1.75, common.

West India Electric Company, Ltd., Kingston, Jamaica, quarterly, 1¼ per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS.

Period.			Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1m.,	Aug.	'11	$443,503	.....	.....	.....	.....
"	"	'10	428,324	.....	.....	.....	.....
BANGOR RAILWAY & ELECTRIC COMPANY.							
1m.,	Aug.	'11	$60,048	*$24,074	$35,974	$13,020	$22,954
"	"	'10	58,065	*25,915	32,150	11,795	20,355
2m.,	"	'11	115,725	*50,883	64,842	26,076	38,766
"	"	'10	112,073	*50,690	61,383	23,717	37,666
BROCKTON & PLYMOUTH STREET RAILWAY.							
1m.,	Aug.	'11	$16,202	$8,503	$7,700	$1,545	$6,155
"	"	'10	16,658	8,833	7,825	1,766	6,059
12m.,	"	'11	120,245	84,063	36,182	18,622	17,560
"	"	'10	123,724	90,753	32,972	21,098	11,874
EAST ST. LOUIS SUBURBAN RAILWAY.							
1m.,	Aug.	'11	$193,414	$105,666	$87,747	.....	.....
"	"	'10	215,316	112,539	102,777	.....	.....
8m.,	"	'11	1,480,821	796,123	684,698	.....	.....
"	"	'10	1,545,513	824,762	720,751	.....	.....
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY.							
1m.,	Aug.	'11	$63,643	*$31,463	$32,180	$14,450	$17,730
"	"	'10	60,578	*32,619	27,959	13,132	14,827
2m.,	"	'11	123,983	*61,668	62,315	28,840	33,475
"	"	'10	121,022	*63,526	57,496	26,267	31,229
PENSACOLA ELECTRIC COMPANY.							
1m.,	Aug.	'11	$25,320	$14,734	$10,586	$5,851	$4,736
"	"	'10	24,236	13,654	10,582	5,279	5,303
12m.,	"	'11	285,249	166,429	118,820	67,208	51,612
"	"	'10	258,490	151,188	107,301	57,077	50,225
PORTLAND RAILWAY, LIGHT & POWER COMPANY.							
1m.,	Aug.	'11	$521,262	*$273,502	$247,760	$118,456	$129,304
"	"	'10	479,944	*241,629	238,315	118,972	119,343
8m.,	"	'11	4,179,778	*2,036,576	2,143,202	991,940	1,151,262
"	"	'10	3,616,280	*1,726,329	1,889,951	914,696	975,255
ST. JOSEPH RAILWAY, LIGHT, HEAT & POWER COMPANY.							
1m.,	Aug.	'11	$92,959	*$62,583	$30,376	$19,381	$10,995
"	"	'10	89,773	*52,128	37,645	18,583	19,062
8m.,	"	'11	715,656	*444,786	270,870	154,094	116,776
"	"	'10	674,715	*402,418	272,297	146,300	125,997

*Including taxes.

Traffic and Transportation

Fare Complaint Against Buffalo, Lockport & Rochester Railway Dismissed

The Public Service Commission, Second District, has dismissed the complaint of Milton J. Whedon, of Medina, which alleged that the New York Central & Hudson River Railroad and the Buffalo, Lockport & Rochester Railway are discriminating against Rochester in favor of Buffalo in the fares charged between Medina and these cities. Medina is 41 miles from both Rochester and Buffalo. The round-trip fare between Medina and Rochester is $1.60, and between Medina and Buffalo $1.20. No specific allegation was made in the complaint that the rates in effect between Medina and Rochester are unjust or unreasonable, and the commission holds that the facts presented do not show that the regular rate of 2 cents per mile now charged is excessive or unreasonable. The commission also holds that the existence of excursion and commutation rates and the sale of mileage books at a less price than the general level of the rate per mile do not justify a finding that such general level is excessive or unreasonable. The commission finds the reason for the difference in charge between Rochester and Buffalo is the competition of the International Railway with both roads from Lockport to Buffalo, and a round-trip rate from Medina to Buffalo is made to meet the competition, the sum of the fares from Medina to Buffalo upon the electric railway with the change at Lockport being $1.14 for the round trip.

Referring to the situation whereby the railroads are required to make a lower rate because of competition bebetween Buffalo and Lockport, the commission says in its decision:

"It is a sound principle in rate making and well recognized by every governmental and other authority having control of such matters that it is permissible as well as good policy for a railroad to accept low rates on traffic which can be obtained only in this way. Traffic carried at such rates may be and often is unremunerative in the sense that its contribution to the general expenses of the company is inadequate; but so long as it contributes anything at all it may be worth the company's while to carry it."

The commission points out that the argument that the rate from Medina to Rochester must be reduced because it is greater than from Medina to Buffalo, if followed out, would demand a cut all over the lines of the New York Central & Hudson River Railroad to 1½ cents per mile. On the other hand, if the Buffalo rate were increased to 2 cents a mile the present Rochester rate would be reasonable and just. In conclusion the commission says that the rate from Medina to Rochester is the usual and accepted rate of the New York Central & Hudson River Railroad, is recognized and authorized by law, and no fact known to the commission justifies a finding that it is excessive. If a rate of 2 cents a mile from Medina to Rochester is excessive, the same rate from Rochester to Syracuse is excessive. It can scarcely be expected that the whole passenger rate system of the respondent should be torn up in order to give the people of Medina a peculiar advantage, when the only reason suggested therefor is that they are enjoying another.

Near-Side Single-Platform Cars in Operation in Buffalo

The International Traction Company, Buffalo, N. Y., placed in service on its Grant Street line on Sept. 17, 1911, thirty-five single-platform prepayment cars known as near-side cars. The first car carried as passengers Thomas Penney, president of the International Traction Company; Nelson Robinson, a large stockholder in the International company; Thomas E. Mitten, vice-president of the International Traction Company and president of the Chicago City Railway; Thomas W. Wilson, general manager of the International Traction Company; George Dreybus, traffic agent; Charles A. Coons, superintendent; R. T. Senter, master mechanic; John B. Olmstead, of the Public Service Commission; J. C. Calish, vice-president and assistant-treasurer

of the Buffalo & Lake Erie Traction Company; H. G. Tulley, of Chicago; W. I. Ohmer, of the Dayton Fare Register Company; Robert B. Liddell, of The J. G. Brill Company, and Louis A. Kling, also of The J. G. Brill Company.

Mr. Penney is quoted as follows: "The operation of the near-side car yesterday was very successful and clearly demonstrated that it will meet the requirements of the traveling public with the greatest convenience to passengers. The near-side car is a tremendous advance in street car building and officials of all the electric railways in the country are watching with interest the introduction of this car. Buffalo is the first city to try it out, and a number of street railway officials of other cities were here to observe its operation. It demonstrated its facilities for loading and unloading. We are greatly pleased with the success of the first day's trial."

The Buffalo near-side car was described and illustrated in the ELECTRIC RAILWAY JOURNAL of June 24, 1911, page 1112.

Accident in Erie, Pa.—A car of the Cleveland & Erie Railway, Girard, Pa., was overturned in a collision with a steam railroad locomotive at a crossing in Erie, Pa., on Sept. 16, 1911, and more than ten passengers were injured.

Heavy Labor Day Traffic.—On Labor Day the interurban cars of the Illinois Traction System handled more than 75,000 passengers. A single car running from Springfield to Danville, 120 miles, handled 950 passengers during a one-way trip.

President Taft in Detroit.—On the occasion of his visit to Detroit on Sept. 18, President W. H. Taft traveled by the interurban line of the Detroit (Mich.) United Company from Detroit to Pontiac and back to the Michigan State Fair, which he formally opened. As a souvenir the Detroit United Railway issued a Taft edition of its handsome folder map, on the cover of which was printed "President W. H. Taft, Detroit, Sept. 18, 1911," and inside over the face of the map was a large outline portrait of the president.

Hearing on Elevated Railway Service in New York.—The Public Service Commission of the First District of New York has issued an order for a hearing on the afternoon of Sept. 26, 1911, to determine whether the Interborough Rapid Transit Company should not be ordered to operate eight-car trains on the Manhattan Elevated Railway during rush hours and also to determine whether any additions to or changes in the Manhattan Elevated Railway should be required as necessary to the convenience and safe operation of such eight-car trains.

Complaint Against Buffalo & Lake Erie Traction Company Closed.—The Public Service Commission of the Second District has closed on its records the complaint of William Schuler as to alleged refusal of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., to carry his goods between Fredonia and Westfield on morning cars. Complainant alleged that his business suffered by reason of the company delaying the carrying of his goods until the afternoon cars. Arrangements have been made for the hauling of his goods on certain morning cars between the points in question.

New Station and Office Building in New Westminster, B. C.—The new interurban station and office building of the British Columbia Electric Railway at New Westminster has been opened. The building is two stories in height, of brick construction, the lower floor being used for passenger and freight traffic and the upper for the company's offices. From the station are operated the Westminster city lines, interurban lines connecting New Westminster with Vancouver over the three routes of the company between the cities, and the Fraser Valley branch running through the South Fraser Valley to Chilliwack.

Commuter Requests Refund of Fare.—A commuter on the New York, New Haven & Hartford Railroad has filed a complaint with the Public Service Commission of the Second District asking that the New York, New Haven & Hartford Railroad be required to refund the full amount of the conductor's receipt for a cash fare collected from a commuter who has forgotten his commutation ticket. The present practice of the company is to charge 5 cents in excess of the cash fare and give the rider a cash receipt redeemable for 5 cents. The petitioner asks that the ticket agents refund the full amount paid by commuter upon receipt of the conductor's receipt and the exchange of coupon from the commutation ticket. The complaint has been served upon the company.

Brooklyn Transfer Order.—The Public Service Commission of the First District of New York has issued an order to the Brooklyn Heights Railroad and the Nassau Electric Railroad of the Brooklyn Rapid Transit System the effect of which will be to establish two additional transfer points between two lines operated by the Brooklyn Rapid Transit Company in the South Brooklyn and Bay Ridge section. One of the lines is the Sixty-fifth Street and Bay Ridge Avenue line of the Brooklyn Heights Railroad, and the other is the line of the Nassau Electric Railroad between the Thirty-ninth Street ferry and the West End Terminal, Coney Island. The effect of the new arrangement will be to extend the scope of the 5-cent fare to Coney Island by the line which runs from Thirty-ninth Street ferry, South Brooklyn.

Transfers Between Washington and Maryland Lines.—The Interstate Commerce Commission has been asked to pass upon the question of the interchange of transfers between the Baltimore & Washington Transit Company and the Capital Traction Company, Washington, D. C. The matter came to the attention of the Interstate Commerce Commission from the District Electric Railway Commission, with which a complaint had been filed by a resident of Takoma Park, it being alleged that the Capital Traction Company had refused to accept transfers at Fourteenth Street and Kennedy Street northwest from the line of the Baltimore & Washington Transit Company. The District Electric Railway Commission decided that the matter was an interstate question, since the Baltimore & Washington Transit Company operates in Maryland.

New Rule Book of Michigan United Railways.—The Michigan United Railways, Jackson, Mich., of which A. W. McLimont is vice-president and general manager and George F Faber superintendent of transportation, has issued a new rule book for interurban trainmen and employees, effective Sept. 1, 1911. The book consists of 123 pages and in addition to rules for the instruction of motormen, conductors, station masters, freight and ticket agents, section foremen and employees of the electrical department it includes a number of new departments. Paragraphs have been added on the subject of emergency straight air brake equipment, straight air brakes and instructions for the detection of causes of failure. Instructions for the treatment of persons suffering from electric shock are also given. The book is well indexed by subject and contains at the back pages for notations and reference to bulletins. The general rules follow closely those laid down by the American Electric Railway Association.

The Interborough Bulletin.—The following reference to the *Interborough Bulletin* is made in the annual report of the company, an abstract of which was published in the ELECTRIC RAILWAY JOURNAL of Sept. 16, 1911: "On Jan. 15, 1911, your company began the publication of a monthly periodical known as the *Interborough Bulletin* for free distribution among employees. This was done to place the various departments in closer touch with each other and with the employees generally for the purpose of creating a more perfect understanding of the working conditions connected with the operation of the property, and to secure by courteous and considerate treatment of passengers more friendly relations between employees and the public. It was also anticipated through this medium to obtain an interchange of views and opinions between all classes of employees, so far as they relate to the management and maintenance of the corporate business, by inviting suggestions from the men who come in personal contact with the traveling public as to the best manner of securing the convenience and comfort of passengers. The results so far obtained have been exceedingly gratifying and the usefulness of the publication is being extended with each issue. The bulletin is also being mailed to all stockholders of record, and the company will publish from time to time matters of interest exclusively to holders of its securities."

Personal Mention

Mr. Frank H. Plaice has resigned as general manager of the Winona Railway & Light Company, Winona, Minn.

Mr. J. D. McDowell has been elected secretary and treasurer of the Fremont (Ohio) City Street Railway, to succeed Mr. James G. Hunt, as secretary, and Mr. John N. Sherman, as treasurer.

Mr. Ensign Johnson, formerly division superintendent of the Cleveland, Southwestern & Columbus Railway, Elyria, Ohio, has been appointed superintendent of transportation of the Inter-Urban Railway, Des Moines, Ia.

Mr. James Weimer, formerly dispatcher on the Cleveland, Southwestern & Columbus Railway, Elyria, Ohio, has been appointed trainmaster of the Inter-Urban Railway, Des Moines, Ia., to succeed Mr. Benjamin Marriott, resigned.

Mr. Owen O'Hearn, who has been connected with the Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky., for some time, has been appointed superintendent of construction of the company, a newly created position.

Congressman William B. McKinley, president of the Illinois Traction System and the Western Railways & Light Company, has sailed for Rome, Italy, to attend the International Parliamentary Peace Congress as the representative of the United States.

Mr. William H. Harton, Jr., engineer of maintenance of way of the Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky., has had added to his duties the supervision of the construction of the water system in Bellevue and Dayton.

Mr. J. E. Ralston has been appointed superintendent of power of the Des Moines (Ia.) City Railway and the Des Moines Inter-Urban Railway. Mr. Ralston formerly was power-plant engineer of the Cleveland, Southwestern & Columbus Railway at Elyria, Ohio.

Mr. J. E. Welch, master mechanic of the Des Moines (Ia.) City Railway, has resigned. Mr. Welch formerly had charge of the power plant and rolling stock of the city and interurban properties at Des Moines. He has been connected with the Des Moines properties for the last ten years.

Mr. C. C. Elwell has resigned as engineer of maintenance of way of the Connecticut Company, New Haven, Conn., to become engineer of the Public Utility Commission of Connecticut. Mr. Elwell was connected with the Connecticut Company four years. He was formerly with the New London & Norwich Railroad.

Mr. J. B. Ingersoll has resigned as electrical engineer of the Spokane & Inland Empire Railroad, Spokane, Wash., to become electrical engineer of the British Columbia Electric Railway, Vancouver, B. C. Mr. Ingersoll was formerly connected with the Westinghouse Electric & Manufacturing Company, and supervised for that company the installation of electrical apparatus for the Coeur d'Alene line of the Spokane & Inland Empire Railroad. He afterward resigned from the Westinghouse Electric & Manufacturing Company to become connected with the Spokane & Inland Empire Railroad.

Mr. Ernest C. Webster, formerly assistant engineer of maintenance of way of the Connecticut Company, New Haven, Conn., has been appointed engineer of maintenance of way of the company to succeed Mr. C. C. Elwell, whose appointment as engineer of the Public Utility Commission of Connecticut is noted elsewhere in this column. Mr. Webster was born in Litchfield, Conn., and was graduated from the Sheffield Scientific School at Yale in 1904. After graduation he became associated with Mr. Albert B. Hill, now engineer of the New Haven Water Company. Mr. Webster has been connected with the Connecticut Company about five years.

Mr. R. G. Hutchins, Jr., who since March 1, 1911, has been first vice-president of the Chicago (Ill.) Railways, has resigned to accept the position of vice-president of the National Bank of Commerce, New York. Mr. Hutchins succeeds to the position made vacant by Mr. James S. Alexander, who was elected president of the National Bank of Commerce. During his short connection with the Chicago Railways Mr. Hutchins won the highest esteem and heartiest good will of his associates, and his departure is viewed with sincere regret. In leaving Chicago he expressed himself as deeply sensible of the good will and co-operation that have been a pronounced feature of his relations with the officials of the Chicago Railways.

Mr. Charles J. Davidson, who resigned recently as chief engineer of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to become a member of the firm of Woodmansee, Davidson & Sessions, consulting engineers, Chicago, was tendered a testimonial dinner at the Hotel Pfister, Milwaukee, on Sept. 14, 1911, by about 100 of his business friends. Mr. C. N. Duffy, toastmaster, reviewed briefly the work carried out in the thirteen years Mr. Davidson was with the engineering department of the Milwaukee Electric Railway & Light Company. When Dr. Davidson assumed his duties at Milwaukee the total horse-power of the Milwaukee plant was 10,000; now it exceeds 100,000. The other speakers included Mr. Ernest Gonzenbach, president and manager of the Sheboygan Railway & Electric Company; Mr. Fred M. Prescott, Mr. W. C. Scott, Mr. Charles A. Cahill, who is Mr. Davidson's successor at Milwaukee; Mr. Henry Schoellkopf, Mr. J. D. Mortimer, vice-president of the North American Company and vice-president and general manager of the Milwaukee Electric Railway & Light Company, and Mr. Fay Woodmansee. Mr. Mortimer characterized Mr. Davidson as having a rare combination of engineering and business ability. He pointed out that the most important feature in Mr. Davidson's work for the Milwaukee company had been the design, construction and operation of the large Commerce Street generating station. Mr. Mortimer predicted that when the present additions to this station have been completed it will have a greater generating capacity per unit of floor space and will have been constructed at a smaller cost per unit of generating capacity than any other station of similar size in this country. At the close of the dinner Mr. Mortimer, in behalf of Mr. Davidson's friends, presented him with a collection of photographic views.

OBITUARY

George M. Place, secretary and treasurer of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., and junior member of the Dempster-Place Company, is dead.

George H. Bentson, secretary-treasurer of the London (Ont.) Street Railway, died on Sept. 8, 1911, after a brief illness. Mr. Bentson was born in Toledo, Ohio, on Aug. 26, 1879. After attending the public schools in that city he entered the employ of the Toledo Traction Company, now part of the Toledo Railway & Light Company. He was employed in various capacities in the office of the company, and finally was made cashier, a position he held until he resigned in September, 1905, to become secretary-treasurer of the London Street Railway.

Employees of the Detroit (Mich.) United Railway to the number of about 1700 out of a total of 2400 went on strike on the morning of Sept. 20, 1911, to enforce their demands for a maximum wage of 30 cents an hour and a minimum wage of 25 cents an hour. Men who had worked for the company less than six months were receiving 23 cents an hour, those who had worked less than eighteen months 25 cents, and those who had worked more than eighteen months 28 cents an hour. The question of wages and terms of service has been before Judge James Phelan, representing the men, and George F. Monaghan, representing the company, since June last, but they have been unable to agree on the third member of the board. Judge Phelan and Mr. Monaghan were in conference from 2.30 p. m. to 5.30 on Sept. 20, but were unable to come to an agreement. At 8 p. m. the conference was resumed with Judge Phelan, F. W. Brooks, general manager of the company, and Milton McRae, who had previously been suggested as the third arbitrator, in attendance, and about 10 p. m. Judge Phelan left to present to the men a plan for a truce pending a final settlement and the men decided to return to work. The nature of this truce had not been made public up to the time that it was placed before the men for their consideration.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***California Terminal Company, San Francisco, Cal.**—Application for a charter has been made in California by this company to build an electric or steam railway between San Francisco and Sacramento, via Martin and other north of the bay counties, a distance of 95 miles, with an 18-mile branch extending into Petaluma and a 5-mile branch into Napa. Capital stock, $500,000. Directors: C. W. Conlisk, W. M. Rank and R. A. Morton.

West Side Railroad, San Francisco, Cal.—Chartered in California to build a 30-mile electric railway from Sacramento to Rio Vista. This company will use the Northern Electric Railway bridge across the Sacramento River. Incorporators: H. W. Furlong, president; B. P. Lilienthal, president of the Northern Electric Railway, and William Herlitz. [E. R. J., Sep. 9, '11.]

Georgia Railway & Power Company, Atlanta, Ga.—Application has been made for incorporation in Georgia by this company with an authorized capital stock of $27,000,000, consisting of $15,000,000 of common stock, $2,000,00 of 6 per cent cumulative first preferred, without voting power and $10,000,000 of 4 per cent non-cumulative second preferred stock. It is reported that the new company may acquire control of the Georgia Railway & Electric Company and the Georgia Power Company. Incorporators: Charles Magee, John M. McWhinney, George A. Kingston and Robert Mathison, Toronto, Can.; Jack J. Spalding, Forrest Adair, Alexander C. King, E. Marvin Underwood, Hughes Spalding and George W. Adair, Atlanta.

***East Rome Gasoline Railway, Rome, Ga.**—Application for a charter will be made in Georgia by this company to build a 3-mile railway in Rome and East Rome. It is the intention of the company to use gasoline motor cars. Capital stock, $50,000.

***Richmond & Eastern Indiana Traction Company, Richmond, Ind.**—Application for a charter has been made in Indiana by this company to build an electric railway to connect Portland, Union City, Bethel, Cox's Mills, Richmond, Brookville and Harrison. Capital stock, $50,000. Incorporators and directors: Adam H. Bartel, Sharon E. Jones, William F. Starr, Albert W. Gregg, Henry C. Burcham, Lee B. Nusbaum and H. W. Jordan.

***Caraopolis & Sewickley Railway, Coraopolis, Pa.**—Application for a charter will be made in Pennsylvania by this company to build an electric railway in Coraopolis, Moon and Sewickley. Incorporators: S. L. Tone, vice president of the Beaver Valley Traction Company, New Brighton, Pa.; W. B. Carson, C. S. Mitchell, A. W. Stevenson and J. L. Foster.

Snyder Avenue Railway, Philadelphia, Pa.—Chartered in Pennsylvania, as a subsidiary company of the Philadelphia Rapid Transit Company, to build a double track 7.66-mile electric railway on Snyder Avenue from Delaware Avenue to Thirty-sixth Street in South Philadelphia. Capital stock authorized, $140,000. Incorporators: Charles O. Kruger, president; Alexander Rennick, James J. Springer, George W. Mantz and W. L. Maize. [E. R. J., Aug. 19, '11.]

FRANCHISES

***Calgary, Alta.**—W. H. McLaws and L. P. Strong, representing the Southeast Calgary Corporation, presented a plan to the City Commissioners whereby the corporation proposes to construct an electric railway from the present terminal of the municipal railway to the Canadian Pacific Railway's industrial division in southeast Calgary.

San José, Cal.—The Peninsular Railway has received a franchise from the Board of Supervisors of the County of Santa Clara to construct a single or double track line in Santa Clara County, together with the necessary curves and side tracks, etc., upon Willow Street, Delmas Avenue and Lincoln Avenue in San José.

Canon City, Col.—F. B. Street and F. S. Kelsey, New York, have received a twenty-five-year franchise from the City Council to construct a line from the railway depot in Canon City to the top of Royal Gorge. [E. R. J., Sept. 2, '11.]

Mystic, Conn.—The Groton & Stonington Street Railroad, New London, has asked the approval of the Public Utilities Commission for the extension of its tracks from Mystic to Old Mystic.

***Rome, Ga.**—The East Georgia Gasoline Railway, Rome, has asked the City Council for a franchise in Rome.

***Valdosta, Ga.**—George L. Patterson will ask the City Council for a franchise to build a 4-mile electric railway in Valdosta over streets not traversed by the lines of the Valdosta Street Railway.

Jeffersonville, Ky.—Charles W. Kelly, Jeffersonville, and associates have received a franchise from the Board of County Commissioners to build a line in Clark County.

New Iberia, La.—F. W. Crosby, representing the Southwestern Traction & Power Company, New Orleans, has asked the Board of Trade for the right to build its tracks over certain streets in New Iberia.

***New Iberia, La.**—The New Iberia, St. Mary & Eastern Railroad has received a franchise from the City Council to operate over certain streets in New Iberia. F. M. Welsh, president.

Webster, Mass.—The Worcester Consolidated Street Railway, Worcester, has asked the Selectmen for a franchise to relocate its Cemetery Street line and extend it to the Oxford line.

Weymouth, Mass.—The Bay State Street Railway has received the approval of the Massachusetts Railroad Commission for the relocation of its tracks in Main, West and Front Streets at Liberty Square in Weymouth.

Detroit, Mich.—The City Council of Detroit, Mich., has refused to reconsider its action in granting the Detroit (Mich.) United Railway permission to loop the Brush Street line with the Hastings Street line.

Hastings, Minn.—The Interurban Construction Company, Hastings, has received a franchise from the City Council in Hastings. This line will connect St. Paul, Inver Grove, Hastings, Cannon Falls and Rochester. W. L. Sonntag, Hastings, general manager. [E. R. J., Sept. 9, '11.]

North Tonawanda, N. Y.—The Frontier Electric Railway, Niagara Falls, has received a 100-year franchise from the Common Council to build a double line and a single track terminal freight line in North Tonawanda over private way. The line will connect Buffalo, Niagara Falls and North Tonawanda. James S. Simmons, Niagara Falls, general manager. [E. R. J., Sept. 9, '11.]

Fremont, Ohio.—Albert H. Close, Toledo, and A. H. Jackson, Fremont, have secured a franchise for an electric road through Seneca County which will connect Fremont and Tiffin. They will apply at once for franchises in Tiffin and Fremont and also for the right through Sandusky County. This road would connect the Lake Shore Electric Railway, Cleveland, at Fremont with the Toledo, Bowling Green and Southern Traction Company, Finlay, and the Ohio Electric Railway at other points. [E. R. J., Sept. 16, '11.]

Eugene, Ore.—The Oregon Electric Railway, Portland, has asked the City Council for a franchise to build a loop through the business section of Eugene. As soon as it is granted the company will construct the Salem-Albany line to Eugene.

Johnstown, Pa.—The Johnstown Passenger Railway has received a franchise from the Councils for its Southmont extension.

***Salt Lake City, Utah.**—The Ogden, Logan & Preston Railway has received a franchise from the Cache County Commissioners to operate a line within the county. It is the intention of the company to construct an electric railway from Ogden through the Cache Valley to Preston. Negotiations for a franchise in Ogden are under way. A. W. Shaw, Chicago, and W. P. Funk and M. G. Gollightly, Salt Lake City, appeared before the Commissioners in the interest of the company.

Seattle, Wash.—Oliver T. Erickson has introduced an ordinance in the City Council directing the board to proceed with the construction of the municipal electric line in Seattle and extending through the Rainier Valley, for which bonds were voted in March. [E. R. J., March 25, '11.]

Vancouver, Wash.—The Washington-Oregon Corporation has received a franchise from the City Council to extend its tracks in Vancouver.

Wenatchee, Wash.—The Wenatchee Traction Company has received a franchise from the City Council in Wenatchee. The company has not yet secured a franchise from the County Commissioners to build its line over the county roads. [E. R. J., July 15, '11.]

TRACK AND ROADWAY

Birmingham, Ensley & Bessemer Street Railway, Birmingham, Ala.—This company, which is building a line between Birmingham, Emsley, Bessemer and East Lake, is reported to have elected the following officers: J. H. Morris, Philadelphia, president; J. M. Dewberry, Birmingham, vice-president, and P. S. Briggs, Philadelphia, secretary.

Montgomery (Ala.) Traction Company.—Within the next few days this company will have completed a new 3-mile line extending almost due south from the State Capitol in Montgomery to the intersection of the Carter Hill Road and Hall Street.

Ft. Smith Light & Traction Company, Ft. Smith, Ark.—Work has been begun by this company rebuilding with 80-lb. rails its line from Front Street to Thirteenth Street in Ft. Smith.

British Columbia Electric Railway, Vancouver, B. C.—This company has awarded to the Moore & Pethick Company the contract for grading 18 miles of its new interurban line on Vancouver Island running north from Victoria through the Saanich peninsula. The contractors will start work at once and the terms of the agreement call for the completion of the work in twelve months. The Saanich extension on Vancouver Island will be 22 miles in length, connecting Victoria with Deep Bay on the west shore of the Saanich peninsula near its northern point. Considerable preliminary clearing work has already been done on the right-of-way by the company. From the northern terminus of the line it is probable a ferry will be operated connecting fertile islands on the Gulf with the mainland.

Fresno, Coalinga & Monterey Company, Fresno, Cal.—Plans have been outlined by this company for three branch lines. One branch is to extend from Hollister to San José, another from Hollister to Santa Cruz, by way of Watsonville, and the other from Coalinga to Maricopa and Bakersfield. Efforts are now being concentrated on the plans for the main line between Fresno, Coalinga and Monterey. T. C. White, Fresno, president. [E. R. J., Sep. 9, '11.]

Pacific Electric Railway, Los Angeles, Cal.—Plans for a 5-mile track to be the connecting link of the Corona and Colton systems, and giving a clear run from Corona to Riverside and San Bernardino, were recently made by this company.

***Oakland, Martinez & Alhambra Railway & Ferry Company, Martinez, Cal.**—This company is being organized as a subsidiary company of the Oakland, Antioch & Eastern Railway, Portland, to build an electric railway between Oakland, Martinez via Walnut Creek and the Alhambra Valley, a distance of 13 miles. A wharf would be built at Martinez by this company and a ferry service established between Martinez and Benicia. The business men of the towns affected are requested to subscribe $150,000, for which stock in this new line will be issued. The Martinez Business Men's Association is interested.

Ontario & San Antonio Heights Railroad, Ontario, Cal.—An extension will be built by this company between Cucamonga and Upland, providing that a free right-of-way is secured. This line will eventually be extended to Etiwanda and San Bernardino. The company is also considering plans to extend the Glendora line to San Bernardino.

Cresent City Railway, Riverside, Cal.—Work will soon be begun by this company on its extension to Bloomington.

***San José, Cal.**—J. H. Mehling, San José, will ask the State Board of Harbor Commissioners for dockage privileges along the water front at San José in connection with his plan to operate steamers between South San Francisco Bay and the ferry building in connection with an interurban railway from the former place to San José. The right-of-way for the electric railway has been obtained from the northern city limits of San José to tidewater.

San Luis Obispo, Cal.—Walter G. Lincoln, San Luis Obispo, has completed preliminary surveys and is now making arrangements for the necessary bonds for the construction of an electric railway in the city and county of San Luis Obispo. [E. R. J., Aug. 26, '11.]

Vallejo & Northern Railway, Vallejo, Cal.—Grading has been begun by this company at Vallejo on the line that is to be the new connecting link between Sacramento and San Francisco.

Connecticut Company, New Haven, Conn.—Plans are being considered by this company to build an extension from Thomaston to Torrington.

Groton & Stonington Street Railway, New London, Conn.—This company placed in operation on Sept. 15 its extension from Mystic to Old Mystic.

Washington Railway & Light Company, Washington, D. C.—Work has been begun by this company double tracking its Congress Heights line, with the object of operating through cars from Washington to Congress Heights.

Georgia Railway & Electric Company, Atlanta, Ga.—An extension will be built by this company in Atlanta to Ansley Park.

City & Suburban Railway, Brunswick, Ga.—This company has begun work on its extension from Brunswick to the plant of the Southeastern Naval Stores Company, which is located several miles from Brunswick.

Quincy & Peoria Traction Company, Peoria, Ill.—The Allen Engineering Company of Chicago has completed a preliminary examination and report for this company to build an interurban line 121 miles long between Peoria and Quincy, following the Illinois River. [E. R. J., Aug. 5, '11.]

Waukegan, Rockford & Elgin Traction Company, Waukegan, Ill.—This company has placed in operation its line between Palatine and Wauconda. The line will eventually be extended to Lake Zurich.

Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind.—It is reported that this company has arranged to close the gap of 45 miles between Crawfordsville and Danville. Work is to be begun in the spring.

***New Albany, Ind.**—F. E. Seagraves, Toledo, Ohio, has gone over the route of the proposed road from New Albany to French Lick and West Baden Springs and expressed his ability to build the road and also his willingness to take hold of the project if he received encouragement from along the line.

Vincennes, Washington & Eastern Traction Company, Vincennes, Ind.—The 1 per cent subsidy election held in Washington and Jefferson Townships, Pike County, Sept. 14, in aid of the construction of this line from Vincennes to Tell City, a distance of 80 miles, was carried in both townships. The appropriation will amount to $18,000 and $10,000, respectively.

Union Traction Company, Coffeyville, Kan.—Plans have been completed and work will soon be begun by this company on the construction of the western loop in Coffeyville.

Shelbyville, Ky.—Plans for an electric railway from Shelbyville to Frankfort, Ky., are reported to have been abandoned by the business men who were interested originally in the construction of the line. [E. R. J., Aug. 5, '11.]

***Iberia, St. Mary & Eastern Railway, New Iberia, La.**—This company has awarded a contract to L. M. Linnan, Baton Rouge, for grading this interurban railway from New Iberia along the right-of-way of the Southern Pacific Railway to Oliver Station, thence to Jeanerette, Charenton, Franklin and Berwick. This line will cross the Teche River near Charenton and near Franklin on a steel bridge. It is planned to operate gasoline motor cars. F. M. Welsh, president.

New Orleans Railway & Light Company, New Orleans, La.—This company will double track its Common Street line from Baronne Street to Rampart Street in New Orleans.

United Railways & Electric Company, Baltimore, Md.—It is reported that this company plans to build a 5-mile extension from Ellicott City to St. Charles College.

Springfield (Mass.) Street Railway.—The new East Street extension of this company in Springfield was opened for traffic on Sept. 14.

Worcester (Mass.) Consolidated Street Railway.—Work has been begun by this company double tracking its Tatnuck line for about 1 mile. The company has completed its Clinton line extension in West Boylston.

Mankato (Minn.) Electric Traction Company.—This company will soon build about a mile of new track in Mankato.

***Yazoo City, Miss.**—A company is being formed to build an electric railway between Yazoo City and Canton. Among those interested are H. Wise, I. S. Reed, T. H. Campbell, H. H. Brickell and D. A. Swayze, all of Yazoo City.

Public Service Railway, Newark, N. J.—This company plans to build two extensions in the West Side section of Jersey City.

Fort Ransom, N. D.—E. S. Lovelace, Fort Ransom, and associates are making preliminary arrangements to construct an electric railway between Enderlin and Fort Ransom, with an extension later to Sheldon. [E. R. J., Jan. 7, '11.]

Tri-State Railway & Electric Company, East Liverpool, Ohio.—Plans are being made by this company for a new crosstown service over the River Road and North Side lines in East Liverpool.

***Marion, Ohio.**—At a meeting of business men at Bellecenter on Sept. 11, J. R. Snowball, capitalist of Philadelphia, proposed to furnish capital to build an electric railway between Belle Center and Marion, if they would secure a free right-of-way and secure money for the preliminary survey.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—Surveys have been made and plans are being made by this company to build an extension from Port Colborne to Bridgeburg, via the shore of Lake Erie.

Pittsburgh (Pa.) Railways.—The Committee on Public Service has approved an ordinance that is open to all bidders embodying an agreement with the Pittsburgh Railways relative to its tracks in Murray Avenue. Under the agreement the company will shift its tracks from a private right-of-way to the middle of Murray Avenue from Forward Avenue to Hazelwood Avenue in Pittsburgh.

West Penn Railways, Pittsburgh, Pa.—This company is said to be considering plans for two possible routes for an extension of its line from Phillips into Uniontown. Surveys are being made.

Pittsburgh (Pa.) Railways.—This company is said to be considering plans to build an electric railway from Beaver Falls to Koppel, and to build a bridge over the Beaver River, south of Rock Point, and extend the line into Ellwood City.

Abbeville, S. C.—Plans to construct an electric railway from Abbeville to Easley, 60 miles in length, via Anderson, have taken definite shape and work will soon be begun. The people of Abbeville County have agreed to raise $40,000 of the $150,000 needed to comply with the provisions of New York bankers who will finance the project. The town of Antreville, in that county, will raise an additional $10,000, and the remainder will be raised in Anderson and Pickens Counties. [E. R. J., June 10, '11.]

Middle Tennessee Traction Company, Nashville, Tenn.—This company has awarded the contract to McLaughlin & Company, Franklin, for grading the proposed 40-mile electric railway between Shelbyville and Franklin via College Grove. This will include a 50-ft. bridge. About 6 miles of the line has been graded. John Wilkes, 2 Berry Block, Nashville, chief engineer. [E. R. J., June 24, '11.]

Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.—An extension of this company's loop in the South Bluff section of Corpus Christi will soon be built.

Tyler, Tex.—The bonus asked by Thomas O'Hara and Ralph E. Hoskot, Dayton, Ohio, to whom the City Council recently granted a franchise, has been raised. The construction of the line will begin not later than Jan. 1. [E. R. J., Jun. 10, '11.]

Washington & Old Dominion Railroad, Richmond, Va.—Preliminary arrangements are being made by this company on its electric railway which is to bisect the northwestern end of Alexandria County and serve, it is said, as a connecting link between the Great Falls & Old Dominion Railroad and the Bluemont division of the Southern Railway. Grading is under way. Charles M. Henckley, president. [E. R. J., Aug. 26, '11.]

Kenosha (Wis.) Electric Railway.—Plans are being made by this company for an extension of its lines in Kenosha.

Badger Railway & Light Company, Milwaukee, Wis.—This company has placed in operation its line between Pewaukee and Watertown. The line when fully completed will connect Lake Geneva, Elkhorn, Whitewater and Pewaukee. Gustav Pickhardt, Milwaukee, chief engineer. [E. R. J., Aug. 19, '11.]

Milwaukee Western Electric Railway, Milwaukee, Wis.—This company has awarded the first grading contract for the construction of its line into Central Wisconsin to P. J. Finnerty, Oconomowoc.

***Yellowstone Park, Wyo.**—E. J. Haynes and associates are considering plans to construct a gasoline motor line through Yellowstone Park.

SHOPS AND BUILDINGS

Oakland, Antioch & Eastern Railway, Oakland, Cal.—Work will be begun at once by this company on its new depot at Fortieth Street and Shafter Avenue in Oakland. The company's yards and freight houses are also to be built on Shafter Avenue near the terminal point.

Illinois Traction System, Peoria, Ill.—An entire block of property on Ninth Street, between Monroe Street and Adams Street, in Springfield has been purchased by this company. The building now occupying this block will be remodeled and converted into a freight depot. The company will then devote the present terminals in the rear of its passenger depot to the exclusive use of passenger traffic.

Worcester (Mass.) Consolidated Street Railway.—An addition will be built by this company at its Gates-Lane carhouse in Worcester. A sprinkler system will be installed at an aggregate cost of between $45,000 and $55,000 and a cistern for water supply will be built, costing approximately $3000. The carhouse will be equipped with fire doors and fire walls. These additions have been decided upon since the original plans were drawn.

Ohio Electric Railway, Cincinnati, Ohio.—This company will soon let the contracts for a new freight house to be erected on East Town Street in Columbus. The building will be 40 ft. x 150 ft. and will be constructed of brick, steel and concrete, one story high.

Lake Shore Electric Railway, Cleveland, Ohio.—This company and the Sandusky, Fremont & Southern Railway, Sandusky, and the Fostoria & Fremont Railway, Fostoria, will occupy the new Wheeling depot, which has just been completed in Fremont.

Hull (Que.) Electric Company.—This company will soon award contracts to build a new carhouse, having a capacity of twenty-seven cars, in Hull.

POWER HOUSES AND SUBSTATIONS

Wilmington & Philadelphia Traction Company, Wilmington, Del.—This company will erect a power house along the Brandywine River, near the one it now operates, at a cost of $50,000 exclusive of machinery, etc. The main building of the structure will be 107 x 112 ft. and will have an average height of 63 ft. It will be constructed of brick and steel and will contain a duplicate power house plant.

Des Moines (Ia.) City Railway.—This company has awarded a contract to the J. W. Turner Improvement Company, Des Moines, for the construction of an addition to its power plant in Des Moines.

New Hampshire Electric Railways, Haverhill, Mass.—This company advises that it has purchased two boilers with a capacity of 1000 hp for its power house in Haverhill.

Tri-State Railway & Electric Company, East Liverpool, Ohio.—This company has purchased a new 1500-kw Parsons steam turbine with surface condenser for its East Liverpool power house.

Rutland Railway, Light & Power Company, Rutland, Vt.—Plans are being considered by this company for a new power house and dam at Clarendon Gorge. The specifications call for a circular reinforced concrete dam with an ultimate height of 96 ft. The power station will be about 40 ft. x 20 ft. and will contain one 500-kw turbine and a water wheel of 1000-hp.

Manufactures & Supplies

ROLLING STOCK

Orange County Traction Company, Newburgh, N. Y., is said to be in the market for ten open prepayment cars.

Oregon Electric Railway, Portland Ore., expects to purchase six motor cars, sixteen coaches and one observation car.

Green Bay (Wis.) Traction Company is having a 4000-gal. Kennicott electric cataract sprinkling car built by the Kennicott Company.

Rutland Railway, Light & Power Company, Rutland, Vt., has ordered two 34-ft. semi-convertible motor car bodies from The J. G. Brill Company.

Connecticut Company, New Haven, Conn., has ordered two McGuire-Cummings standard long-broom steel-underframe single-truck snow sweepers.

International Railway, Buffalo, N. Y., has ordered three McGuire-Cummings standard long-broom steel-underframe single-truck snow sweepers from the McGuire-Cummings Manufacturing Company.

Fort Madison (Ia.) Street Railway has ordered two single truck one-man prepayment cars with McGuire-Cummings solid steel Columbian trucks from the McGuire-Cummings Manufacturing Company.

Geary Street Municipal Railroad, San Francisco, Cal., has completed plans and specifications for forty-three double-end pay-as-you-enter type closed steel motor car bodies and four extra trucks complete with axles, wheels and motors. The bids are returnable to the Board of Public Works on Nov. 1.

Kokomo, Marion & Western Traction Company, Kokomo, Ind., has ordered two double-truck interurban passenger smoker and baggage cars mounted on McGuire-Cummings 70-A high-speed trucks and one double-truck steel-underframe express car mounted on McGuire-Cummings 70-A high-speed trucks from the McGuire-Cummings Manufacturing Company.

TRADE NOTES

George L. Fowler, New York, N. Y., consulting mechanical engineer, has removed his office to 83 Fulton Street, New York, N. Y.

International Oxygen Company, New York, N. Y., has removed its New York offices from 68 Nassau Street to 115 Broadway, where increased facilities have been secured.

Q M S Company, Plainfield, N. J., has received orders for two Q M S special and two Q M S standard car-wheel grinders from the Portland (Ore.) Railway, Light & Power Company.

Ohmer Fare Register Company, Dayton, Ohio, has arranged to purchase 4½ acres of land at Edgemont, a suburb of the city, on which a modern manufacturing plant will be erected.

Cambria Steel Company, Johnstown, Pa., has appointed Leo Loeb assistant steam engineer in the steam engineering department. Mr. Loeb was formerly assistant professor of mechanical engineering at the Rensselaer Polytechnic Institute.

Electric Railway Maintenance Association, New York, N. Y., has been incorporated with $50,000 capital to engage in general consulting and electrical engineering business. Incorporators: A. B. Herrick, C. G. Boyden, New York, and J. K. Mann, Brooklyn.

American Rolling Mill Company, Middletown, Ohio, tendered a banquet on Sept. 1 to its entire sales and operating departments. Several addresses were made by members of the executive staff and heads of departments. The banquet was coincident with starting up of the company's East Side works.

National Carbon Company, Cleveland, Ohio, is building a new carbon plant at Niagara Falls which is to be ready for occupancy some time in October. The company will manufacture carbon electrodes exclusively at this plant. This is the second plant which the company has built during the past year, the other being at Toronto, Ont.

Universal Lubricating Company, Cleveland, Ohio, has appointed T. U. Franklin general sales manager, effective Oct. 1. Mr. Franklin was formerly associated with the Indian Refining Company and was for several years connected with the Toledo & Western Railway. Previous to that time Mr. Franklin was identified with steam railroad work in the Middle West.

Chicago Pneumatic Tool Company, Chicago, Ill., at a meeting of the board of directors on Sept. 26, will consider a plan for the acquisition of a controlling interest in the St. Petersburg (Russia) Pneumatic Tool Company, capitalized at $500,000. The company has recently established new branch offices at Brussels, Copenhagen, Stockholm and Christiania. Charles Booth has resigned as vice-president of the company on account of ill health.

Hall Signal Company, New York, N. Y., announces that W. A. Peddle, signal engineer of the company, in charge of estimating and construction, with office in Garwood, N. J., has been transferred to the sales department, with office in New York. H. L. Hollister, engineer for the Western district, with office in Chicago, succeeds Mr. Peddle. W. G. Hovey, recently with the Hall Signal Company, has become connected with the railway sales department of the Okonite Company, New York.

..**W. Frank Carr** has resigned as chief engineer of the Falk Company, Milwaukee, Wis., effective Oct. 1, 1911. Mr. Carr was born in Holyoke, Mass., in 1861 and was graduated from the Massachusetts Agricultural College (Amherst) in 1881 and as a civil engineer from the Massachusetts Institute of Technology in 1884. He was assistant bridge engineer of the Boston & Lowell Railroad the first year after his graduation, and then served for a year as a professor in the engineering department of the University of Minnesota at Minneapolis. Subsequently he opened an office in Minneapolis as a contracting and consulting engineer. In August, 1888, Mr. Carr became connected with the Minneapolis Street Railway, serving as assistant engineer during the construction of the Selby Avenue cable line in St. Paul. In 1890, at the time of the change of motive power of the company's line from cable to electricity, he was appointed chief engineer, in which capacity he had personal supervision over the electrification of 190 miles of road, including overhead and track construction, designing of rolling stock, etc. He resigned from the Minneapolis Street Railway in December, 1891, to accept the position of general manager and chief engineer of the Roanoke (Va.) Street Railway and the Roanoke Electric Light & Power Company, and supervised the reconstruction and extension of these systems. He was superintendent of electrical construction of the West Chicago Street Railway from March 1, 1895, to June 1, 1896, covering the period of change of motive power of this company from horse to electricity. From June, 1896, to April, 1899, he was chief engineer of the company, and during this time also superintended the electrification of the Lake Street Elevated Railroad. Mr. Carr became connected with the Falk Company as chief engineer in April, 1899, and had the entire management for the company of the special work department and the contract work for the construction of city and interurban systems. Mr. Carr is a member of the American Society of Civil Engineers and of the University Club of Milwaukee. He is succeeded in the Falk Company by W. C. Burdick, who is a graduate civil engineer from the University of Wisconsin. Mr. Burdick was employed by several railroad and manufacturing companies for four years, and for the last six years he has been assistant engineer of the special-work department of the Falk Company.

ADVERTISING LITERATURE

George W. Richardson, Chicago, Ill., has issued a folder which describes and illustrates the Richardson direct-reading slide rule.

J. J. McCabe, New York, N. Y., is mailing a circular which calls attention to the new style McCabe two-in-one heavy pattern double-spindle lathe.

H. M. Byllesby & Company, Chicago, Ill., have reprinted in pamphlet form the address delivered by H. M. Byllesby, president of the company, at the annual convention of the American Institute of Electrical Engineers, Chicago, Ill., on June 27, 1911. An abstract of this address was printed in the Electric Railway Journal of July 1, 1911.