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### Parks and Pleasure Resorts

In years past the ELECTRIC RAILWAY JOURNAL has devoted two issues in January and February largely to descriptions of electric railway amusement parks. Following this custom, the first park number of this year was dated Jan. 30, and the issue of this week is the second and last in which articles of special interest to park managers will predominate. Only a small amount of space in

the editorial pages has been given over in this issue to a discussion of park topics, as in the Jan. 30 issue the general aspects of the park situation were commented on quite fully. The parks which are described on pages 360 to 369 include the amusement resorts of two electric railway companies on the Pacific slope, one company in the Middle West and one of the largest urban and suburban companies in the East, which controls no less than 12 parks at different points on its lines. This variety of location is a good indication that the practice of operating amusement parks as adjuncts of electric railway properties for direct or indirect profit is widespread throughout the country, and is not confined to any one section or group of companies. It must be concluded, therefore, that in the opinion of at least a great many railway managers parks are a paying investment.

### Park at Dubuque

Union Park, which is owned by the Union Electric Company, of Dubuque, Ia., is less than five years old, but in the comparatively short space of time since it was opened it has become the people's playground and one of the show places of Dubuque. It was started with the idea of providing for the people of Dubuque a clean, wholesome and attractive open-air resort, free from noisy excitement. There are no scenic railways, carrousel or other similar amusement devices. Instead, every detail of the natural beauty of the park site has been brought out by skilful landscape gardening, and the "outside attractions" which have been provided are of the kind which educate and appeal to the intellect. Children and their parents are encouraged to visit the park during the daytime by the installation of swings, sand piles and other equipment for youthful amusements. To attract their elders the company from the beginning has confined its effort and expenditure to providing excellent musical entertainments free of charge. These entertainments were formerly given from a pavilion surrounded by seats in an open air amphitheater. This spring a pretentious theater building is to be erected to accommodate large musical organizations, light opera companies and other forms of theatrical entertainment. It will have a seating capacity under cover of 2600 and accommodation for 3078 persons in an open-air natural amphitheater built of concrete on a side hill. A seating capacity of nearly 6000 in a park theater seems large, but last season, with concerts in the open air, the audiences ranged from 4000 to 7500. Dubuque is a city of only 45,000 inhabitants, yet on many occasions the attractions at the park drew one-sixth of the city's entire population. The idea of providing a single kind of high-class entertainment at the park has proved successful in Dubuque. It might not be as successful if tried in parks near other cities,

but if park patrons are beginning to tire of exciting and noisy "thrillers," there remains the opportunity of trying the experiment which has been the making of Union Park.

### Keeping Rolling Stock Supplies Low

The larger the system, and the greater the number of car houses in service, the more important it is to cut down excessive quantities of stores. It is not easy to keep close to the zero line in the supplies of materials on hand, and there is scarcely anything more annoying or costly in the maintenance of equipment than to run short of the necessary spare parts. But it is possible to pay especial attention to the accurate requisitioning of material, the transmission of requisitions to the purchasing agent in time so that all desired bids may be obtained, and a careful watch over the supplies when they are received. This will tend to avoid the purchase of excessive quantities and the return of material to the central storehouse, when its necessity at individual car houses has been eliminated. Delays in this department of a company's service are inseparable from expense. On a road which keeps a stock of material worth \$250,000 the fixed charges may amount to \$100 a day, allowing for interest, depreciation due to the advancement in the art, taxes and insurance. This may easily mean that the total earnings of from six to ten cars will have to be set aside to pay the cost of stockholding, leaving the operating expenses and fixed charges on the cars, and power supplying equipment necessary for them, to be paid for by the earnings of other cars. To the average man the stock of materials kept in the car houses and mechanical headquarters of a large railway system is an impressive illustration of the company's financial strength, but there is room for a much wider appreciation of the fact that it costs money to keep supplies on hand even after they are paid for. There is room for the practice of the highest kind of judgment in this matter.

### Subway Construction and Cost at Home and Abroad

With the exception of the Metropolitan and Metropolitan District railways, in London, all of the underground roads have been of the deep-tube type. It is often assumed that the reason for the adoption of this construction in London is the soft clay which underlies the city and through which it is almost as easy to pierce a tube as if one were cutting through cheese. It seems, however, from a recent discussion at the British Institution of Civil Engineers, that this is not the only or even the controlling reason.

The narrowness of the London streets has a great deal to do with the selection of the deep-tube method. In New York, lower Broadway and Elm Street are 80 ft. wide; Lafayette and Fourth Avenue, 100 ft.; Forty-second Street, 90 ft., and the upper part of Broadway, 100 to 150 ft. In London, on the other hand, it was stated that there were not over a dozen streets over 80 ft. wide, and one of the speakers knew of only three as wide as 100 ft. If one adds to this condition the rigorous protection thrown around property rights in basements and cellars under the roadway, the reason for descending far below the street level is evident. The chief objection to a deep subway is the cost and time required to convey passengers between the train platforms and the street level. The former

amounts, on the Central London Railway, to about 0.2 cent per passenger, or approximately 5 per cent of the gross receipts. The capitalized value of these elevators is from £40,000 to £60,000 per mile, a large item in the cost of underground railways.

As regards the entire cost of the lines, various figures were quoted. Sir John Wolfe-Barry, past president of the Institution, thought their total cost not far from £700,000 per mile; the engineer of the Waterloo & City quoted the cost of that tube as £483,000 per mile, including the real estate purchased and equipment. The Central London, on a similar basis, was given as £631,000; the manager of the company thought that if the tube alone, lined, was considered, the cost would be £60,000 per single track, or £120,000 per double track, but another speaker thought £300,000 a closer figure under the latter conditions. It is difficult to compare these figures with those of the New York subway, because of the use of single-track tubes in London and four-track subway in New York. But taking the cost of construction for the New York subway, with its 25.7 miles of route and 76.5 miles of track, at \$50,000,000, and the cost of equipment at \$25,000,000, the difference between the two methods does not seem to be very great.

### Safeguarding the Transfer in Cleveland

The operation of the Cleveland street railway system by receivers has given prominence to one feature of operation which is of extreme importance to companies throughout the country. This feature is the recognition by the receivers, acting under the instructions of a judge of the United States Circuit Court, and the acceptance by the public of the fact that a transfer is a liability of the company and an asset of the traveling public, and as such is entitled clearly to consideration in a computation of the cost of operation.

As this phase of the present situation in Cleveland is of interest, not only to the company directly concerned, but also to other railways which realize that the transfer generally tempts and stimulates abuse, it will be desirable to restate the facts respecting the existing conditions which govern the issue of transfers in the Ohio city. The ordinance granting the so-called "security franchise" to the Cleveland lines, which took effect when the lease of the property by the Municipal Traction Company became operative, provided that if the rate of cash fare should be lower than that which the company was authorized to charge, it might make "such charge for transfers as shall not increase the fare for a ride and transfer in the aggregate above the ticket rate of fare herein provided."

The management of the Municipal Traction Company tried various expedients designed to permit operation at a rate of fare which should correspond exactly or nearly with the expectation of "3-cent fares with universal transfers." The sweeping reductions in car-mileage which accompanied the lower rates of fare, however, displeased the public, and the decline in the unit of fare failed to develop the anticipated large increase in the number of short-haul passengers. Various experiments were made with the rates of fare, which included the elimination of various long hauls for one fare and the establishment of arbitrary charges for transfers.

All of the experiments tried in turn failed to produce the net earnings which the management of the Municipal Traction Company had anticipated. The general charge of 1 cent for a transfer was discontinued finally, under the public pressure which demanded a trial of 3-cent fares with universal transfers, until the people of Cleveland voted to reject the "security franchise," and receivers were appointed to take charge of the property. If the management of the Municipal Traction Company had been upheld by the voters of Cleveland in its control of the railway, it is probable, judging from the statements showing the imperative need of increased revenues, that a charge for transfers would have been re-established immediately.

The instructions of Judge Tayler, of the United States Circuit Court, to the receivers directed them to charge the highest rates of fare permissible under the ordinances. Since the receivers are operating the lines as one system and on some of the lines 3-cent fares were required, the result is to make the fares on the 3-cent lines when transfers are issued 2 cents above the regular rate. When the transfer is issued by a conductor on these lines 3 cents are collected from the passenger, but 1 cent is refunded when the transfer is surrendered. On the 5-cent fare lines 1 cent is collected by the conductor on the issue of a transfer, but this is refunded when the transfer is tendered for a proper ride.

The Newton (Mass.) Street Railway is charging 1 cent for each transfer issued. In speaking of the action of this company, the *ELECTRIC RAILWAY JOURNAL* (see editorial, "An Extra Charge for a Transfer," issue of Jan. 9, 1909) said that it would be important "because it gives a value to that which has been regarded altogether too lightly if its effect on earnings is to be given due weight by the public as well as by the street railway managers themselves." The Newton company, unlike the Cleveland receivers, retains the full charge for transfers.

The receivers who are operating the Cleveland lines have undoubtedly protected the revenues of the property by recognizing the transfer as an important element in the financial results of management.

### Car Design for Rapid Transit Lines

As our readers have been aware for some time past, the task of designing cars for maximum rate of loading and unloading is an enormously difficult one. Each trial of a new type raises its own difficulties, and no form yet proposed meets all objections. The main principles involved are not particularly intricate; it is their application that is the puzzle. The first requirement for rapid loading and unloading of a passenger car is that the average distance to be traveled by a passenger in getting in or out should be a minimum. From one point of view the most desirable type of car in rapid transit service is one in which the entire side of the car opens, exposing a side aisle by which passengers can distribute themselves quickly within the car. The nearest practicable approximation to this plan is the Illinois Central type, undoubtedly the most desirable from a loading and unloading standpoint, provided the doors can be shut promptly after the passengers waiting to board the car have passed through the doors.

Its time of trial comes when there is a stream of passengers boarding the train, the usual condition where trains are run a few minutes apart. In such cases a multiplicity of side doors works badly unless the train can take every one on the platform who desires to board it, or unless station guards are present to close the doors, otherwise it is very difficult for the train guards, from their isolated positions on the platforms of the car, to cut off passengers, since a late passenger will often block one of the doors in an effort to get on the train.

The design of car farthest removed from the Illinois Central, the ordinary end-door car, works better in rapid transit service than would casually be thought possible, partly because the guards have complete control of the entrances and partly because when passengers know that they must leave by the end of the car they leave their seats before the station is reached and collect near the door. The worst type of car for prompt loading and unloading is the open car, or the side-door compartment car without a side aisle, because there is no circulation within the car and passengers are unwilling to enter until they see a compartment that suits them.

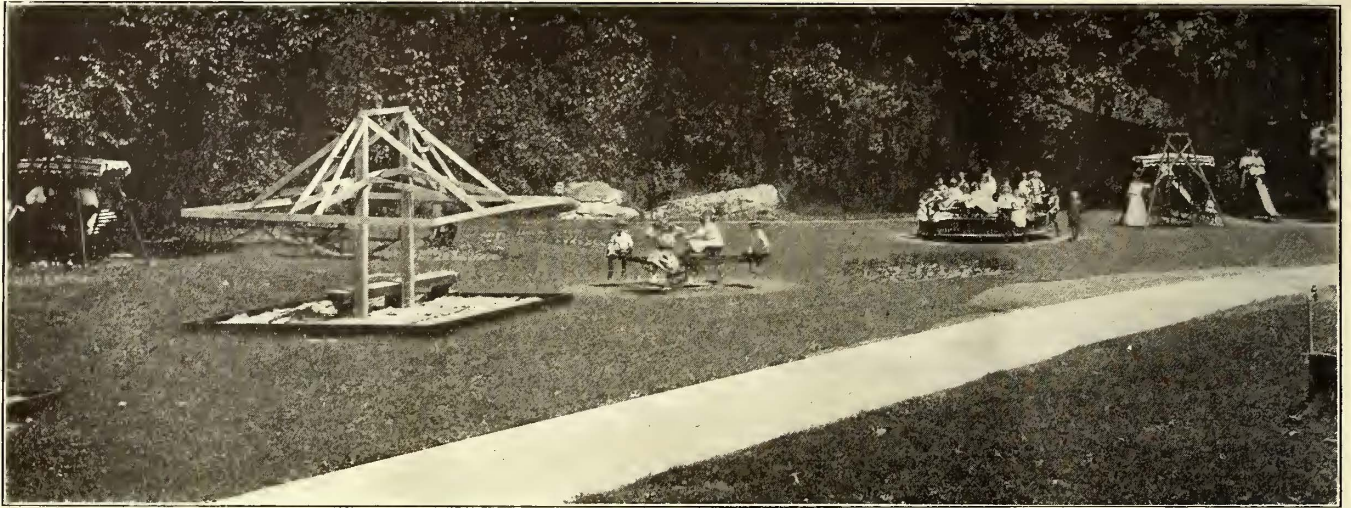
The new subway car in New York constitutes a unique departure in car design, being based somewhat on the circulation principle of the center side-door car, such as used in Boston and elsewhere, but with both entrance and exit doors near the ends. It permits the use of the cars at curved platforms and also provides "stagnant space" in the center of the car where long-distance passengers can station themselves, away from the rush at the end doors. The success of the car, it seems to us, will depend upon whether the guards will be able to close promptly four doors, and also upon whether the circulation principle upon which the car is based can be maintained. The latter point, in turn, is contingent upon the question whether the passengers can be prevented from entering and leaving by the wrong doors, which does not seem any more difficult than with the center side doors, and also upon whether standing passengers can be kept from blocking up the exit door. This latter condition is one which, it would seem, would be fairly difficult to prevent with doors only 38¾ in. wide.

The ultimate solution, where enormous crowds have to be handled rapidly, is that of separate entrance and exit platforms on opposite sides of the car. This plan has been employed in a number of the stations of the Hudson & Manhattan Railroad. It is questionable whether any less revolutionary plan will enable a company to deal with extraordinary crowds. The whole trouble lies deeper than mere car construction, and belongs to the planning of the transportation system. How far remedial measures can be applied in the existing subway remains to be seen. We are none too sanguine regarding any proposed remedy during the real rush hours, although it may be possible to get a certain useful amount of relief at times. Perhaps when another subway is built the lessons of the present ones will be taken to heart. The trouble lies in the large number of intermediate stations, originating very heavy traffic and compelling a very rapid double movement of passengers at express stations where transfer between local and express trains takes place.

## RECENT PARK IMPROVEMENTS AT DUBUQUE

During the past season a number of attractive features have been added to Union Park, owned by the Union Electric Company, of Dubuque, Ia. The main characteristics of this resort were described by L. D. Mathes, general manager of the Union Electric Company, in an article in the

One of the features of the playground section is an attractive rustic building known as "Mothers' Rest." It is designed in bungalow fashion, is equipped with comfortable furniture, has roller awnings on all sides to be let down to keep out the rain and the sun, and is reserved for the exclusive use of the mothers and custodians of young children. Near this building are numerous amusement devices set



Union Park, Dubuque, Ia.—The Children's Playground

STREET RAILWAY JOURNAL for Feb. 29, 1908. Through the courtesy of Mr. Mathes the ELECTRIC RAILWAY JOURNAL is able to describe the results secured by the additions made last year and also to present an account of those proposed during the present season.

### CHILDREN'S PLAYGROUND

The most important attraction added to Union Park

apart for the use of children. Among them are a miniature merry-go-round on which the little folks propel themselves, thereby getting exercise as well as enjoyment; sand boxes 20 ft. x 20 ft. square, in which the children at play are protected from the sun by canvas awnings; lawn swings in several sizes and designs; toboggan slides in six sizes, and a half-dozen teeter rockers.



Union Park, Dubuque, Ia.—Toboggan Slides and Teeter Rockers for the Young People

during 1908 was a children's playground. The idea was suggested to the manager from reading a magazine story of the work of the Playground Association of America. The few buildings and other equipment required for the children were not expensive, but have been found to be of great value in rounding out the park attractions.

Within the playground space is a row of six swings for those children who are more venturesome than the others and may be entrusted to entertain themselves with this simple old-fashioned amusement device. An illustration is presented showing the six swings in a row supported from timbers which are carried across the tops of seven rustic

posts. By means of this supporting frame and by using a metal chain, protected where grasped by the hands, in place of ropes, a substantial and ornamental amusement device is provided.

All around the playground section are elaborate floral designs. When the accommodations and ornamentations for the children were first completed there was some trouble from adults and boisterous youngsters abusing the equipment, but two signs reading as follows were posted, and these notices are said to have been as effective as two park policemen:

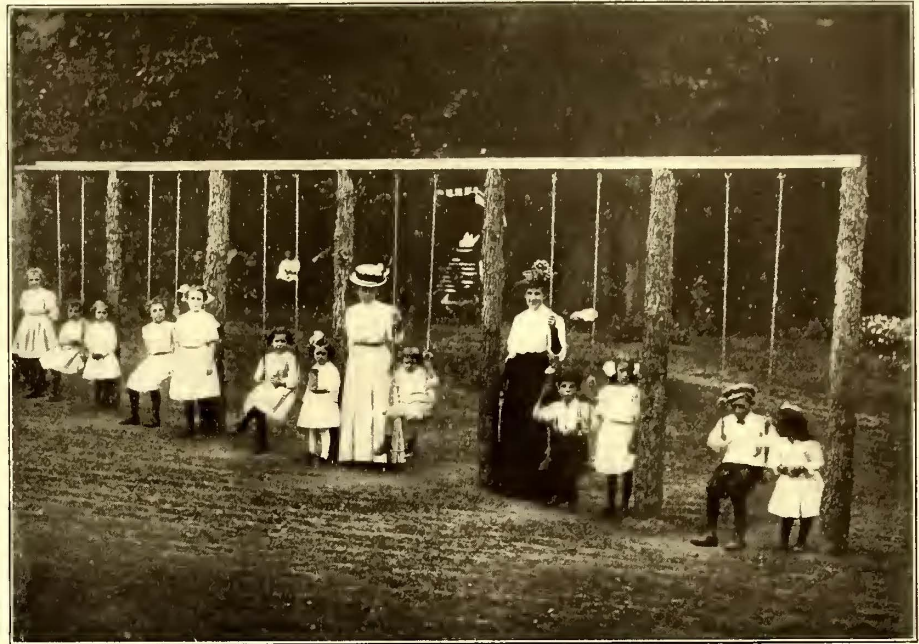
**NOTICE**—The amusement devices in this park are for children only. Adults will kindly refrain from the use of the same. Don't destroy the property of the company and thereby defeat our object of providing pleasure for the little folk.

It is worthy of mention, and somewhat of a surprise to the management, that the children never invaded the flower beds. So far as known, there never was a bud or stalk maliciously broken off by young or old.

Broad concrete walks serve for thoroughfares through the grounds. At night these walks are brilliantly illuminated by tungsten lamps carried in ornamental glass reflectors and supported from steel poles of the very attractive design shown in one of the illustrations.

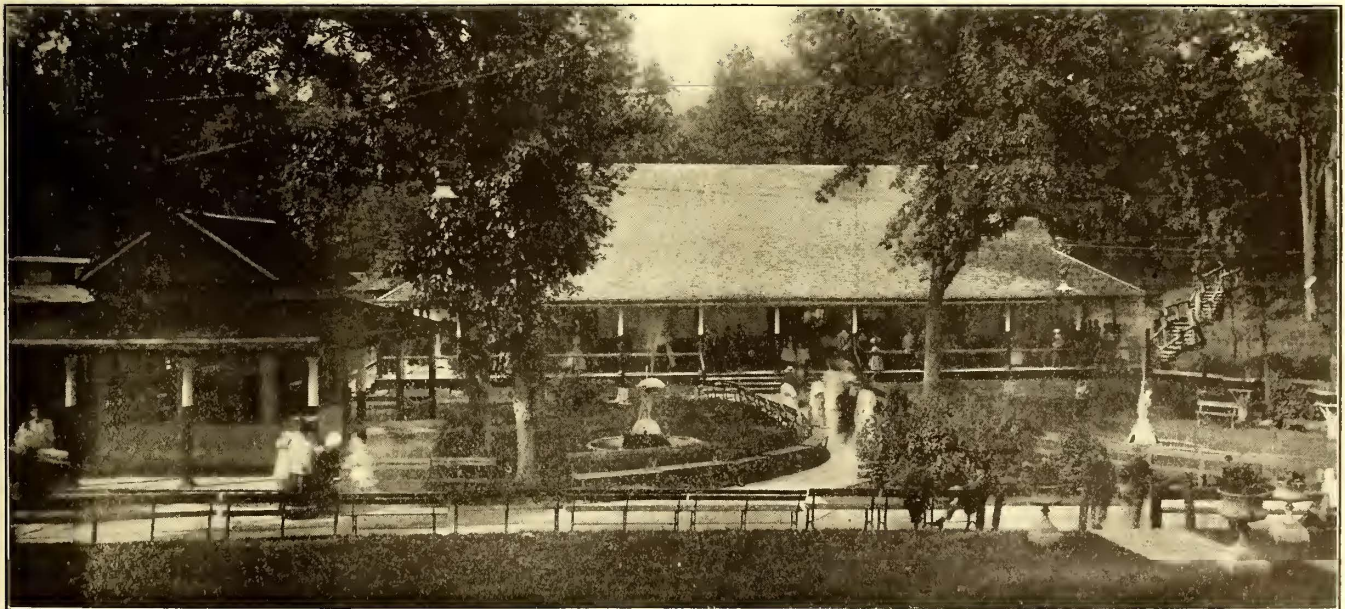
The creation of the playground feature of Union Park instantly won the commendation of the public and the city press. It is said that each child who was permitted to in-

playground movement the company this year is planning large additions to the facilities for the children's enjoyment. It is building a crescent-shaped wading pool which will be 150 ft. long by 75 ft. wide at the center. Beginning at one side there will be a depth of water of 1 in., increasing gradually to a maximum depth of 18 in. The floor will be cement and the bottom of the pool will be covered with



Union Park, Dubuque, Ia.—Six Swings in a Row

several inches of clean white sand. There will be the constant inflow of a 2-in. stream of artesian water and a discharge through an outlet of the same diameter. Around the outer edge of the crescent a rustic structure will be built, affording a place where the children can be seated for



Union Park, Dubuque, Ia.—The Dancing Pavilion

dulge in the pleasures of this playground was as eager to go again as "to witness the return of Christmas or to meet Santa Claus face to face." The educators and the clergy of the city were particularly strong in their expressions of approval of the playground feature.

As a result of the pronounced success of the initial

the removal of their shoes and stockings and the safe storage of these articles until the return of the children.

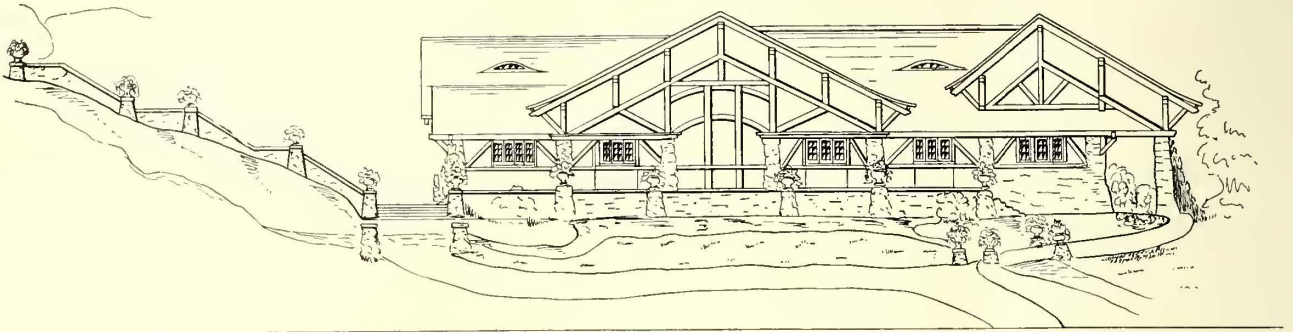
Ideas utilized in the construction of this wading pool were obtained from Ogden Park, Chicago, a resort which is recognized as the most completely equipped children's playground in the world. While Union Park is not expected

to rival Ogden Park in the character of its equipment, it is said that from the standpoint of natural beauty and surroundings the park at Dubuque far surpasses that at Chicago.

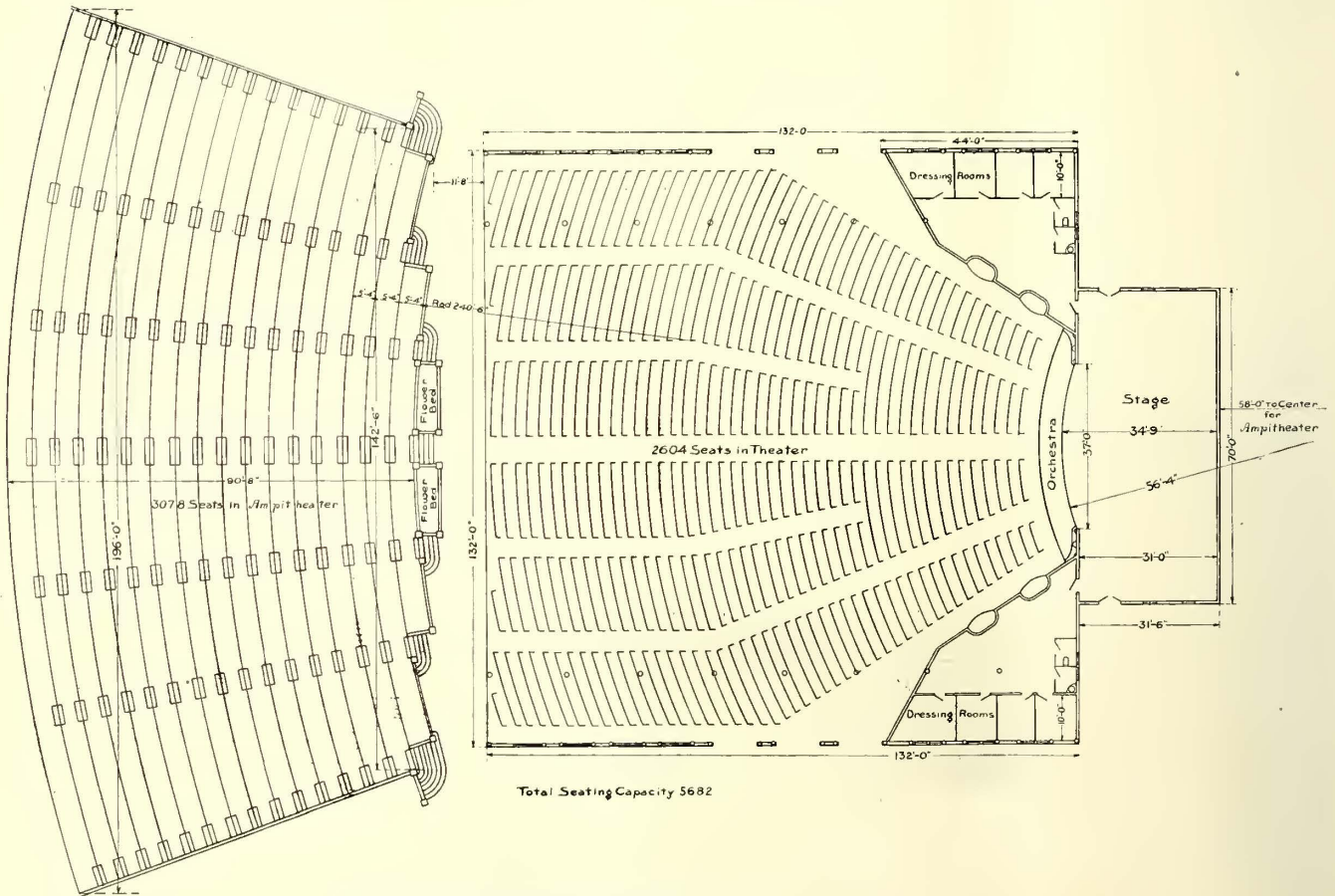
The attractions of the playground at Union Park demonstrated last year that the capacity was entirely insufficient to accommodate the flocks of children and their parents or custodians who rode out to the park for the sole purpose of visiting the playground. The company is therefore erecting this year four additional buildings, also of rustic

The building will be 163 ft. 6 in. deep and 132 ft. wide. It will have a large and well-equipped stage which will accommodate musical organizations, light opera companies or any other form of entertainment that the management may elect to put on. The main floor will be of concrete with a drop of 5 ft. from the point of entrance to the stage. There will be 2604 opera chairs, and except for the two lines of posts near the wall on the east and west sides, they will afford an unobstructed view of the stage.

The south end will be entirely open, but may be closed



Union Park, Dubuque, Ia.—Side Elevation of New Theater



Union Park, Dubuque, Ia.—Seating Plan of New Theater

design. In their charge will be one or two women in nurses' uniforms who will undertake to care for sleepy and fretful children, thus giving the mothers freedom to enjoy the musical programs at the "Plaza" or indulge in the other beauties of the park.

**THEATER AND MINOR IMPROVEMENTS**

The most pretentious improvement to be made at Union Park this year will be the erection of a theater. This structure will be designed along especially attractive lines and will be of a novel type of construction.

by steel rolling doors guided by collapsible posts supported from the roof. The line of these doors is at the base of the steep hill shown in one of the illustrations. This hill will be carefully graded and covered with cement to a height which will afford accommodation for 3078 seats. The amphitheater seats will be made of solid concrete running at an angle of about 50 deg. The steps are cut back 5 ft. 4 in. with a 2-ft. rise. On each of the steps there will be a double row of hardwood slat benches with steel frames; and on every other step there will

be a station for a large rustic or cast cement, flower or shrubbery pot. The amphitheater will have a 6-ft. rough-stone wall on the east and west and on three sides will be lighted with tungsten lamps set on ornamental iron posts.

The stage end of the theater will have all the equipment of a first-class play house and a special feature will be made of the dressing rooms. These will be ample in number and size, with a large outside area for trunks and excess baggage. In addition to the regular toilet facilities a shower bath will be provided. It will be seen that the company realizes that in providing such comforts it will get the best efforts of the performers. Actor folk, as a rule, are provided with shabby dressing rooms in the smaller theaters and when they see these quarters they will not fail to show their appreciation.

A Chicago specialist in theater electric lighting effects has been engaged to lay out the decorating scheme. Inasmuch as the company is in the lighting as well as the railway business, it is thought that the complete electrical equipment of the theater will be a good advertising medium and have an indirect influence toward increasing the lighting business.

Illustrations are presented showing the general arrangement of the covered portion of the theater. It will be noted that the arrangement is such that large crowds may be handled with facility. Every advantage has been taken of the natural beauties of the surroundings and as shown by the side elevation the theater building has been designed to form a feature in unison with these natural attractions. Last year the theatrical attractions played to audiences of from 4000 to 7500. At that time the seats were all out of doors and the company encountered some loss through inclement weather, which it is thought will be largely eliminated by the erection of the building described.

During the past season the company furnished entertainment at a weekly average cost of from \$750 to \$1,000. There was no admission charge or fee of any kind. With



Union Park, Dubuque, Ia.—Terminal Loop Station

the completion of the rustic theater a nominal fee of, say, 10 cents to 20 cents, for seats within the building will be charged, but seats in the outside amphitheater may be had free. The idea in making a charge for the attractions is that thereby the quality may be improved, the gross receipts for admission being used to defray the expense of

the weekly production. It is thought that instead of meeting a weekly cost of \$1,000 for entertainment the company will be able to put on a \$1,500 bill and the receipts from admissions, if applied against the cost, will reduce the weekly expenses to a figure less than that of the past season. It is stated that the experience of Ingersoll Park, at Des Moines, has been that starting with a free show, the



Union Park, Dubuque, Ia.—Artistic Lighting Fixtures

management, by charging a modest price for admission, has been enabled to put on more extensive and better shows and at the end of three seasons the admissions have not only paid for the shows, but left a substantial profit.

#### OTHER CHANGES

Less pretentious improvements, yet those which help to make complete a most attractive resort, may now be mentioned. The company is erecting an additional greenhouse 60 ft. x 200 ft. in ground dimensions. With this new structure the company will be able to produce attractive horticultural exhibits and it is said that during the coming season Union Park will have the most beautiful and most extensive flower gardens in Iowa. The park then surely will deserve its advertised appellation of "Dubuque's most beautiful sylvan retreat—the place of recreation for all the people."

Before the park season opens on June 15 the company will have added 3500 lin. ft. of concrete walks, all of which will be illuminated with tungsten lamps on iron posts. There will be a dozen rustic buildings scattered around the hillsides among the rocks and trees for the accommodation of picnic parties who may desire tables and benches for lunching purposes; also six fountains will be built in addition to those now installed. A waterfall effect will be developed by discharging a 6-in. stream over a concrete runway 4 ft. wide with three falls from rock to rock, averaging 20 ft. each.

To quote Mr. Mathes, manager of the park: "All of the time and money which we have spent has proved entirely satisfactory to the owners of the property. The park has won fame far beyond this particular locality; its praises are sung by all those who have in the past few years visited Dubuque. It is a permanent institution which will grow in beauty and each year will bring greater returns to the company. The improvements are all of a most substantial character. A dollar has not been cut in half with the idea that it would do the work of two. The buildings are overhauled and painted each year and when the park is opened in the spring it looks as spick and span as if it had been created but the day before."

## PARKS SERVED BY THE INLAND EMPIRE SYSTEM OF SPOKANE

BY CHARLES E. FLAGG, ADVERTISING AGENT, INLAND EMPIRE SYSTEM

The city of Spokane, Wash., scarcely 30 years old, has now a population of over 100,000. The topography of the city proper, as well as of the surrounding districts, lends

150 ft. wide along the Spokane River gorge and to develop a complete chain of parks covering 2300 acres of more or less level ground and 1000 acres of hillside. The city's principal parks at present, including Manito, Liberty, Corbin and Recreation parks, are all served by the Inland Empire system.

### SPOKANE'S LAKESIDE PARKS

It is only in recent years, since modern means of trans-



Inland Empire Park System—Manito Park, Spokane

grand natural opportunities for parks and boulevards and the city's Park Commission, of which A. L. White is president, is actively engaged in developing what will undoubtedly be a park system equal to that of any other city of like size in the United States.

The parks already developed aggregate nearly 200 acres and are scattered through the city, the largest being Manito

portation have been provided, that Spokane's magnificent lake region has become well known. Scattered about in the foothills of the Rockies in Eastern Washington and in the more rugged ranges of Northern Idaho are as charming a chain of mountain lakes as can be found anywhere. The principal resorts are served by the Inland Empire electric system with its parlor-car train service and it is not



Inland Empire Park System—Baseball Day at Recreation Park, Spokane

on the hill to the south. The beautiful falls of the Spokane River and the gorge below the city afford ideal opportunities for park development. The park board has recently asked the city for \$1,000,000 for carrying out the proposed work, the plans for which have been furnished by Olmstead Brothers, the well-known landscape architects of Boston. It is proposed to build 9 miles of boulevards

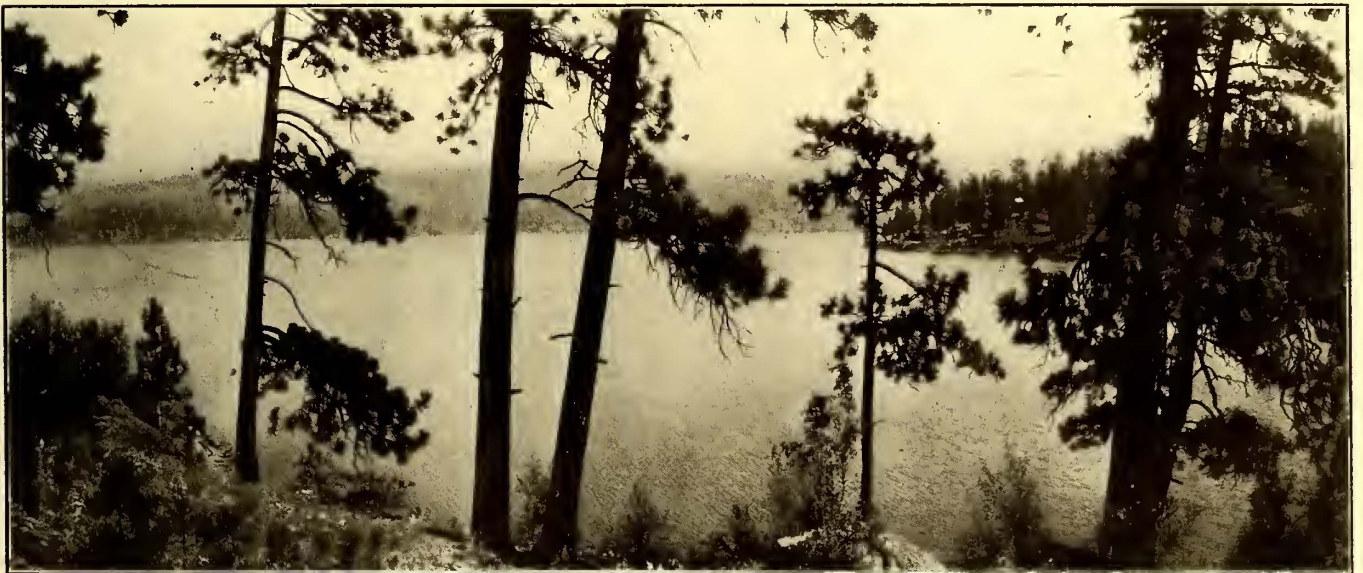
surprising that the lake traffic each year is gaining very rapidly.

Liberty Lake is the city's nearest resort and affords the finest bathing beaches in the Spokane country. The Inland management has just laid out a 35-acre park, built a \$10,000 pavilion, a 500-ft. floating pier, bath houses and various devices for bathers. The park when completed will also





Inland Empire Park System—Shaded Lawns of Manito Park, Spokane, a City Playground of 95 Acres, Reached Only by Trolley



Inland Empire Park System—Liberty Lake Park on the Cœur d'Alene Division, 17 Miles from Spokane



Inland Empire Park System—A Summer Crowd on the Spacious Lawns of Blackwell Park, Cœur d'Alene

include a baseball diamond, a running track, and tennis courts.

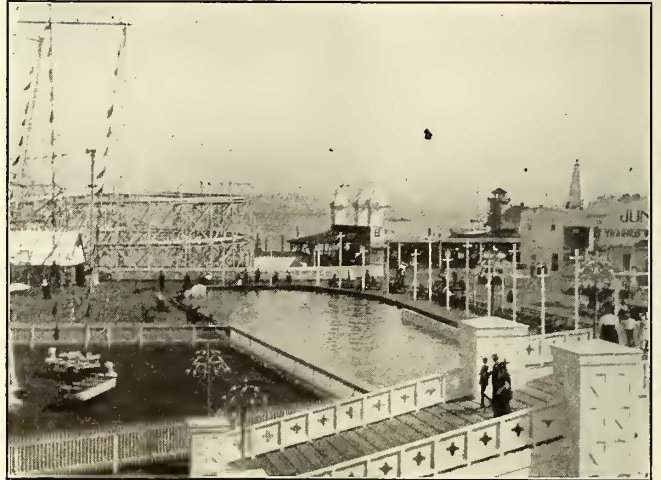
At Cœur d'Alene City, Idaho, Blackwell Park, located directly on the lake front, is a popular resort for summer excursionists. At Hayden Lake, 8 miles north of Cœur d'Alene and 40 miles from Spokane, the Inland has added many improvements to its grounds, including a golf course, tennis courts, bath houses and the Bozanta Tavern, a charming little hotel of Swiss chalet architecture, which is delightfully located on the bluff overlooking Idaho's most beautiful mountain lake.

Hayden Lake is a favorite resort for tourists and is easily accessible, as the principal transcontinental steam lines have traffic arrangements with the Inland and ticket tourists directly to the lake.

### AMUSEMENT RESORTS IN SEATTLE

Until a few years ago the park needs of Seattle, Wash., were supplied almost entirely by the Seattle Electric Company, but the municipal park commission is now undertaking this work. Madrona and Leschi parks on Lake Washington, formerly owned and maintained by the Seattle Electric Company, were recently sold to the city, and a fund of \$1,000,000 has been voted by Seattle for purchasing additional parks and playgrounds. The railway company states that while the parks maintained by it in the past have been very much appreciated and well patronized, it may be questioned whether this company ever will find it necessary to engage in this sort of development again.

contains a large dancing pavilion, gardens, a shaded boardwalk about three blocks long, bandstand and several pavilions built out over the water. Space is rented for boat-houses and other concessions. Formerly it was the custom to have band concerts several times a week at this



Seattle Parks—Circle Swing, Scenic Railway and Lagoon in Luna Park

park, but during the coming summer this form of entertainment will not be undertaken.

Adjoining Madison Park on the shore of Lake Washington is the White City Amusement Park, which contains attractions usually to be found in such resorts, and is op-



Seattle Parks—A General View Facing the Chutes in Luna Park

Such enterprises will be left to the care of private individuals and the municipal park commission.

At the present time the Seattle Electric Company owns but one park, which is known as Madison Park, and is on Lake Washington at the terminus of the Madison Street cable lines. This park is about 5 acres in extent,

erated by private enterprise. An accompanying illustration shows the entrance and affords a general view of this park. The association controlling this park is contemplating a number of improvements for the coming season.

Luna Park, the most extensive amusement resort in

Seattle, occupies a commanding position on a point of land at the entrance to Seattle harbor, and is reached by the Seattle Electric Company's Alki Point car line. Considerable of the patronage enjoyed by this resort also is handled by boat, which competition in the past has been



Seattle Parks—Entrance to White City, Madison Park

rather welcome than otherwise, owing to insufficient trackage available for the street railway cars. During the coming year, however, the railway company will be in better shape to handle the park business to this resort, and contemplates the operation of trains, each consisting of a motor car and one trailer, on 6-minute headway. Luna Park is operated by private enterprise, has been a fair moneymaker, and a number of improvements are contemplated during the coming year.

A few days ago local papers announced that a third amusement resort, to be known as "Fire Show Park," was to be constructed on Lake Union, about half-way between the business district of Seattle and the Alaska-Yukon-Pacific exposition grounds. This location is on the most direct route of the Seattle Electric Company between the city and the exposition grounds, and for that reason would be very advantageous to the promoters of the enterprise, but the railway company anticipates all the travel that it conveniently can handle on this line to and from the fair grounds. The Alaska-Yukon-Pacific Exposition is to be held in Seattle from June 1 to Oct. 16 of this year, and heavy travel is expected on all the city and suburban lines of this company, therefore the business which it will receive from amusement resorts will be merely incidental.

Railway apparatus and material imported by China in 1907 were valued at \$10,403,860. As compared with 1906, there was a decrease of nearly 10,000 tons of rails in 1907. This is accounted for, not by a falling off in demand, but that the Hanyang Iron Works, at Hankow, are now turning out approximately that amount of rails yearly.

A recent issue of the *Municipal Journal and Engineer* contains an article by Y. Katagiri on the Osaka (Japan) Electric Railway. Osaka, with a population of 1,700,000, is the second largest city in Japan, and owns the transportation and lighting means of the city. The street railway equals 22 miles of single track. The earnings in November, 1908, were \$455,640. The rolling stock comprised 100 cars, of which 70 are in daily service, and each car averages 97 miles a day. The fares range from 1 to 5 cents. Half-price workmen's tickets are good to 7 a. m.

## PARKS OF THE CONNECTICUT COMPANY

BY M. J. LEARY, GENERAL FREIGHT AND PASSENGER AGENT OF THE COMPANY

All of the parks under the jurisdiction of The Connecticut Company, whether owned or leased by that company, are operated and controlled from the office of the general freight and passenger agent, at New Haven, Conn. Previous to June 1, 1908, the parks were under the control of an amusement manager, but since that time they have been handled by this department.

All contracts for vaudeville attractions, outdoor acts, band concerts, fireworks displays, billboard and newspaper advertising, program printing, tickets, etc., are looked after by this department. Experience has shown this to be the most economical and practical way to run the parks, and, while we have to be on the road most of the time during the season, a good deal of the work can be concentrated in this office. We rely to a great extent upon the judgment and interest of the local superintendents or managers of the trolley lines on which the park is located, and they all understand that they are responsible to a certain extent for the operation of the park or parks on their division, but before any changes or improvements are made such matters must be referred to this office for final disposition. In addition to personal supervision, we also require weekly reports of traffic and earnings and expenses.

At the different parks which have theaters we give vaudeville and moving pictures every afternoon and evening during the week, and in some places on Sundays. The program usually consists of four or five acts, moving pictures and piano playing. All of the theaters are rustic, open-air buildings, and a moderate admission fee is charged, ranging from 5 to 20 cents. Admission to all the parks is free. Considering these prices, the theatrical offerings are extremely good. We aim always to have the shows thoroughly moral and free from any traces of vulgarity, as this policy always gives the best satisfaction. No individual booking is done by this company, but the attractions are put on for us under contract with a booking agency, which looks after all matters in connection with the theaters and productions. Last year the contract was awarded to the Park Booking Circuit, of New York, and the consensus of opinion was that the shows were the best we have ever had, and they gave universal satisfaction. The contract for the season of 1909 has not yet been let.

The attendance at our parks the past season has been equally as good as any other season we have had. While our patronage at the theaters and other pay amusements fell off somewhat, due to the general business depression, yet, taking the matter as a whole, we feel very well satisfied. The following paragraphs will give your readers an idea of some of the attractions at our different parks, which serve a wide range of popular taste:

### SAVIN ROCK, WEST HAVEN, CONN.

This place is too well known around our part of the country to need any introduction to the public, and it is far and away the best park on our system. Owing to its location, directly on Long Island Sound, it enjoys peculiar natural advantages, for the place is splendidly shaded with large elm trees, and its nearness to the water gives it the advantage of splendid facilities for bathing and boating. One of the most attractive features at Savin Rock is the famous electric fountain, which is operated day and night

during the season. This fountain is situated in the midst of a beautiful piece of turf, surrounded by banks of flowers, and when operated by night the effect of the different colored lights thrown from below on the descending water is very beautiful, and attracts considerable attention. The band stand is also situated at this point, and our free afternoon and evening concerts last season drew large crowds.

There are a number of hotels and restaurants just outside the grove, the most prominent being the Colonnade

**HANOVER  
PARK  
FIREWORKS  
TO-NIGHT**

**HANOVER  
PARK  
LEAGUE  
BASEBALL  
TO-DAY**

Connecticut Company's Parks—Advertising Posters

restaurant, which serves all varieties of shore dinners and practically anything that can be found in an up-to-date New York hotel. This restaurant is situated on a pier over the water, and is quite an attractive place. The grove is full of all sorts of concessions, such as are usually found at an amusement resort of this character. Several new attractions will be put in this coming season. None of these concessions, however, are operated by this company. We lease the ground out to concessionaires, and they put in their shows, which must, at all times, be run in a manner satisfactory to this company. We insist on this so that the park may be kept clean and respectable. Some of the attractions are "Canals of Venice," "Tickler," "Temple of Isis," "Diving Bell," "Ferris Wheel," "Merry-Go-Round," "Photograph Galleries," "Japanese Gardens," "Shoot the Chutes," "Scenic Railway" and the "Human Roulette Wheel," and numbers of others.

Band concerts, fireworks shows and other attractions are given at regular intervals. Owing to the splendid track facilities at this point, we are able to handle the largest crowds without any trouble or inconvenience.

MOMAUQUIN, EAST HAVEN, CONN.

The main attractions at this place are the Momauguin Hotel, which is located right on the water, and the splendid bathing beach. The zoo has been discontinued at this park. We give regular band concerts and fireworks shows here, which draw very large crowds.

RYE BEACH, RYE, N. Y.

This park is not owned by the railway company, but leased. The main attractions are a very good theater, dancing pavilion, skating rink, etc. We give regular band concerts and fireworks during the season. This park has a large territory to draw from, and the attendance is very heavy.

HANOVER PARK, MERIDEN, CONN.

This park is owned by the company, and we lease to one concessionaire all privileges with the exception of the theater, merry-go-round, boats and base ball diamond. There is a very fine casino, where refreshments are served, and which has a splendid floor for dancing and roller skating. There is also a first-class merry-go-round and theater,

at which regular vaudeville is given during the season. It is situated on a lake, and there is good boating.

Regular band concerts and fireworks are given during the season, and the attendance is very large. The base ball field and grand stand are separated from the park proper, and professional as well as amateur games are played during the season.

WILDWOOD PARK, PUTNAM, CONN.

We do not own this park, but it is leased, and we in turn lease out the concessions just as we do at Hanover Park. The park is situated on a beautiful lake, where there are admirable boating and fishing.

The theater, merry-go-round, restaurant, shooting gallery, etc., are the main attractions. We give regular band concerts and fireworks displays at this place. The attendance is very good, and it is practically the only park in that neighborhood.

HIGHLAND LAKE PARK, WINSTED, CONN.

This park is owned by the company, and concessions are let out as at Hanover Park. It is located on a pretty lake, with good boating and fishing.

The theater, dancing pavilion, swings, splendid picnic grove and facilities, restaurant and shooting galleries are the chief attractions in addition to regular band concerts and fireworks displays.

LAUREL PARK, MANCHESTER, CONN.

This park is leased, and we, in turn, lease out concessions as at Hanover Park. There is no theater, but an excellent dancing pavilion, restaurant and good boating. This park has splendid natural advantages, and is quite a favorite resort for people in this locality. We give regular band concerts and fireworks displays at this point, and expect to have the best band in Connecticut, namely, the Governor's Foot Guard Band, at this park for practically the entire season.

WHITE OAK PARK, NEW BRITAIN, CONN.

This park is owned by the company and the concessions leased. There is a lake and good boating, as well as a theater, which will probably be discontinued next season. In addition there are good refreshment stands, a dancing pavilion and merry-go-round. This place is a favorite

**WILDWOOD  
PARK  
SEPT. 7  
GRAND ILLUMINATION  
AND  
FIREWORKS**

**HIGHLAND  
LAKE  
GRAND CARNIVAL  
SEPT. 3  
AFTERNOON AND EVENING  
FIREWORKS  
Special Attractions**

Connecticut Company's Parks—Advertising Posters

resort for picnic parties, and while it has not as many attractions as some of our other parks, it is quite a resort for the people of New Britain and that locality. Band concerts and fireworks are also given here.

LAKEVIEW PARK, MIDDLETOWN, CONN.

This park is owned by the company. It is situated on a lake, has a refreshment stand, skating rink and dancing pavilion. It will probably not be operated next season.

## ROTON POINT, SOUTH NORWALK, CONN.

This property is owned by the company and concessions are leased. The grounds are situated on Long Island Sound and are a favorite resort for people of Norwalk, South Norwalk and neighboring towns. Splendid shore dinners are a feature, besides good vaudeville, moving pictures, a skating rink, regular band concerts and fireworks.

## LAKE QUASSAPAUG, MIDDLEBURY, CONN.

In consequence of the building of a line from Waterbury to Woodbury the company has prepared this resort, which will be opened May 29 for the first time. It is one of the most desirable and beautiful of this company's parks. The property is owned by the company. Quassapaug Park is expected to have an enormous patronage, as it is practically the only resort near Waterbury and neighboring towns.

The park is along famous Lake Quassapaug, which is noted for exceptionally good boating and fishing.

There is now a good hotel on the premises, which is to be operated next season. Among the attractions will be a merry-go-round, dancing pavilion, skating rink, photograph gallery, swings, base ball diamond, music and fireworks. The concessions are leased. A theater may be placed there later, but not this season.

## PINE ROCK PARK, SHELTON, CONN.

This place is closed, and we do not expect to open it again.

## OCEAN BEACH, NEW LONDON, CONN.

This property is owned by the company and concessions are let. It is situated on the ocean, and has splendid bathing facilities. Regular band concerts and fireworks are the general attractions at Ocean Beach. There is no theater. New London is the rendezvous for the fleet of the New York Yacht Club, and this serves to attract visitors. The hotel accommodations at New London also are excellent, and the fish dinners attract many people from the interior who otherwise would go to Providence. Our line to New London and the beach skirts the Thames, affording a beautiful view of the surrounding country. Again, New London has many attractive stores and shops, which serve to induce people to combine business and pleasure in one trip. Large parties frequently come to Ocean Beach over our lines from points as far distant as Willimantic, a ride of 30 miles, which consumes about three hours. A large shelter overlooks the ocean and affords picnic parties every facility for enjoying their lunches.

In 1907 the United States Patent Office received 57,679 applications for patents for inventions, or, including applications for reissues of patents and for patents for designs, 58,762 applications. Patents issued, together with reissued patents, numbered for that year 36,620. The patents that expired during that year were 25,322 in number. The States of New York, Illinois and Pennsylvania headed the list of new patents granted—New York with 5281 patents, or 1 to every 1389 inhabitants; Pennsylvania with 3471, or 1 to every 1815 inhabitants; and Illinois with 3470, or 1 to every 1388 inhabitants. In the District of Columbia one patent was granted for every 941 inhabitants, and in Connecticut one for every 987. On the other hand, such States as Alabama, Mississippi, North Carolina and South Carolina only show one patent for something over 10,000 inhabitants, the last-named having been responsible in 1907 for one patent for every 26,302 inhabitants. The patents granted to citizens of foreign countries numbered 3866.

## SOME FEATURES OF COST KEEPING AND ACCOUNTING AT WILLOW GROVE PARK, PHILADELPHIA

Willow Grove Park, which is operated by the Philadelphia Rapid Transit Company, is the largest amusement park in the United States conducted exclusively by a street railway company. The park covers an area of 130 acres, and is beautifully laid out, with a lake 4 acres in extent, 30 acres of wooded groves, broad and well-kept avenues, spacious lawns and flower gardens. The distinguishing feature of the entertainment provided for patrons is the superior band and orchestral music that is furnished free of charge for the enjoyment of all who visit the park. During the season, which covers a period of 101 days, from the Saturday prior to Memorial Day to Labor Day, such high-class attractions as Sousa's Band, Victor Herbert's Orchestra, the Thomas Orchestra and Pryor's Band are engaged for from two to five weeks at a time.

The other amusements are of the highest class and of a character pleasing to the most refined tastes. Among the more pretentious attractions may be mentioned the Mountain Scenic Railway, the Roller Coaster, Venice, Coal Mine, Mirror Maze, two carousels, Captive Flying Machine, Tours of the World, boating on the lake and a theater where carefully selected moving pictures of the most up-to-date character are exhibited. Located in the center of the large lake is a magnificent electric fountain, erected at a cost of \$100,000, which always proves a strong attraction at night. An athletic field, situated near the picnic groves, is another feature which appeals to many. Three restaurants and a large soda fountain are conveniently and pleasantly located on the grounds.

Willow Grove Park is 13 miles from the center of Philadelphia and is reached by seven direct lines of street cars. It is also reached by the Philadelphia & Reading Railroad, over which road many large out-of-town excursions are run to the park on special days from points as far distant as Harrisburg and Lancaster, Pa. The park is owned and operated by the Philadelphia Rapid Transit Company, under the direction of Geo. C. Wynkoop, Jr., superintendent. Most of the amusement devices are operated by concessionaires, but the traction company operates the roller coaster, mirror maze and boats and the three restaurants. The park pays the entire cost of the special musical attractions already mentioned, and also the electric power and light furnished.

The system of records and cost keeping maintained in the office of the superintendent is elaborate in detail, and contains a number of features of interest and value to park managers. The railway company conducts the three restaurants. The first, which is called the "Casino," is located on a knoll commanding a beautiful view of the park, and is in close proximity to the music pavilion. Its spacious piazzas accommodate 500 guests, who may dine within hearing of the music. This restaurant is conducted in the very best manner, and the service and food are first-class in every respect. The prices are commensurate with the quality of food served. The second restaurant, known as the Lakeside Café, has accommodation for 750 persons at the tables at one time. It is located at the entrance of the large picnic grove, beside the electric fountain. The prices are moderate and the service very good. The third restaurant is known as the Rustic Pavilion, and is located in the upper part of the park, on the Midway. It is a well-kept light lunch café, and is especially adapted for quick service. The restaurants cater to all classes of

patrons in the matter of price and service. All of them are liberally patronized, and the company operates them at a very satisfactory profit.

The record of daily receipts is so arranged that the superintendent has on his desk every morning at 8 o'clock a comparative statement of every attraction on the grounds, showing the gross receipts for the previous day, the receipts for the corresponding day for the past six seasons, and the total for each of the years up to that period. This same detailed comparative statement he has for every special day and excursion. At 9 o'clock he receives a statement of the amount of supplies drawn by each restaurant on the previous day, giving in detail the amount of each item of supplies drawn and the percentage of the gross receipts at the restaurant the withdrawal represents. Following this, he inspects the payroll statement, which shows the labor cost for each and every department of the restaurants on the previous day, with a comparison of the cost for the corresponding days during the past six seasons. Every Friday an inventory is taken at each restaurant and a balance struck to determine accurately the profit. This weekly balance is laid before the superintendent every Saturday afternoon and a comparative statement therewith showing the restaurant's standing for the corresponding period for several seasons back. Of this frequent checking and balancing Mr. Wynkoop says the weekly balance is as essential to the park management as is the monthly balance to the merchant, as the park season is crowded into 101 days, whereas the commercial year has 365 days. It can be readily seen that with such a system no retrogressive movement can set in without immediate detection. Certain special days or certain excursions are shown to be ones to be encouraged or dispensed with altogether, the payrolls are seen to be properly regulated, and the withdrawal of supplies is kept within bounds.

The restaurant business presents a very difficult problem to every park manager, and one that he must deal with personally. For the good of the park and the proper protection of its patrons, the restaurant cannot be placed in other hands, but should be conducted by the park; the park should stand ready to lose money rather than sacrifice the interests of its patrons. The business can be made successful and profitable only by the strictest attention to details and a thorough knowledge of its requirements. The limited time of employment, the lack of permanent positions and the absence of incentive—for there cannot be much incentive to the men who are offered a three-months' job and then are cut adrift—are conditions that make it absolutely necessary for the manager of the park to know the details. New men must be secured each year, even though part of the old forces return, and the time intervening from season to season puts old and new employees out of touch with the business, and they must be drilled and instructed. The first week of the season requires the exercise of the greatest care to make it a profitable one. Much depends on the first week; the survival of carefully laid plans, and discipline will be either established or destroyed for the whole season.

Mr. Wynkoop has made a very careful study of the cost keeping methods and has analyzed closely every feature of the operation of the restaurants in his charge down to the minutest detail. The basis on which supplies are purchased is to apportion the average of daily expenditures for each item of supplies as a fixed percentage of the total amount to which the restaurant manager is limited. This total amount is based on an arbitrary percentage of the

gross receipts. For example, if the daily gross receipts of the Casino averaged during the previous season \$700, the percentage which can be spent for supplies is assumed at some arbitrary figure, say 55 per cent, or \$385. The average daily allowance of the chef for sirloin steak is taken at, say, 18 per cent, or a total of \$69.30; for tenderloins, 9 per cent, or \$34.65; for butter, 3 per cent; bread, 3 per cent; fruit, 2½ per cent, and so on through the entire list. These percentages have been arrived at after a careful study and analysis of the guests' orders and total number of portions served during the several seasons past of each item on the menu. The same system is applied to the two other pavilions, the percentages, of course, differing on account of the differences in menus.

All supplies for the three restaurants are issued from a central storehouse. The company maintains a central depot near the markets in Philadelphia, at which it buys its supplies, and the supplies are delivered and received for at this depot, from which they are sent daily by a market car to the park. The storekeeper issues supplies only on requisition and keeps a record of the foodstuffs purchased and delivered to the managers of the restaurants. By this system of cost keeping and checking requisitions for supplies, Mr. Wynkoop has been able to show a very satisfactory profit.

The prices of food in all the restaurants are kept as low as is consistent in maintaining an excellent quality of food and the best service. A number of expedients have been tried to popularize the restaurant service. One of the most successful has been the preparation by Mr. Wynkoop of a small sheet attached to the regular menu, on which are suggestions for meals for from one to four persons to cost any amount from \$1 to \$10. The combinations, which are made up from items on the menu and show the prices of each article and the number of portions, are not inflexible, like the so-called "club menus" used in many restaurants. Any variation from the suggested meals can be ordered.

Close attention has been paid to many other details of conducting the restaurants. The size of the pieces of butter served with meals is carefully regulated and every portion of ice cream is exactly the same size. Every portion of any article served is duly accounted for by a checking system—that is a story in itself. In these small and seemingly unimportant details of operation lies the margin between profit and loss.

As previously mentioned, a number of out-of-town excursions are handled at the park during the season. The superintendent of the park solicits these excursions and assists in making them a success by furnishing advertising posters, hand bills and similar literature. A careful record is kept of the receipts attributable directly to the presence of excursionists in the park. A card 5 in. x 8 in. is made out for each excursion day, giving the name of the excursion, the date, day of the week, kind of weather, temperature, time of arrival and departure, name of committee in charge, number of people brought to the park, kind and cost of advertising data furnished, and the receipts of the day. Usually, these excursions arrive early in the morning, many hours in advance of the ordinary crowds of the day. When the excursion arrives at the park all the concessions are opened, and a statement of the receipts is taken at 12 o'clock noon, and again at 2 o'clock. These statements are entered upon the cards. These figures show the minimum amount of business done with the excursionists; the receipts from this source after 2 o'clock

cannot be determined, as the regular patrons have begun to arrive.

Certain days during the summer are set apart for Children's Day, Sunday School Day, Grand Army Day, etc. A card is kept for each of these days of a form similar to the cards used for excursions. The total receipts at the park on these days are also entered on a card headed "Special Day Comparisons." If the receipts on special days do not show a substantial increase over the average receipts for the corresponding day, or show a decrease from year to year, the special day is discontinued.

The large bands and orchestras which constitute the principal attraction during the season involve a heavy expense, and it is important to know their relative value in attracting people to the park. A card is kept showing the name of the orchestra or band, the period during which it played at the park, the number of days of rainy, cloudy and clear weather, the total receipts at the park during the period, and average receipts per day. A comparison of this figure of average receipts per day, when equated for differences in weather conditions, give a fairly close estimate of the value of each musical organization as an attraction to the general public.

#### IMPROVEMENTS IN OPERATION OF PEEKSKILL LIGHTING & RAILROAD COMPANY

Mention is made in the last annual report of the New York Public Service Commission, Second District, of improvements in operation effected by the Peekskill (N. Y.) Lighting & Railroad Company. The improvements were made as a result of a report of C. R. Barnes, electric railroad inspector for the commission, recommending various changes. A list of the recommendations made by Mr. Barnes has been given to the *ELECTRIC RAILWAY JOURNAL* by Stuart Wilder, vice-president and general manager of the Peekskill company, who states: "We think that all these recommendations are good, the most important being the installation of telephones along the line." The recommendations were as follows:

1. A stop sign should be placed at the top of the heavy grade on South Street, and all cars should come to a full stop before proceeding down the grade.
2. When cars are run in sections, all cars followed by another should carry signs properly illuminated indicating that fact.
3. When cars are run in sections, or extra cars are run on suburban lines, all cars followed by another should be, during hours of darkness, equipped with oil tail lights.
4. The company should provide employees with a book of rules.
5. All motormen and conductors employed in the future should be required to pass a physical examination.
6. The Verplanck & Mohegan Lake line should be equipped with telephone systems, with telephone at all switches directly connected with the company's office.
7. A cluster of lights should be burned at all meeting-point switches.
8. Highway crossing signs should be placed at all grade crossings of highway outside of village limits.

The company's attention is called to the danger incident to operation during the fall season, especially on heavy grades, caused by leaves.

A holiday card just received from the officers of the tramway department of the New South Wales Government Tramways shows that the Government is now operating 223 miles of track and that in the last fiscal year 17,521,410 car-miles were necessary in which to carry 172,020,932 passengers.

#### OPERATION OF THE CLEVELAND STREET RAILWAY SYSTEM BY RECEIVERS

One effect of the operation of the Cleveland street railway system by receivers has been to make available for publication various statistics, some of which have been compiled, necessarily, to guide Judge Tayler, of the United States Circuit Court, in his instructions to the receivers on the vital questions of the rates of fare to be charged. The final result of consideration of the subject of fares by Judge Tayler was the issue of an order by him directing the receivers to establish on Feb. 1 the highest rates of fare permissible under the ordinances. While there is a difference of opinion between the Cleveland Railway Company and the city of Cleveland as to the date of expiration of certain ordinances, the operation of which affects the rates of fare on certain lines, the legal questions involved have been argued before the court and a decision is expected soon. In the meanwhile lines which contribute about 65 per cent of the gross revenue from operation are charging the old rate of fare of 5 cents for a ride, or 11 tickets for 50 cents; and 35 per cent of the present gross revenue is derived from lines which charge a fare of 3 cents, provided the exact change or a disk is handed the conductor.

An additional improvement in the gross earnings of the property has been effected by the treatment of transfers by the receivers. Under the existing arrangement a passenger on one of the 5-cent-fare lines who desires a transfer is obliged to advance 1 cent to the conductor, but this charge is refunded when the transfer is surrendered; a passenger on one of the 3-cent-fare lines who desires a transfer pays the conductor, in addition to the regular fare, the sum of 3 cents, but of this amount 1 cent is refunded when the transfer is surrendered. What the system of transfers in force on the 3-cent-fare lines amounts to, therefore, is that for each transfer issued and surrendered the company receives the sum of 2 cents above the regular fare.

The number of transfers issued by the Cleveland lines amounts at present to about 31 per cent of the total number of revenue passengers, as compared with an average of about 40 per cent for the Cleveland Electric Railway Company a little while before the lease was made. From these figures it is assumed that the saving of 9 per cent in the number of transfer passengers thus indicated represents approximately the economy resulting from the elimination of unnecessary rides and the reduction of abuse of the transfer privilege, due to the fact that passengers, under the plan adopted, are unlikely, unless they desire to use the transfers, to bother about getting them.

The transfer slips in use contain no reference to the arrangements for charge and refund, which have been indicated in the foregoing. The transfers read: "Good only at point of intersection for continuous trip on first car leaving transfer point punched, on date and before time punched. This transfer is issued subject to the rules of the company, and is good only in the hands of the person to whom issued." The transfers are issued under the Stedman time-limit patent.

The receivers have added gradually to the service since they took charge of the lines until at the present time the number of car-miles run is substantially equal per day to the total reported by the Cleveland Electric Railway Company prior to the execution of the lease of the property to the Municipal Traction Company. This change represents a great improvement in the service afforded the people of

Cleveland over that which was given by the management of the Municipal Traction Company during its brief control of the property. In addition to restoring the large number of car-miles which were eliminated by the Municipal Traction Company management, the receivers have made changes in the characteristic schemes of routing inaugurated by the officials who were placed in charge of the property immediately after the lease became effective.

Brief reference has been made in previous issues of the ELECTRIC RAILWAY JOURNAL to some of the figures which are published herewith.

EFFECT OF GOOD SERVICE ON EARNINGS

Henry J. Davies, secretary and treasurer of the Cleve-

In January, February, March and the first 27 days of April, 1908, there were carried on the roads of the Cleveland Electric Railway Company and the Forest City Railway Company 39,126,793 revenue passengers. In the same period of the previous year there were carried 42,136,038 passengers, a decrease of 3,009,245 passengers, or 7.7 per cent. April 27 was the last day on which the Cleveland Electric Railway Company operated its property.

In January, February, March and part of April, 1907, we sold tickets at the rate of seven for 25 cents. In the same months of 1908, at the rate of 11 for 50 cents. This comparison, therefore, is between operation at maximum rates in 1908 and low rates in 1907.

In July, August, September and October, 1908, the Municipal Traction Company carried 48,949,165 revenue passengers; in the same months of 1907 there were car-

TABLE I.—OPERATIONS OF PROPERTY OF CLEVELAND RAILWAY IN DECEMBER, 1908, AND YEAR 1908, AS COMPARED WITH OPERATIONS OF CLEVELAND ELECTRIC AND FOREST CITY RAILWAY COMPANIES IN DECEMBER, 1907, AND YEAR 1907.

	December		Increase.	P. C. Increase.	Twelve months		Decrease.	P. C.
	1907.	1908.			1907.	1908.		
Revenue passengers.....	\$10,809,558	\$12,301,335	\$1,491,777	13.8	\$136,283,060	\$135,031,237	\$1,251,823	.92
Transfers.....	3,726,758	3,846,250	119,492	3.21	51,939,947	40,549,736	11,399,211	21.95
Total.....	\$14,536,316	\$16,147,585	\$1,611,269	11.1	\$188,223,007	\$175,571,973	\$12,651,034	6.72
Per cent transfers.....	34.5	31.2	.....	3.3	38.11	30.00	8.11	21.28
Passengers per day.....	348,695	396,817	48,122	13.8	373,378	368,938	4,440	1.18
Transfers per day.....	120,218	124,072	3,854	3.21	145,041	110,767	34,274	23.04
Total.....	468,913	520,889	51,976	11.1	518,419	479,795	38,714	7.47
Passenger receipts.....	\$490,135.20	\$392,965.42	*\$97,169.78	*19.83	\$5,773,542.10	\$4,948,192.96	\$825,349.14	14.30
Receipts per day.....	15,810.81	12,676.30	*3,134.51	*19.83	15,817.02	13,519.65	2,297.37	14.53
Receipts per passenger (cents).....	4.534	3.194	1.340	29.55	4.24	3.66	.58	13.68
Receipts per ride (cents).....	3.372	2.434	.938	27.82	3.07	2.82	.25	8.14
Car-miles (revenue).....	2,156,846	2,020,621	*136,225	*6.32	25,416,108	22,285,977	3,130,131	12.32
Passenger receipts per car-mile.....	22.72	19.45	*3.27	*14.39	22.72	22.20	.52	2.28

\*Decrease.

TABLE II.—GROSS EARNINGS, CAR-MILES AND PASSENGERS CARRIED BY ROUTES—FIGURES OF CLEVELAND ELECTRIC RAILWAY COMPANY IN JULY, 1907, 1908, AND OF LINES OPERATED BY MUNICIPAL TRACTION COMPANY IN JULY, 1908.

Routes.	Earnings			Car miles			Passengers		
	July, 1907.	July, 1908.	Increase. P. C.	July, 1907.	July, 1908.	Increase. P. C.	July, 1907.	July, 1908.	Increase. P. C.
Denison.....	\$9,324.80	.....	*\$9,324.80	49,860	.....	*49,860	310,827	.....	*310,827
Abbey.....	829.54	.....	*829.54	4,182	.....	*4,182	17,390	.....	*17,390
Broadway-St. Clair.....	78,434.04	.....	*78,434.04	322,497	.....	*322,497	1,663,190	.....	*1,663,190
Cedar.....	37,620.64	\$18,526.92	19,093.72	50.75	128,596	71,333	57,263	44.53	798,036
Central-Denison.....	24,508.14	24,508.14	.....	123,118	.....	123,118	.....	.....	565,984
Clifton Boulevard.....	10,617.72	1,604.35	*9,013.37	84.89	71,002	6,949	*64,053	90.21	222,783
Doan (East 105th St.).....	17,526.27	36,096.19	18,569.92	105.96	101,363	154,094	52,731	52.02	374,535
Euclid.....	62,454.45	35,480.61	*26,973.84	43.19	298,787	103,228	*135,559	45.37	1,325,399
Euclid-W. 14th St.....	33,469.99	.....	*33,469.99	154,158	.....	*154,158	712,480	.....	*712,480
Euclid Creek.....	3,193.23	3,170.75	*22.48	.70	5,494	5,145	*349	6.35	67,257
Fairfield.....	27,322.82	3,745.02	*23,577.80	1.09	16,064	26,497	*10,433	64.95	76,878
Payne.....	38,014.88	.....	*38,014.88	.....	82,591	.....	*82,591	.....	576,104
Scovill-W. 25th St.....	10,651.85	35,302.88	*24,651.03	7.13	137,455	139,160	1,714	1.25	800,297
Scranton.....	59,740.43	4,806.78	*54,933.65	54.87	48,092	26,466	*21,626	44.97	223,940
Superior-West Madison.....	8,809.73	5,273.88	*3,535.85	40.14	199,184	.....	*199,184	.....	1,077,016
Union.....	55,067.89	.....	*55,067.89	230,406	.....	*230,406	.....	.....	1,176,231
Wade Park-Detroit.....	34,830.45	23,576.72	*11,253.73	32.31	125,038	119,893	*5,145	4.11	742,073
Willson (East 55th St.).....	80,158.67	43,183.92	*36,974.75	46.13	255,152	165,536	*89,616	35.12	1,688,479
Woodland-Lorain.....	.....	57,777.72	57,777.72	.....	235,695	235,695	.....	.....	1,559,858
Superior-Detroit.....	.....	30,369.27	30,369.27	.....	135,067	135,067	.....	.....	965,634
Bridge.....	.....	13,477.90	13,477.90	.....	61,173	61,173	.....	.....	350,067
Euclid Heights.....	.....	31,499.20	31,499.20	.....	134,168	134,168	.....	.....	842,259
St. Clair.....	.....	25,483.03	25,483.03	.....	120,801	120,801	.....	.....	709,194
Broadway.....	.....	13,531.97	13,531.97	.....	64,515	64,515	.....	.....	423,524
Wade Park.....	.....	8,040.20	8,040.20	.....	42,598	42,598	.....	.....	241,529
Kinsman.....	.....	10,769.56	10,769.56	.....	57,606	57,606	.....	.....	349,479
W. 14th.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	\$562,739.74	\$426,225.01	*\$136,514.73	24.26	2,277,285	1,885,850	*391,435	17.19	12,039,247

\*Decrease.

land Railway Company, sent a letter to the directors of that company on Jan. 18, 1909, enclosing a table showing the passenger receipts, number of passengers and transfers carried and number of car-miles run in December, 1907 and 1908. Mr. Davies said in his letter:

It was claimed for years by Mayor Johnson that a 3-cent fare would greatly increase the number of rides—would so stimulate travel that the passenger earnings of the road would nearly equal its earnings at the higher rates charged by us. Of course, lower fares will increase the number of passengers. Our own experiments show this. I append Table III, showing the increase or decrease, and percentages of increase or decrease, in revenue passengers in each month of 1908, compared with the corresponding months of 1907. The extent to which the reduced fare and service of the Municipal Traction Company stimulated travel is shown in the figures for July, August, September and October. The effect of better service on stimulation of traffic is shown by the figures for December.

ried 47,748,153 revenue passengers, an increase of 1,201,012 passengers, or 2.5 per cent.

I omit May and June because the business of those months in 1908 was affected by the strike of conductors and motormen.

In December, 1908, operating at the same rates of fare and under the same rules as to transfers as had been put into effect by the Municipal Traction Company, but with improved service, the receivers carried 12,301,335 revenue passengers; in December, 1907, the revenue passengers were 10,809,558, an increase in 1908 of 1,491,777, or 13.8 per cent.

November is omitted because the Municipal Traction Company operated during a part of the month and the receivers during the other part.

While the number of passengers was increased by the reduced rates of the Municipal Traction Company, a combination of low rates and good service produced a still larger increase, and most of this larger increase would seem to be due to the improved service given by the receivers.



STATISTICAL RESULTS

Mr. Davies enclosed with the foregoing letter a statement comparing the operations of December, 1907 and 1908. He supplemented this statement by a letter sent to the directors on Jan. 28, containing a table showing "the number of passengers carried, the number of transfers and the passenger earnings of the property in the entire year 1908, compared with the same statistics for the Cleve-

TABLE III.—INCREASE OR DECREASE IN REVENUE PASSENGERS 1908 COMPARED WITH 1907

Month.	Increase or decrease.	Per cent.
January	683,769*	6.35*
February	496,119*	4.93*
March	1,137,795*	9.90*
April	912,846*	8.25*
May	1,089,953*	9.38*
June	31,640	.27
July	148,646	1.23
August	126,761	1.03
September	668,955	5.87
October	256,650	2.13
November	343,230	3.06
December	1,491,777	13.80
Total	1,252,823*	.92*

\*Decrease.

RECAPITULATION

Months.	1907.	1908.	Increase or decrease.	Per cent increase or decrease.
January-April	114,245,052	111,157,222	3,087,830	2.70
July-October	47,748,153	48,949,165	1,201,012	2.50
December	10,809,558	12,301,335	1,491,777	13.80

land Electric and Forest City Railway companies in 1907." For comparative purposes these two statements are combined in the accompanying Table I.

The total decrease in revenue car-mileage in 1908 as compared with 1907 is shown to have been 12.32 per cent, while the reduction in December was but 6.32 per cent, indicating that, as stated in the foregoing, the receivers had begun to restore the service afforded under the old management.

Table II, published herewith, gives statistics by routes of gross earnings, car-miles and passengers for July, 1908, as compared with the corresponding month of the preced-

TABLE IV.—EARNINGS AND EXPENSES OF CLEVELAND ELECTRIC RAILWAY IN JULY, 1907, AND OF ALL OF CLEVELAND LOCAL LINES IN JULY, 1908.

	July, 1907.	July, 1908.
Gross earnings	\$562,739.74	\$426,225.01
Operating expenses	354,772.11	282,651.56
Divided as follows:		
Maintenance, way and structures	64,463.33	38,252.65
Maintenance equipment	78,720.60	53,278.30
Total maintenance	\$143,183.99	\$91,531.01
Operation power plant, net	\$31,767.82	\$32,526.57
Operation cars	135,744.62	131,280.15
Total transportation	\$167,512.44	\$163,806.72
General expense	\$44,075.68	\$27,313.83
Per car-mile, cents:		
Gross earnings from operation	25.07	22.70
Maintenance way and structures	2.85	2.00
Maintenance equipment	3.48	2.78
Total maintenance	6.33	4.78
Operation power plant	1.40	1.70
Operation cars	6.00	6.85
Total transportation	7.40	8.55
General expenses	1.95	1.42
Total operating expenses	15.68	14.75
Net earnings from operation	9.39	7.95
Miscellaneous income	.03	.11
Gross income, less operating expenses	9.42	8.06
Taxes	1.04	1.17
Income, less operating expenses and taxes	8.38	6.89
Interest	1.78	2.03
Net income	6.60	4.86
Rental	...	3.83
Balance	6.60	1.03

ing year. This statement is given to reveal the surprising extent of the changes in routes established by the management of the Municipal Traction Company, to which reference has been made previously in the ELECTRIC RAILWAY JOURNAL. These changes furnished one of the principal sources of dissatisfaction on the part of the public with the management which succeeded the old company.

The totals for July, 1908, as shown, indicate an increase of 1.24 per cent in the number of passengers, a decrease of 24.26 per cent in the gross earnings and a decrease of 17.19 per cent in the total car-miles, as compared with July, 1907.

Table IV shows the gross earnings and the principal divisions of operating expenses for July, 1907, and July, 1908, by totals and per car-mile.

HYDRO-ELECTRIC GENERATING STATION AT BERRIEN SPRINGS, MICH.

An extensive electrical generating and distribution system has recently been placed in service by the Indiana & Michigan Electric Company, of South Bend, Ind. This system is a low-head hydro-electric development, capable of producing 7200 kw, and includes two steam and four hydro-electric plants, having an aggregate capacity of 25,000 hp.

This development, situated on the St. Joseph River at Berrien Springs, Mich., is at the present time transmitting energy for the operation of about 150 miles of interurban electric railways. These include the Chicago, South Bend & Northern Indiana Railway, which extends from Goshen through South Bend to LaPorte and Michigan City; the Southern Michigan Railway, between South Bend and St. Joseph, Mich., and the line operating from Benton Harbor to Dowagiac, Mich.

The generator house is 64 ft. 7 in. x 112 ft. in plan, and is placed with its long axis transverse to the axis of the dam. On each side of it is a penstock section, 50 ft. x 98 ft. in plan, for the turbines of the development. The substructure of the generator house is of concrete, but the superstructure is of paving brick, and is covered with a copper-green tile roof carried by steel roof trusses. Space is provided in the building for four main generators, three of which have been installed. On the generator floor level are placed two 300-kw, 60-cycle rotary converters for supplying energy to the Southern Michigan Railway, the lines of which pass close to the main power house.

Wooden pole-line construction, and for a part of the distance side-arm construction, is employed for the transmission lines, the opposite side of the pole being occupied by bracket arms carrying street railway trolley wire and feeders. In cases of this kind, where the poles are 100 ft. apart, the 25,000-volt lines are on 30-in. centers. All other construction on the 25,000-volt lines is on 36-in. centers, and the 13,200-volt lines are on 24-in. centers.

As the industrial load is almost exclusively that of induction motors, the generators and transformers are designed to operate continuously at about an 85 per cent power factor. A synchronous condenser is operated continuously on the busbars at South Bend to bring the inherent power factor of about 75 per cent to between 85 and 90 per cent, which works out to the most economical condition. In the field circuit of this condenser use is made of a Tirrill regulator, which takes care of the voltage fluctuations within the range of the motor.

The 10 substations of the various street railways supplied with energy are equipped with 300-kw synchronous converters. Each of the substations of the Southern Michigan Railway contains two of these converters, since the summer traffic on this line is very heavy on certain occasions. The converters are compounded for giving as nearly as possible a straight-line voltage characteristic, when taking into consideration the line characteristics.

## THE RETURN ON THE INVESTMENT IN THE NEW YORK SUBWAY

A report upon the return on the investment in the New York subway, the seventh in the series of reports on the New York subway by B. J. Arnold, was made public by the Public Service Commission on Feb. 23. The report, which is dated Dec. 31, 1908, is devoted to an analysis of the various items of revenue and expense during the past three years' operation of the present subway, the object being to determine to what extent additional subways can be constructed and operated profitably either by municipal credit, private capital or a combination of both. An abstract follows:

### ANALYSIS OF EARNINGS AND EXPENSES

Table I shows a comparative statement of the car-miles, the earnings and the operating expenses for the present subway for three consecutive fiscal years, the last one ending June 30, 1908.

It will be noted that the revenue derived from "other sources," that is, from advertising, rent of power, sale of privileges, etc., amounted during the past year to 2.27 per cent of the revenue from all sources and these items are increasing in relative importance each year. It is probable that the revenue from other sources than passenger traffic may be made to amount to 1 cent per car-

### OPERATING EXPENSES

A study of the records of operating expenses as shown by Table I can be made to advantage. The total expense for maintenance, which increased considerably during the second year, has been decreased during the past year, indicating that these expenses do not necessarily increase with the age of the subway. The unit cost per car-mile of these three items of maintenance is practically independent of the number of car-miles operated and will not decrease materially as the number of car-miles increase. Items *Ba* and *C* (wages of trainmen and power supply) will also be practically constant per car-mile whatever the number of car-miles operated. Taking these last two items and adding them to the first three items we have a charge of 7.57 cents per car-mile which cannot be decreased by any appreciable amount by running more car-miles, but which can be avoided entirely every time a car can be prevented from running a useless mile. The problem therefore to reduce the influence of these charges is to run as few non-productive car-miles as possible.

Mr. Arnold then suggests three methods of reducing the non-productive car-miles as follows: (1) To construct a cut-off between Lenox Avenue and 110th Street and the Grand Central station; (2) to provide storage accommodations downtown, say, under Battery Park, and (3) to avoid running so many full-length trains to the extreme ends of the lines. To facilitate the easy make-up of trains and so to reduce this unnecessary car-mileage in future subways each car should be equipped with motors.

TABLE I.—COMPARATIVE STATEMENT OF CAR-MILES, EARNINGS AND OPERATING EXPENSES OF THE SUBWAY OF THE INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK CITY, AS GIVEN IN ITS REPORTS.

	Year ended—					
	June 30, 1906.		June 30, 1907.		June 30, 1908.	
	Amount.	Per car-mile.	Amount.	Per car-mile.	Amount.	Per car-mile.
Car-miles .....	31,931,073	....	37,184,940	....	44,005,213	....
Earnings:						
From transportation.....	\$6,900,873.96	\$0.216	\$8,319,468.24	\$0.2237	\$10,020,538.18	\$0.2277
From other sources.....	151,138.04	.0047	187,455.37	.0050	232,799.19	.0053
Totals.....	\$7,052,012.00	\$0.2208	\$8,506,923.61	\$0.2288	\$10,253,337.37	\$0.2330
Expenses:						
A Maintenance:						
a. Way .....	358,014.01	.0112	483,975.09	.0130	518,551.16	.0118
b. Equipment .....	360,628.88	.0113	706,809.06	.0190	821,744.49	.0187
c. Power plant.....	75,256.13	.0024	115,887.66	.0031	153,756.87	.0035
B Transportation, Operation:						
a. Wages, conductors, motormen and guards.....	538,795.47	.0169	664,519.95	.0179	787,068.42	.0179
b. Wages, platform men, agents, gatemen, porters...	273,718.23	.0086	318,639.32	.0086	370,786.85	.0084
c. Other expenses.....	347,857.19	.0108	411,140.44	.0110	419,245.05	.0095
C Power supply.....	830,266.59	.0260	921,168.32	.0247	1,047,259.33	.0238
D General expenses .....	193,572.85	.0060	261,229.84	.0070	304,900.10	.0069
Total expenses.....	\$2,978,109.35	\$0.0932	\$3,883,369.68	\$0.1045	\$4,423,313.27	\$0.1005
Ratio of operating expenses to earnings, per cent.....	42.23	....	45.64	....	43.14	....
Net earnings.....	\$4,073,902.65	\$0.1276	\$4,623,553.93	\$0.1243	\$5,830,024.10	\$0.1325

mile. Unless the fare is raised the only method of increasing the last item or the gross revenue from passenger traffic is to carry more passengers. This possible increase in passenger traffic may be divided into four classes:

a—Passengers who would ride counter to the rush travel, thus utilizing to better advantage than at present the returning cars.

b—Passengers who would ride during non-rush hours, thus utilizing the equipment which is on hand, but at present lying idle during a large part of the time.

c—Passengers who would ride a comparatively short distance—that is, short-haul passengers, who at present either walk or use the surface lines.

d—Passengers who would add to the present traffic during rush hours.

The object should be to increase the average income per car-mile without adding materially to the present crowding; that is, the most desirable passengers are those of the first three classes.

Nothing is to be gained by increasing the long-haul load—in fact, this part of the business unfortunately is growing rapidly. To make a comprehensive subway system pay a fair return on the investment the income from passenger traffic should average about 1 cent per passenger mile. Passengers carried more than 5 miles and thus contributing less than 1 cent per mile must be balanced by other passengers traveling less than 5 miles and thus contributing an amount proportionately greater than 1 cent per passenger-mile.

With the present subway these three sources of useless car-miles show a total of over 4,500,000 car-miles a year or about 10 per cent of the total number of car-miles operated. If all these car-miles could be cut off the annual saving at the rate of 7.57 cents per car-mile would amount to \$320,000.

Items *Bb*, *Bc* and *D* vary inversely as the number of car-miles. Together they amounted last year to 2.48 cents per car-mile. The total of the two classes thus amounts to (7.57 + 2.48) or 10.05 cents per car-mile. Little can be done in the future operation of the present subway or in the design of future subways to cut down materially the cost per car-mile of the items of the first class. Efficient management and the design of a subway which will allow the running of a greater number of trains upon each track will cut down the cost per car-mile of the items of the second class, but this part of the expense is proportionately small.

### ANALYSIS OF THE FIXED CHARGES

The annual charges are as follows: Interest on the cost of permanent way, sinking fund on investment in permanent way, interest on the investment in equipment, depreciation on equipment and taxes. All of these items can be reduced by keeping down the original cost of construction.

The approximate costs of 1 mile of single track, exclusive of equipment, power plants and electrical conductors, for different kinds of construction in the vicinity of New York City are as shown in Table II.

These figures, which, as before stated, do not include the

cost of car equipment, power-station equipment or transmission system, for the reason that such investment depends upon the car-miles operated, indicate that to operate an elevated passenger road and keep the fixed charges per car-mile for permanent way within reasonable limits the passenger traffic should be about three times that which would justify a surface conduit system. To support a

TABLE II.—APPROXIMATE COSTS IN NEW YORK CITY OF RAILWAY CONSTRUCTION.

	Cost per mile of single track.	
	From low to high.	
Surface railway (for overhead trolley).....	\$20,000	\$30,000
Add for asphalt paving or.....	12,000	
Granite block paving.....		20,000
Cost of surface road.....	\$32,000 to	\$50,000
Cost of conduit road, including same allowances for paving.....	80,000 to	120,000
Elevated railroad.....	200,000 to	300,000
Subway.....	600,000 to	900,000
Tunnel under river.....	1,200,000 to	1,800,000

subway the travel should be about three times the minimum travel that would justify the building of an elevated road and to maintain a tunnel the length of haul must either be very short or the passenger movement through it must be of great magnitude. Due allowance must always be made for possibilities of development, but when the promise of a reasonably early growth in traffic does not exist the more expensive forms of permanent way cannot be justified from a strictly commercial point of view. Subways are eminently adapted for main-line traffic, but not for branch lines, and in general the outlying districts cannot be relied upon to support a subway until the traffic which originates in the district added to the traffic which passes through the district is sufficient to justify three elevated lines of the present type.

The cost of constructing the permanent way of a subway equal in mileage to the present subway tracks in the boroughs of Manhattan and the Bronx may be taken at \$50,000,000. The cost of the necessary rolling stock and repair equipment, power house, substation, signal system and electrical distributing systems would add \$25,000,000 to the investment. The performance of the present subway shows that 50,000,000 car-miles can be operated to advantage in that part of the subway on the Manhattan side of the East River tunnels—that is, one car-mile per year may be expected for each dollar invested in permanent way and two car-miles per year for each dollar invested in "equipment." Upon a large part of the cost of the permanent way the present operating company is paying interest at the rate of 4 per cent per year, which is at the rate of 4 cents per car-mile for interest charges on the cost of permanent way only. If the construction funds had been provided by a private company the interest cost per car-mile would probably not have been less than 5 cents or 6 cents. If all of the money furnished by the city for the permanent way could have been secured at 3½ per cent the cost per car-mile for this interest would be 3.5 cents.

This item of annual interest charge upon the permanent way offers more opportunities for improving the financial standing of a subway system than any other item so far discussed. For instance, with the present subway if the investment in branch lines which are operated at a loss could be eliminated or if their first cost could be charged proportionately by special assessment directly upon the property benefited by them then this interest charge on permanent way would be reduced by 30 per cent or from 4 cents to 2.8 cents per car-mile, thus effecting a saving of 1.2 cents per car-mile. Or if future subways could be built with a much greater carrying capacity in proportion to the amount invested in permanent way then this unit charge of 4 cents per car-mile for interest on permanent way can be reduced to less than 3 cents per car-mile without any change in the rate of interest carried by the present subway.

The arrangement with the city by which most of the money for permanent way of the present subway was raised provides for a sinking fund of 1 per cent per annum on that part of the investment. On a basis of 50,000,000 car-miles with an investment of \$50,000,000 this sinking fund of 1 per cent per annum amounts to 1 cent per car-mile. In future subways it is not unreasonable to expect that 2 car-miles should be operated for every dollar ex-

pected for permanent way and thus the sinking-fund charge be reduced to 0.5 cent per car-mile.

INTEREST ON INVESTMENT IN EQUIPMENT

The investment for the equipment of a subway similar to the present subway in Manhattan and the Bronx may be taken at approximately \$25,000,000. As this money was not raised by means of the city's credit the interest charge may be taken at 6 per cent per annum, as this is about as low as money usually costs a private corporation after paying brokerage and other expenses incidental to securing it. On the basis of 50,000,000 car-miles this interest charge upon equipment amounts to 3 cents per car-mile. As the original cost of all of this equipment increases directly as the car-miles increase the most effective way of reducing the importance of the charge for interest on the equipment must be by reducing the rate of interest. If the money for the first cost of the equipment had been raised on municipal bonds or in any other way at the same rate (i. e., 4 per cent) as the money invested in permanent way then the unit cost would be reduced from 3 cents to 2 cents per car-mile, a saving of 1 cent per car-mile. This method of financing the cost of the equipment would therefore result in a considerable reduction in the annual charges.

DEPRECIATION.

In the accounting system used with the present subway the item of depreciation upon equipment is not recognized. In my opinion this policy, or perhaps lack of policy, is a serious mistake, as it is certain that if all of the surplus earnings are disbursed each year in the form of dividends and no allowance is made for depreciation there will come a time when renewals must be made either at the expense of the stockholders or at a sacrifice of the service, which can and should be maintained for future patrons of the subway system. Just how much the allowance for depreciation should be cannot be determined without a careful study of the conditions in each particular case. An investigation will no doubt reveal the fact that there are parts of the structure and perhaps also of the equipment which can be maintained up to full working value and upon which the reserve for depreciation may be neglected, but this same study will also show that there are other parts which are depreciating in such a way as to require an annual reserve to provide for eventual renewals. For instance, the wooden cars should be removed from the subway, but apparently no way of financing this loss has been adopted. These cars were the best cars that could be secured at the time the subway was designed, but shortly after they were built metal cars were developed. Of about 850 cars in the subway 500 are of this wooden or composite type. The original cost of these composite car bodies was \$3,350 each and new metal bodies to replace them will cost about \$5,500 each. The difference between the cost of new metal cars and the original cost new of the composite cars should be charged to capital account, but the difference between the original cost of the composite car and its scrap value as it leaves the subway should be considered a loss and be offset by a depreciation reserve.

I assume that the accounting system for the future operation of subways will conform to the accounting system adopted by your commission, and as this system includes a depreciation account, I feel warranted in recognizing this charge in this analysis.

RECAPITULATION OF POSSIBLE SAVINGS

We are now in a position to reach some conclusions regarding the design of future subways by reviewing the entire problem of making a sub-surface system of transportation pay a fair return on the investment even with the fare limited to the uniform amount of 5 cents per passenger. In the following recapitulation (Table III) the cost of operating the present subway is first shown in each case, the figures of operating expenses being taken from the record of the year ending June 30, 1908. The extreme theoretical reduction in cost that can reasonably be expected is shown in the second column, and the final column is intended to indicate the lowest probable practical limit of cost that can be attained in the operation of future subways under the most favorable conditions. All figures are given in the unit of cents per car-mile.

From the foregoing analysis it will be seen that in order to pay a profit of 6.5 cents per car-mile from the operation

of a subway similar to the present subway it is necessary to crowd the passengers in the cars so that the average income from passenger revenue amounts to 23 cents per car-mile. Furthermore, in order to maintain this profit of 6.5 cents per car-mile, which in the case of the present

TABLE III.—COMPARATIVE OPERATING EXPENSES OF PRESENT AND FUTURE SUBWAYS.

	—(Cost in cents per car-mile)—		
	Present subway.	Possible saving.	Future subway.
Maintenance of way.....	1.18	.18	1.00
The reduction is due to the possibility of operating more cars than is done at present over each track.			
Maintenance of equipment.....	1.87	.27	1.60
The saving shown may be accomplished by providing the most economical repair shop equipment.			
Maintenance of power plant.....	.35	.10	.25
Very little saving is to be expected except that due to running more cars or providing slightly less reserve machinery than has been thought best with the present subway.			
Wages of trainmen.....	1.79	.04	1.75
The only reduction that can be expected in this item will be due to efficiency in the management of the men and trains, and not in the reduction of the cost of labor. Every car-mile operated will require its quota of trainmen.			
Wages of station-men.....	.84	.34	.50
All station expenses per car-mile will become less as the volume of traffic increases.			
Other transportation expenses.....	.95	.40	.55
This item also diminishes as the number of car-miles increases, although the reduction cannot be expected in the same proportion as the increases in car-miles.			
Power expenses.....	2.38	.20	2.18
Every car moved one mile will require approximately the same amount of power, unless the average speed is reduced. Some slight economy may be expected with increase in load.			
General expenses.....	.69	.25	.44
This item will become smaller as the car-miles increase, as the total expenses are divided among a larger number of car-miles.			
Total operating expenses.....	10.05	1.78	8.27
The total probable saving in operating expenses is less than 2 cents per car-mile, and the lowest limit to which these expenses can be reduced is 8.27 cents per car-mile. As the fullest limit of economy cannot be expected with every item in any one case, it is probable that 9 cents per car-mile represents the lowest practicable operating cost, in the present state of the art.			

TABLE IV.—COMPARATIVE FIXED CHARGES OF SUBWAY SIMILAR TO PRESENT, AND OF FUTURE SUBWAYS.

	—(Cost in cents per car-mile)—		
	Subway similar to present subway.	Possible saving.	Future subway.
The first column shows the results that can be obtained by operating 50,000,000 car-miles in a subway in which the permanent way cost \$50,000,000 and the equipment \$25,000,000, which is approximately the ratio with the present subway.			
Interest on permanent way.....	4	2	2
This item can be limited by keeping down the investment and by operating the tracks up to their fullest limit of capacity during rush hours.			
Sinking fund for permanent way.....	1	0.5	0.5
This item can be reduced in the same proportion as the previous one. The 1 per cent determined upon as the rate for sinking fund with the present subway is not any too large.			
Interest on equipment.....	3	1	2
By reducing the rate of interest from 6 per cent to 4 per cent, a considerable saving can be effected. If the policy of providing funds for the equipment by means of the city credit could be followed, the saving in interest per car-mile would go far toward providing an adequate depreciation reserve for the replacement of this equipment.			
Total for fixed charges.....	8	3.5	4.5
It will be seen that the possibilities for saving are nearly twice as great with the fixed charge accounts as with the operating expense items.			
Total cost, including both operating expenses and fixed charges.....	18.05	5.28	12.77
The sum total of all the possible economies amounts to 5.28 cents per car-mile, or 30 per cent of the total average cost of operating each car-mile in a subway similar to the present subway. As the lowest limit can only be secured by strict economy in investment and in operation, which in some cases might reduce the quality of the service supplied, it will be better to assume a medium figure of between 14 and 15 cents per car-mile as the low practicable limit which can eventually be expected with future subways. With the present subway it will be difficult to introduce sufficient economies to reduce the total cost per car-mile to less than 17.5 cents.			

subway is now all disbursed as dividends, the item of depreciation on the equipment must be entirely neglected.

The second column shows that if changes are made in the methods of financing, constructing and operating subways it is possible to design and build future subways that

TABLE V.—RECAPITULATION OF ESTIMATES FOR FUTURE OPERATIONS.

	—(Cost in cents per car-mile)—	
	Subway similar to present subway.	Possible in future subway.
Income per car-mile:		
From passenger operation only.....	23	18
From advertising, sale of power, etc.....	1	1
Total gross income per car-mile.....	24	19
Operating expenses.....	10	9
Net earnings.....	14	10
Fixed charges.....	7.5	5.5
Surplus to be applied to dividends and depreciation..	6.5	4.5
Depreciation at the rate of 3 per cent per year on actual investment in equipment.....	..	1.5
Surplus for profit.....	6.5	3

will furnish adequate service for a 5-cent fare and at the same time take care of depreciation and interest on the investment. That the service can be adequate is indicated by the fact that the income per car-mile from passenger revenue only need not be more than 18 cents, instead of 23 cents as required under present conditions.

To produce this result the following economies must be secured:

1. Reduce the investment required for permanent way by raising by special assessment on the property benefited the first cost of all branch lines. The saving per car-mile would approximate ..... 1 cent
2. Increase the earning capacity of each dollar invested in permanent way by designing the stations on the main line on the reservoir principle, so that 60 trains an hour can run over each main line track. Practicable saving per car-mile. .... 1 cent
3. Effect economies in operation and maintenance and reduce relative importance of general expenses by operating more cars with same organization charges. Saving per car-mile. .... 1 cent
4. Raise the money for the first cost of the equipment on a basis of 4 per cent, instead of 6 per cent, either by using the city's credit or otherwise. Saving per car-mile..... 1 cent
5. If all the investment for both the permanent way and the equipment could be secured solely upon the city's credit, the "profit" made by the operators over and above interest charges could be justly reduced, as the operators would then assume no financial risk. With the present subway, which pays nominal taxes amounting to about \$60,000 per year, about 1 1/2 cents of every 5-cent fare goes toward "profit." If the city furnished the money for the equipment as well for the permanent way, then this profit could be reduced from the present rate of about 6.5 cents per car-mile, as shown in the above table, to not more than 3 cents per car-mile. At this rate the profit to the operators would amount to \$1,500,000 per year on the basis of 50,000,000 car-miles. Thus the saving per car-mile to the subway system by this arrangement would amount to at least ..... 3.5 cents

The above statement shows the relative value of the possible economies in design and operation that may be realized in connection with future subways. The sum total of all the savings amounts to 7.5 cents per car-mile, but as it may not be practicable to secure the full measure of economy indicated as possible in each case, the total saving may be taken at 6.5 cents per car-mile. As a "contra" charge it must be remembered that a depreciation reserve fund should be provided for which at least 1.5 cents a car-mile must be allowed, thus reducing the net saving to 5 cents per car-mile; that is, assuming that the above economies are effected, future subways may be maintained with a gross average income per car-mile from all sources of 19 cents, instead of 24 cents, as at present, on the assumption that no taxes are paid in either case.

If future subways are taxed upon the same basis as the present subway, which, when reduced to a car-mile basis amounts to 0.12 of a cent per car-mile, future subways would have to earn 19.12 cents per car-mile, instead of 19 cents, as above stated, but if they were taxed upon the same basis as the present elevated lines of the City of New York are taxed, which, when reduced to car-mile basis, is about 3 cents\* per car-mile, future subways would have to earn 22 cents per car-mile instead of 19 cents, as above stated.

It seems to me as a general proposition that with the return upon the investment now required by private capital there is now no field in New York City for the construction of a comprehensive system of subways entirely with

\*Including franchise tax which has not been paid.

private capital unless the fare for the long-haul passenger is something more than the present 5-cent fare. If it were possible to establish a fare greater than 5 cents for the long-haul passenger the solution to the problem would be simple from a railroad standpoint, although complicated and disadvantageous to the public, but since the 5-cent fare is now the legal fare the real problem is how to get subways and maintain this 5-cent fare.

#### CONCLUSIONS

1. Raise all the money for the construction and equipment of such portions of future subways as can be shown to be profitable upon the city's credit and at the lowest possible rate of interest.

2. For such portions of the system as are clearly unprofitable let the territory, the value of which is enhanced by the construction of the subways, bear the burden of the initial cost.

3. Eliminate taxes as is now done with the present subway.

4. Extend the refunding period for the retirement of the cost of subways over as long a period as practicable.

5. Design the express stations of the main stems of such subways upon the reservoir principle so as to secure maximum capacity with minimum investment.

6. Lay out a comprehensive system of transportation and begin the construction of subways at the center of the congested district and extend outward in order to get the benefit of the short-haul profits before assuming too much of the long-haul burden and in connection with the short-haul business investigate carefully the possibilities of moving platforms for the local tracks.

7. Take advantage of specific cases where railroad companies desiring to secure terminals, the indirect value of which to them is great, may be willing to contribute largely to the cost of building portions of a comprehensive subway system.

8. Lease the operating privileges under proper public supervision to an operating company upon the basis of an agreed compensation per car-mile, the number of car-miles to be operated, which is the measure of service, to be determined by dividing the income from the traffic by the total cost of operating a car-mile, the income to be sufficient to provide for operating expenses, including maintenance, fixed charges and depreciation, and leave sufficient margin to sufficiently compensate the operating company so as to secure the highest class of skill and efficiency in operation.

### FEBRUARY MEETING OF THE PUBLIC SERVICE RAILWAY SHOP FOREMEN'S ASSOCIATION

The regular monthly meeting of the Public Service Railway Company's Shop Foremen's Association was held on Friday, Feb. 19. Mr. Ricker reported progress on the subject of sand boxes. His committee was obtaining from each foreman a statement of sandbox troubles, and after analyzing all the reports would make suggestions for solving the difficulties.

President Murphy read the statement of crippled cars covering January. Some of the figures were protested by some of the foremen, who asserted that the pull-ins reported were not always actual cripples. The figures are made up from reports furnished by the transportation department and sent to headquarters before the local repair foreman can check them up. It is not unusual for motormen to turn in a car "crippled" for no other reason than that one with better motors or air brakes is available as a substitute. Mr. Feeney, representing General Manager R. E. Danforth, said that steps were being taken to have the pull-in reports verified by the shop foremen before they are sent to the main office. Mr. Ricker suggested that the report have two columns, one giving the pull-ins reported by the transportation department and the other the number determined by the inspectors after examination.

N. W. Bolen, superintendent of transportation, said he

was aware of the habit of some motormen to turn in good-order cars as cripples so that they could have an excuse for getting one which would meet the schedules more easily. He was anxious to co-operate with the shopmen for the elimination of this practice, and to that end would instruct his depot masters to keep a special record of the motormen who report pull-ins. He would also arrange to have his foremen confer with the shop foremen on this matter in all its bearings.

Mr. Ossett, of the legal department of the company, then gave a brief talk on the relations which should exist between the shop department and the legal department of a railway company. He has found when personal injury cases came up for litigation that it was not easy to secure the proper evidence from the shop records to prove that the cars concerned were in good condition at the time of the supposed accident. He suggested that a report should be made on a car every time any work was done on it, even to the sanding of the steps and platform in snowy weather. Such reports should be duly signed and countersigned by the local foreman, thereby securing a document which would be admissible as legal evidence. He also mentioned the desirability of keeping close track of the names and addresses of the men. The average car house employee is of a more or less nomadic disposition, and frequently when a case comes up some months after an accident it is found that the best witness has departed for points unknown. Mr. Ossett also suggested that it would be a help to the legal department if every employee's particular class of work was specified in the shop record, as it was important at times to know just what kind of work a particular man's signature covered.

F. P. Maize, traveling inspector, said that he had looked into the cause of the trouble with sleet wheels. He had found that some of them required reaming, the hub being .003 in. smaller than the pin. This change had removed a great deal of the trouble of which the shop foremen had formerly complained. Further investigation of progress with the new gear lubricants had shown that some depots were using too much, but this would soon be corrected, and the cost of this item would decrease. In some places journal boxes were simply refilled with oil instead of being repacked. This was both poor and wasteful lubrication, as the packing should always be removed to take out the glazed portions. He had looked into complaints regarding slow deliveries, and had found that the shops were not entirely to blame. If the depots would return immediately any parts for which they had no use, it would be a great help for the shop. The outside foremen should not suppose that because one part of a piece of apparatus is worn out that the rest of it is worthless. Often enough the absence of some small but essential part hinders shipments from the shop. Melting out the babbitt from motor bearing shells when supplies do not come fast enough from the storekeeper was also an undesirable practice.

The New Orleans Railway & Light Company, in addition to the large amount of maintenance work now under way, has in contemplation the substitution of Georgia granite pavement for shells in the tracks on Magnolia Street from Sixth Street to Napoleon Avenue, a distance of about 1.11 miles of double track. Other paving work of interest to be undertaken at once is the substitution of square creosoted wooden block pavement for the asphalt pavement now in place on St. Charles Street from Common to Canal Streets.

## PURCHASE OF COAL ON B. T. U. BASIS IN CLEVELAND

L. P. Crecilius, superintendent of power, Municipal Traction Company, Cleveland, read a paper on the subject mentioned above at the last meeting of the Cleveland section of the American Institute of Electrical Engineers. He stated that the cost of fuel was approximately 70 per cent of the entire power station cost in Cleveland, and that the heat efficiency of the plant was practically 8 per cent. For some time the company has been purchasing its fuel on the British thermal unit basis. Similar systems are used by the Interborough Rapid Transit Company, New York, and the Water Works Department in Cleveland. Mr. Crecilius described the method pursued by him as follows:

There are available in the Cleveland market in extensive quantities two principal grades of bituminous slack, one coming from the western section of Pennsylvania and the other from the eastern part of Ohio, the best of which is known as Youghiogheny gas slack.

For a period of about two months before the contract was put into effect the company made certain evaporative tests to determine the relative steam-making qualities of Ohio bituminous slack and Youghiogheny gas slack. These tests clearly indicated that the furnaces as constructed, and with the draft available, both Youghiogheny slack and Ohio slack can be burned with equally good results. The average chemical properties of the two kinds of slack, per pound of dry coal, are as follows:

	Youghiogheny gas slack	Ohio bit. slack
British thermal units.....	13,185	12,614
Ash .....	11.6%	13.8%
Sulphur .....	2.03%	3.53%
Volatile combustible matter.....	31.95%	36.62%
Fixed carbon .....	53.52%	45.55%

The relative evaporation per pound of coal as fired was 7 per cent in favor of the Youghiogheny gas slack. The inherent moisture contained in the coal in the first case is 1.52 per cent, and in the second 2.7 per cent.

Each day's consignment of coal furnished to each power plant by the contractor during the continuation of this contract is sampled by the superintendent or his authorized agent, and analyzed to determine its heating value, and the price paid by the company per ton per car of coal is based upon the table of heat value for excess or deficiency of the standard therein contained, but subject to further deductions for ash and sulphur.

A small quantity of coal is taken from at least five different places in each car received by driving into the coal a 5-ft. ram, before the car is unloaded. These quantities thus received from each car of coal of the day's consignment are thrown into a receptacle provided for this purpose and thoroughly mixed, and a properly selected sample of this mixture is taken for chemical analysis. One-half of the sample of the average mixture is labeled and held at the company's laboratory for a period of two weeks after unloading the cars. The other half of the sample taken from the average mixture is analyzed as soon as possible after being taken. No other sample is recognized.

Tests of the sample taken from the average mixture are made by the company's chemist under the supervision of the superintendent. Should the contractor question the results of the company's test (a copy of which is mailed him), the company will, if requested within three days after the copy has been mailed him, forward the other half the sample held for this purpose, to any laboratory in the city of Cleveland which may be agreed upon by the superintendent and the contractor, and have said sample analyzed by it. The results obtained from this second test shall be considered as final and conclusive. In case the disputed values as obtained in the company's test shall be found by the second test to be 2 per cent or less in error, then the cost of the second test shall be borne by the contractor; but if the disputed value shall be found to be more than 2 per cent, then the cost of the second test shall be borne by the company.

Should there be no question raised by the contractor

within the three days specified as to the values of the company's analysis, the second sample of coal is destroyed at the end of two weeks from the date of unloading the cars from which it was taken. Should a second test be made of the sample of the average mixture as herein provided, then any penalties to be made will be based on the results as obtained from the second test.

Coal which is shown by analysis to contain less than 15.0 per cent of ash and 3.5 per cent of sulphur is accepted without a deduction from the basic contract price, plus or minus an amount of excess or deficiency of British thermal unit value, as herein provided. Where the analysis gives amounts for any and all elements in excess of these quantities, deductions are made from the basic contract price in accordance with the penalties provided herein, for value of ash and sulphur below given, plus or minus the amount for excess or deficiency of the standard British thermal unit value.

The so-called average mixture of the day's consignment of coal was arranged to allow the dealer the benefit of cars of coal running low in ash and sulphur to offset those having a high value. The plan also offers some advantages to the company in that, on account of having a fewer number of samples to analyze, the chemist is not hurried in his work, and can therefore devote more attention to the preparation of samples and to the checking of his determinations.

The table referred to in this section of the contract is so proportioned as to focus the attention of the dealer to supplying Ohio bituminous slack of a value ranging from 12,500 b.t.u., the standard in the contract, to 13,125 b.t.u., 5 per cent above the standard, and which to him results in the best profit obtainable. To have protection from the supply of fuel having a high British thermal unit value, and which by reason of its chemical make-up may not be entirely adapted to the stoker equipment as existing, a limit has been placed in the table above which no further premiums are paid.

To guard against a supply of low-grade, cheap coal or slack which has been kept in stock, the British thermal unit value table is so arranged that the value can fall but 10 per cent below the standard, where, by reason of the addition of penalties due to ash and sulphur on this sort of fuel, the price is cut to such an extent that only the freight charges are realized. The idea being to secure for the power plant referred to in this paper the fuel which by test has been found best adapted to the existing equipment and load conditions, and at the same time satisfactory in regard to cost.

Almost immediately after the contract went into effect a marked improvement in the cost of efficiency of the entire plant took place, accompanied by an improvement of some 8 per cent in the consumption of coal per kw-hour.

In conclusion it may be said:

(1) That the installation of the scheme of purchasing fuel on the British thermal unit value basis has been justified in this case.

(2) That, due to the difference in price as existing between Youghiogheny gas slack and Ohio bituminous slack, the latter is the cheaper fuel to use, admitting, however, the superiority of the former over the latter.

The following table shows the variation of analyses from samples taken from cars by three different methods:

	Weight of samples	B.T.U.	Ash	Sulphur
Sample taken by hand at regular intervals while car being unloaded.....	600 lb.	12,843	10.96	2.51
Samples from top of car..	20 lb.	12,918	10.4	2.53
Samples taken by ram....	20 lb.	12,777	11.3	2.56

An Italian company, with a capital of \$300,000, is being organized to construct and operate an electric tramway from Biella to L'Hospice d'Oropa, and another company, with \$140,000 capital, is being organized to build and operate an electric tramway from Varese to Angera. The latter line will, it is expected, be subsidized by the State, the Como Provincial Government and certain municipalities.

**ROLLED STEEL WHEELS FOR THE CHICAGO CITY RAILWAY COMPANY**

The Chicago City Railway Company has made arrangements for the purchase of rolled-steel wheels to be used under all of its rolling-stock equipment. Specifications for the manufacture of these new wheels have just been approved by the Board of Supervising Engineers of Chicago Traction and are presented herewith in part. An illustration is also presented showing the detail dimensions of the 34-in. rolled-steel car wheels which hereafter will be standard for all double-truck cars. This illustration has been reproduced from drawing No. 2-K-4 of the Board of Supervising Engineers. It shows not only the dimensions and contour of the new wheel, but also the position of the wheel riding on the head of the 129-lb. rail, which is standard for all the tracks of the Chicago City Railway and the Chicago Railways Companies. The new rolled-steel wheels will be manufactured by the Carnegie Steel Company.

Referring to the illustration it is noted that the rim of the wheel will have a minimum thickness of  $2\frac{1}{4}$  in. The engineers of the railway company expect that with the flange and tread as shown it will be possible safely and economically to wear the tread down to a thickness of from  $\frac{5}{8}$  in. to  $\frac{3}{4}$  in. with two turnings.

is stated that a saving in weight of about 500 lb. per car will be effected by replacing the present chilled-iron wheels by the new rolled-steel wheels.

A portion of the specifications covering the purchase of these wheels is presented herewith. These specifications were signed as follows: Board of Supervising Engineers Chicago Traction, Board No. 1; Bion J. Arnold, chairman and chief engineer; George Weston, representing the City of Chicago; Harvey B. Fleming, representing the Chicago City Railway Company.

IV.—Bore of wheels to be either  $5\frac{1}{4}$  in.,  $4\frac{1}{4}$  in., rough bore, or as ordered.

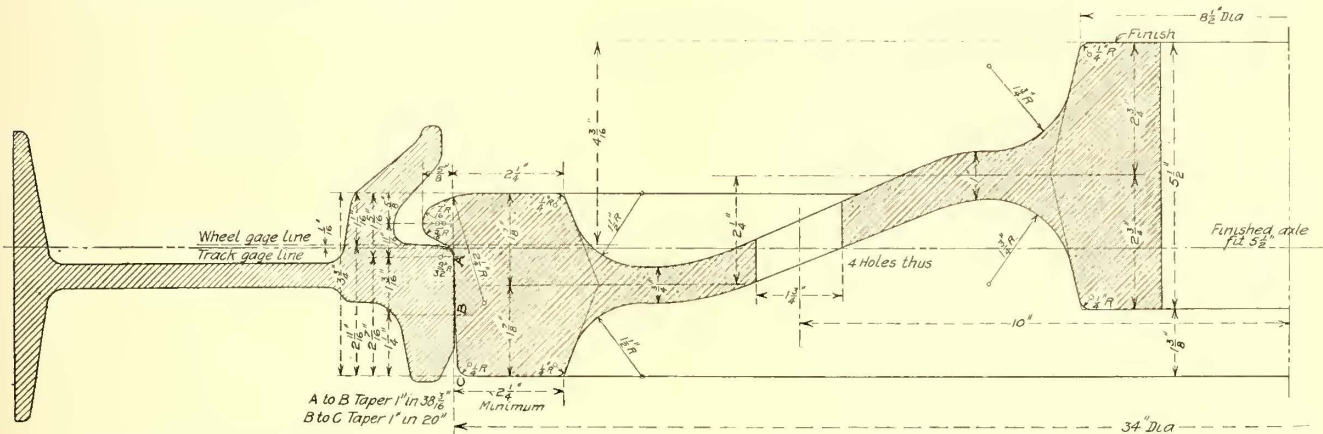
V.—The steel for wheels shall be made by the open-hearth process.

VI.—The steel for wheels shall conform to the following limits in chemical composition:

Carbon .....	0.65 to 0.85 per cent
Manganese .....	0.60 to 0.85 per cent
Silicon .....	0.08 to 0.25 per cent
Phosphorus.....	not to exceed 0.040 per cent
Sulphur.....	not to exceed 0.050 per cent

VII.—The manufacturer shall furnish the inspector the complete analysis of every heat from which the wheels are made. These analyses shall be made on drillings taken from the small test ingots and shall conform to the limits prescribed in paragraph VI.

VIII.—The slabs from which the wheels are made shall



**Cross-Section of New Solid Steel Wheel Adopted by the Chicago City Railway Company, Showing Detail Dimensions of Wheel and Standard Rail**

The first wear, it is expected, will reduce the diameter by  $\frac{3}{8}$  in. and it will require turning off  $\frac{1}{4}$  in. to renew the flange and tread contour. The second wear and turning are expected to be the same in depth as the first, and then the final wear, it is thought, will reduce the rim to a thickness of  $\frac{5}{8}$  in. to  $\frac{3}{4}$  in. The engineers hold the opinion that each of these three periods of wear will give a mileage equal to that now obtained with a chilled-iron wheel or, in other words, that the steel wheel will outlast three chilled-iron wheels.

As an additional economy it is planned to use the steel wheels which have been worn to the above limit under double-truck cars for replacing the present wheels used under the single-truck cars which operate on some of the crosstown lines in the southern part of the city. The axles on the single-truck cars are smaller than the standard axles of the double-truck cars and therefore when a steel wheel has reached the limit of its wear under a double-truck car it will be removed, a bushing will be inserted in the hub and the wheel will then be used in the lighter single-truck service. One consideration leading to the purchase of steel wheels for all the cars of the Chicago City Railway was the desire to reduce the weight of equipment. It

be sheared from the rolled ingot after sufficient has been discarded from its top to insure freedom from piping.

IX.—All wheels shall be free from injurious seams, cracks, flaws or other imperfections. The dimensions of wheels shall conform to the dimensions shown on drawing No. 2-K-4, accompanying these specifications, within the following limits:

- (a) The height of flange shall not vary, according to good machine-shop practice, from that specified.
- (b) The width of flange shall not vary, according to good machine-shop practice, from that specified.
- (c) The throat radius shall not vary, according to good machine-shop practice, from that specified.
- (d) The thickness of rim shall not vary more than  $\frac{1}{4}$  in. from that specified and shall not be less than  $2\frac{1}{4}$  in.
- (e) The minimum width shall not be more than  $1\frac{1}{16}$  in. less than the width specified.
- (f) The diameter of bore shall not vary more than  $1\frac{1}{16}$  in. from that specified and shall be rough turned to the diameter required by using not less than two cuts.
- (g) The eccentricity between center line of tread and center of bore shall not exceed  $3\frac{3}{64}$  in.
- (h) The minimum outside diameter of hub shall not be more than  $\frac{1}{8}$  in. less than that specified.
- (i) Eccentricity outside hub to tread shall not be greater than  $3\frac{3}{16}$  in.
- (j) The length of hub shall not vary more than  $\frac{1}{8}$  in. from that specified.

(k) Distance from gage line to inside face of hub must be  $4 \frac{3}{16}$  in., measured according to good machine-shop practice.

(l) The projection of outside rim shall not vary more than  $\frac{3}{32}$  in. from that specified.

(m) Black spots in the bore of wheel shall not be longer than 2 in. nor deeper than  $\frac{1}{8}$  in. and shall not be located within 2 in. from either face of hub.

(n) All wheels shall be gaged with a ring gage; the opening between gage and tread at any point shall not exceed  $\frac{1}{16}$  in.

(o) All wheels shall be gaged with a four-point ring gage and the opening between any point on gage and back face of flange or outside face of rim shall not exceed  $\frac{1}{8}$  in.

(p) All wheels shall be measured with a standard M. C. B. tape and have the tape numbers clearly marked or stencilled on each wheel. Wheels shall be mated as to tape sizes and shipped in pairs.

(q) The diameter of wheels shall not vary more than  $\frac{3}{16}$  in. from that specified.

X.—Wheels shall be stamped with maker's brand and wheel number in such a manner that each wheel may be readily identified.

XI.—The constructor will replace free of charge any steel wheels sold, delivered and manufactured under this specification which may prove defective by reason of cracking or breaking, defective material or workmanship, provided the same have received reasonable care and attention by the company and have not been used or worn beyond reasonable limits.

XII.—Both the chief engineer of the work and the engineer in charge, or their duly authorized representatives, shall have free entry to the works of the manufacturer at all times while this contract is being executed and shall have all reasonable facilities afforded them by the manufacturer to satisfy them that the wheels are being made in accordance with the terms of the contract.

All tests and inspection shall be made at the place of manufacture prior to shipment and shall be so conducted as not to unnecessarily interfere with the operation of the mill.

### GOVERNOR OF WASHINGTON RECOMMENDS PUBLIC SERVICE COMMISSION

In his annual message to the Legislature A. E. Mead, Governor of Washington, calls attention to the clause in the Republican State platform pledging the party to enact a law similar in spirit to the public utilities law of New York. He says in part:

"This is a subject demanding your most careful attention. The manner of handling and regulating our public-service corporations is of the first importance, and one of the most difficult problems confronting the different States of the National Government. The reason for having these corporations governed and controlled by a special commission is that such commission is, or soon should be, an expert body, better qualified by special study and the time such commission can devote to the questions than are either courts or the Legislature. Many students of this question have concluded that such a commission should be vested with judicial powers and made a tribunal having original jurisdiction to try all public questions between the people and the corporations, providing directly for an appeal from such tribunal to the Supreme Court, to the end that the Supreme Court may have the benefit of the commission's findings and conclusions. Such a commission has been created in the State of Virginia and the Constitution and the act creating it have been lately upheld by the Supreme Court of the United States. This procedure would greatly hasten the final decisions on these important public questions, as the time consumed in taking the testimony and trying the issue before the Superior Court would be obviated.

"If you should conclude that such tribunal, if created, should possess judicial power, it will probably be necessary to have the Constitution of the State amended so as to directly authorize the Legislature to clothe such commission or commissions with judicial functions. I submit the matter to your careful consideration."

### THE EXPERIMENTAL SIDE-DOOR TRAIN IN THE NEW YORK SUBWAY

The illustrations on page 381 show some of the novel features of the New York subway side-door cars, first suggested by Bion J. Arnold in a report to the Public Service Commission of the First District, New York, published in the *STREET RAILWAY JOURNAL* of Feb. 29, 1908. In this report Mr. Arnold discussed the merits of side-door cars of several types, and in conclusion recommended that the present design be changed to one with two doors at each end as illustrated. It will be noted that the original end doors are now reserved for entrance only, and that they are still operated by hand levers. Departing passengers must leave by way of the new doors. Both exit and entrance doors are 3 ft.  $2\frac{3}{4}$  in. over all and are 3 ft.  $2\frac{3}{4}$  in. apart.

To attain the desirable freedom of movement at the car ends it was necessary to give up the longitudinal seating opposite each of the four exit doors per car. The special seats installed between the doors may be removed if it should be desirable to do so for the sake of better passenger movement. Mr. Arnold believes, however, that the losses in seating could be regained by using more transverse seats if future subways are constructed so as to admit wider cars.

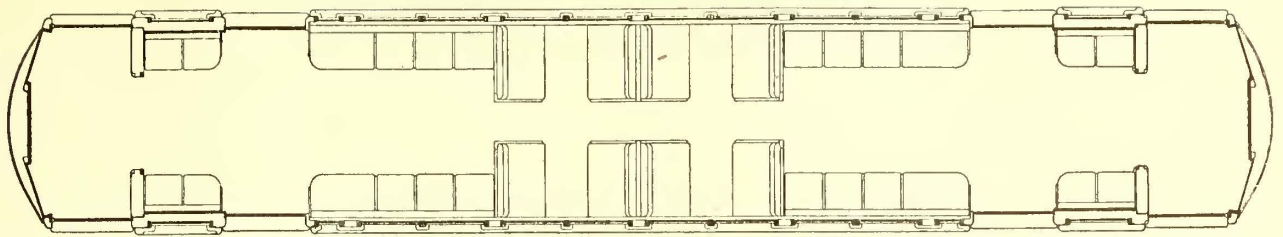
The insertion of the new doors made it necessary to cut out corresponding lengths of the side sills. The latter have been strengthened by placing under the doors 5/16-in. reinforcing girders of fish-belly design, riveted to the sills. The girders are 10 ft.  $9\frac{1}{4}$  in. over all, composed of an upper member 6 in. deep and a lower member  $3\frac{1}{2}$  in. deep. At the motor end a  $\frac{1}{2}$ -in. x  $3\frac{3}{4}$ -in. brace is riveted through a 6-in. channel to the lowest point of the reinforcing girder. Other new steel work for the cars included the installation of  $\frac{1}{8}$ -in. pressed steel posts for the new doors.

The new exit doors are pneumatically operated by the guard who controls the end grab-handle shown in the half-tone view. The door mechanism is of two types, four cars having been equipped by the Burdette-Rowntree Company and four by the Consolidated Car Heating Company. Both designs are operated at the regular train-line pressure, so nothing further than a connection to the main reservoir was needed. The shutting of the last door in the train closes a buzzer circuit leading to the motorman's cab. Current for this circuit is taken from the main circuit through resistances furnished by the Consolidated Car Heating Company. This buzzer circuit is similar to that which is being installed by this contractor on the latest pay-as-you-enter cars of the Third Avenue Railroad Company, New York.

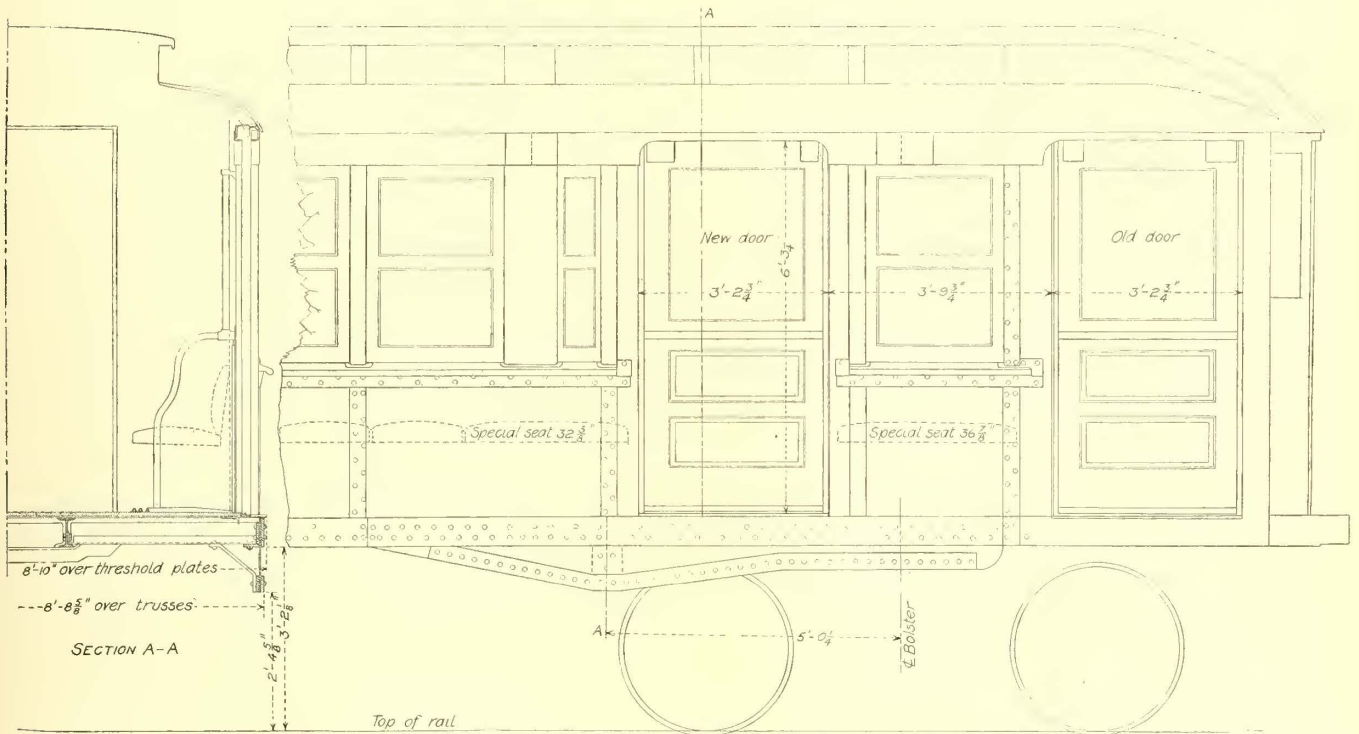
A hearing, adjourned from Tuesday, Feb. 23, will be held on Saturday, Feb. 27, at 10:30 a. m., before Commissioner Eustis, of the Public Service Commission, on the subjects of installing more cars of this type and on proposed changes in the operation of the experimental train.

Dr. W. Wyssling, general secretary of the commission for studying the electrification of the Swiss State Railways, and his assistant, Dr. W. Kummer, have just issued their recommendations on the selection of the proper frequency for single-phase equipment. They recommend 15 cycles from both engineering and financial considerations. The Bavarian and Italian decisions in favor of 15 cycles and the American propaganda are quoted as precedents.

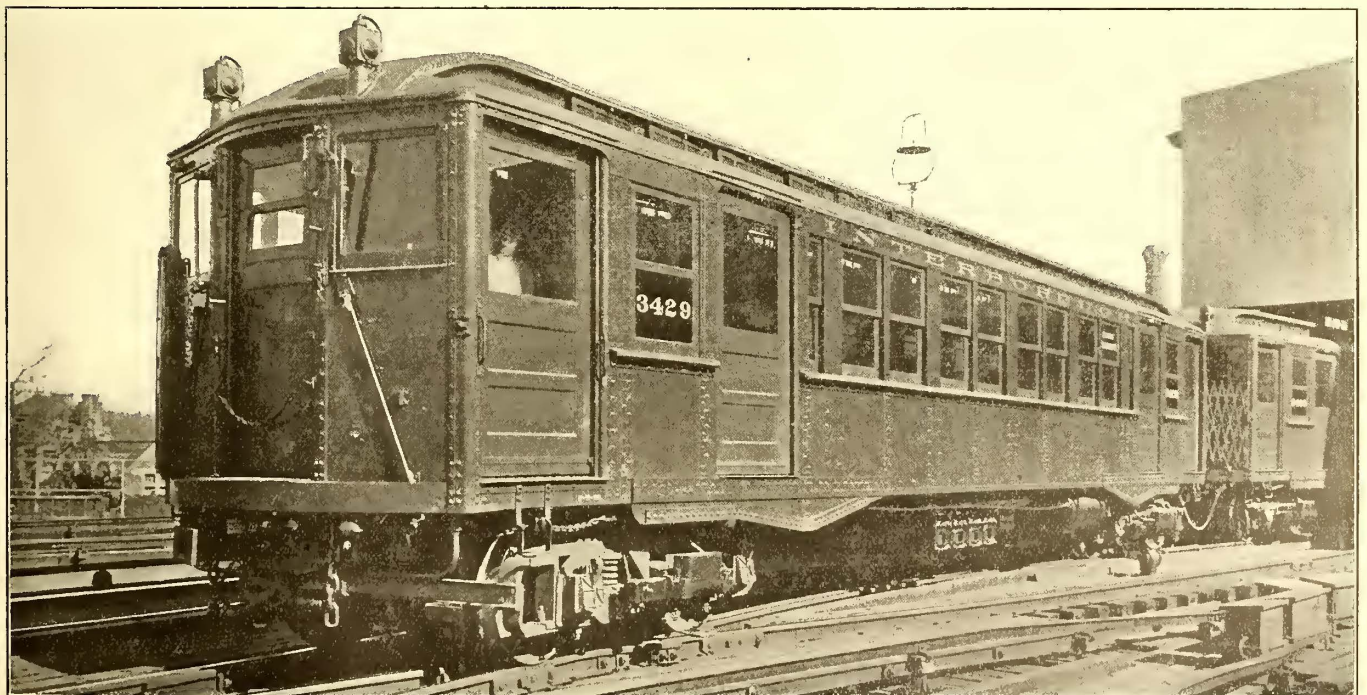




Seating Plan of Side-Door Cars Used on the New York Subway Experimental Train, Showing Reduction in Number of Longitudinal Seats



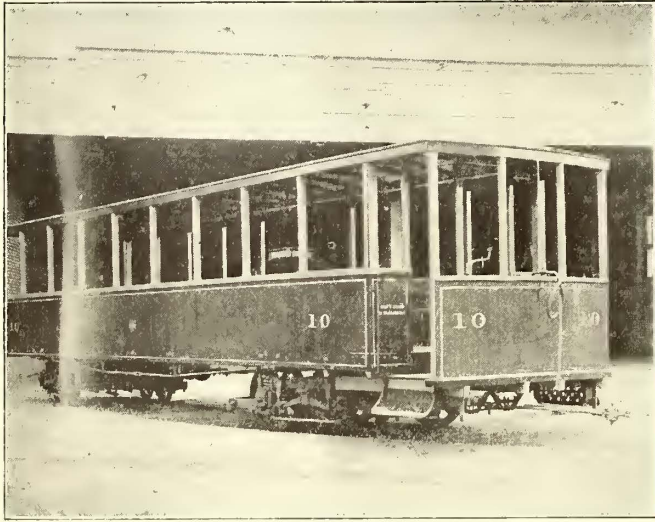
Part Side Elevation and Cross Section of Side-Door Cars Used in the New York Subway Experimental Train



One of the Experimental Side-Door Steel Cars of the New York Subway, Showing Door-Operating Devices on the End

## HOME-MADE TRAILERS IN SHREVEPORT, LA.

Through the courtesy of L. M. Levison, secretary and general manager of the Shreveport (La.) Traction Company, the accompanying views are available of one of the semi-open double-truck trail cars built by this company for State fairs, baseball grounds, parks and similar special service. The bodies, which are built of native cypress and long-leaf pine, are 37 ft. long over all and 8 ft. 2 in. wide. They are of semi-closed construction, with 3-in. x



Semi-Open Car Built for Park Service in the Shops of the Shreveport Traction Company

4-in. posts framed for windows or storm curtains should they be needed. They are mounted on Brill No. 27-G-1 trucks, and are equipped with straight air brakes. The total weight of each car is about 14,000 lb. and the seating capacity 120. The seating illustrated is longitudinal, but



Interior of Shreveport Semi-Open Car for Park Service

end seats are also furnished. As the standing area is very liberal, the car is ideal for heavy traffic in the warm climate of Shreveport, where it never snows, and where the passengers are hauled comparatively short distances.

A report from Constantinople, Turkey, says that the Gresham Company, of London, has applied for a 50-year concession for constructing and operating electric railways in the suburbs of Constantinople.

## COMMUNICATION

### THE PROBLEM OF REDUCING ACCIDENTS

THE UNITED RAILWAYS & ELECTRIC COMPANY,  
BALTIMORE, MD., Feb. 20, 1909.

To the Editors:

I have read with great interest the articles written by Frederick W. Johnson, of Philadelphia, and Ellis C. Carpenter, of Anderson, Ind., which have recently appeared in the columns of the ELECTRIC RAILWAY JOURNAL, relating to the reduction of electric railway accidents and to the successful operation of railway claim departments. It is unnecessary to state that these articles were instructive and edifying, and coming as they do from experienced and well-known claim officials, they should be carefully studied.

The reduction of electric railway accidents to the lowest possible minimum (or their permanent elimination, if such a happy proposition is possible), the thorough and rigid investigation of all claims and suits, the prompt settlement for the lowest possible amount of all that are meritorious and the detection and successful prosecution of all accident fakers and malingerers are questions which continually occupy the mind of the claim official, and the most efficient methods to arrive at these desired results are eagerly sought. The successful claim official, although his years of usefulness may have been many and his experience in his particular line of railway duty profound, always realizes he never "knows it all" and he is eternally vigilant in his efforts to glean additional knowledge for the successful operation of his department.

It is hoped, therefore, that other claim officials will follow the example of Mr. Johnson and Mr. Carpenter and express their views from time to time in these columns upon the methods they consider most feasible for the successful operation of railway claim departments.

F. HOWARD W. KIDD,  
Claim Adjuster.

### TWO NOVEL VENDING MACHINES

A decided novelty in weighing machines is being put on the market for park and station use by the United Vending Machine Company, Cleveland, Ohio. This device is a combination of scale and phonograph, which will, upon the insertion of a coin call out the exact weight of the person standing on the platform. The voice is said to be so loud and distinct that the weighing of one person immediately attracts others to the machine. The talking scale has already been installed in a number of public places and, no doubt, has attracted the coins of many who would never think of being weighed otherwise than gratis at their local grocer's. A novelty like this should exert a strong appeal to park crowds, who derive most of their fun from the "follow your leader" principle.

The talking scale is not made for early consignment to the scrap heap, but for permanent use. All the working parts are made of nickel-plated tempered steel. The balance beams are hung on tool-steel knife-edge bearings. The scales are built in highly polished quarter-sawed oak cabinets, ornamented with nickel-plated trimmings; they are also built in aluminum-finish weatherproof iron cases for outside and inside use. In general, this contrivance is built to withstand abuse as well as the best of ordinary scales, and in addition has a most attractive finish. The accompanying illustration represents the interior of the

machine, the cover having been removed to show the photographic mechanism.

Another park novelty placed on the market by this company is the card-printing machine shown in one of the illustrations. This device appeals in a very effective way to the natural desire to see one's name in print. The machine can be operated by anybody, but is particularly amusing to children. The alphabet is arranged in the usual

the attendant neglect to reverse the feed. The maximum traverse feed of the grinder is  $\frac{1}{2}$  in. and is operated by a hand wheel and miter gear on the splined shaft in the front of the machine. The longitudinal travel of the grinder is obtained from the powerful feed screw shown in the illustration. Attention is called to the fact that the travel, 20 ft. per minute, is somewhat faster than might be supposed from the thread of the screw as a triple thread



Talking Scales

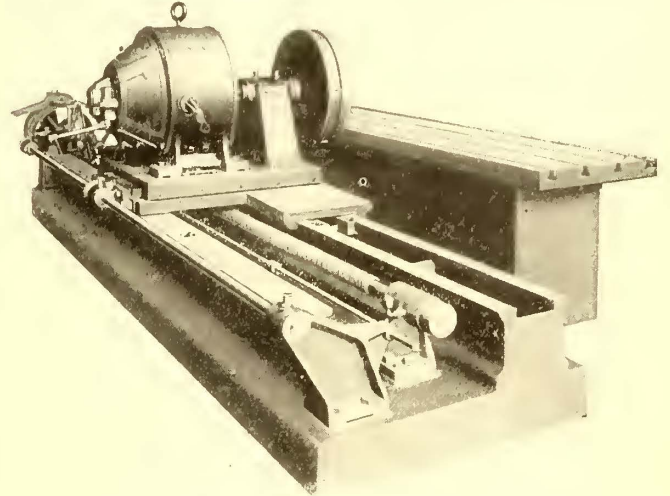


Card Printing Machine

order and is followed by punctuation marks. The machine can be arranged to give out 12 cards for 5 cents or 5 cards for 1 cent. The cost of supplies is very small, a \$2 roll of card paper and accompanying ink being enough for \$16 of cards. As it takes only 30 seconds to print a dozen cards, this device is capable of great earning power. The printer is mounted on a stand in a heavy glass case, which attractively sets off the mechanism. It is accompanied by instructions giving the few simple movements required to print the cards.

**MOTOR-DRIVEN TRAVELING HEAD FACE GRINDER**

The accompanying illustration shows a 102-in. face traveling head grinder made by the Diamond Machine Company, of Providence, R. I., and driven by a Westinghouse type "S" compound-wound, 10-hp. 1100-r.p.m., completely enclosed motor. This grinder is particularly adapted for purposes where it is necessary to grind to very exact figures any materials that are liable to be too hard to be machined. The grinding head is direct connected to the motor, which, together with a very heavy outboard bearing, is mounted on a large base moving on ways. The motor has an extended shaft to carry the grinder chuck. The work is stationary, being bolted to the large platen in front of a 22-in. emery ring, while the ring rotates and also moves slowly back and forth from end to end of the platen. The reversing is done by a hand lever when the machine is in use, but automatic stops are provided at each end of the extreme travel to prevent over-travel should



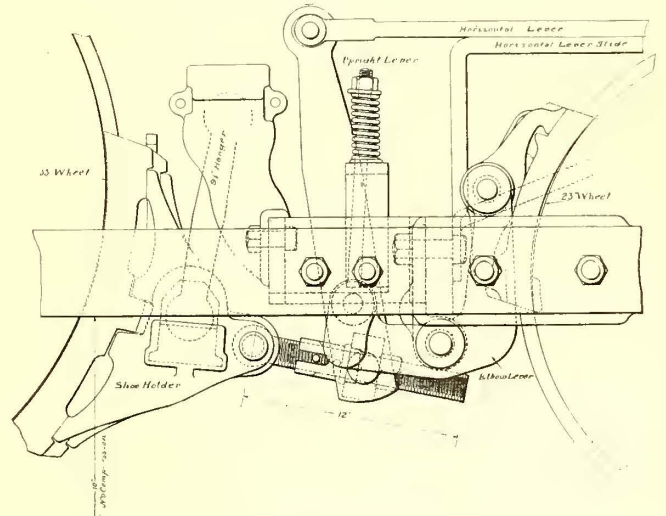
Motor-Driven Traveling Head Face Grinder

is used. The lead screw is driven by a second motor not shown in the illustration.

Where required an a.c. motor may be supplied in place of the d.c. motor. The size of the motor to operate the lead screw is dependent upon the amount of metal to be removed.

**IMPROVED BRAKING SYSTEM FOR MAXIMUM TRACTION TRUCKS**

The J. G. Brill Company, of Philadelphia, Pa., has recently acquired the rights for the improved method of distributing the braking weight on maximum traction trucks shown in the accompanying drawing. This arrangement was invented by J. S. McWhirter, superintendent of car



Improved Brake for Maximum Traction Truck

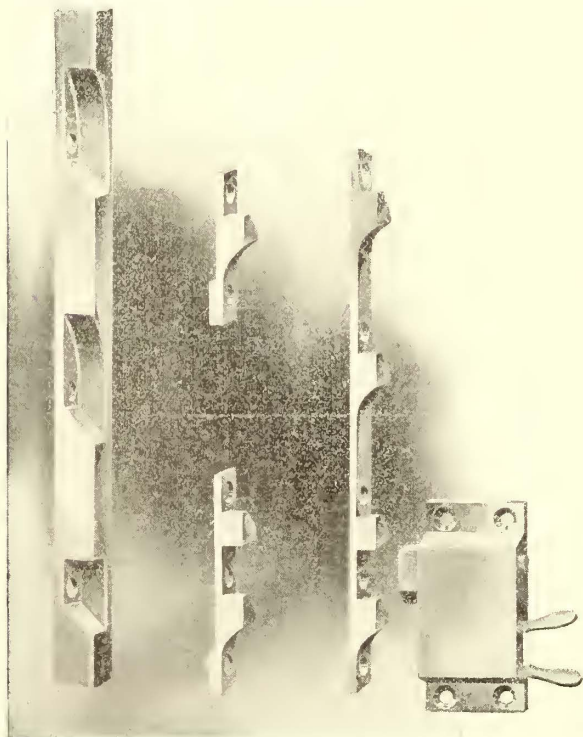
equipment, Third Avenue Railroad Company, and has been successfully applied on 543 maximum traction trucks operated by that company. It has been specified for all the new cars ordered by the same company. This is the method applied to reduce braking trouble, as mentioned in the

ELECTRIC RAILWAY JOURNAL of Feb. 20 in the article on maintenance trouble reduction on the Third Avenue Railroad.

The brake operates as follows: The force exerted in the right-hand direction on the horizontal lever forces the adjustable threaded rod in the direction of the driver wheel. At the same time the fulcrum, which is suspended from the bell-hanger lever, works on a second fulcrum on the elbow lever and forces the small shoe against the pony wheel. In this position 33 per cent of the braking weight is on the ponies. Variation in the position of the fulcrum suspended from the bell-hanger lever will change the ratio of braking weight. The bell-crank lever acts also as a brake-shoe hanger and support. A 9/2-in. hanger supports the shoe and head of the driver wheel.

**AN INNOVATION IN CAR WINDOW FIXTURES**

An interesting combination of side weather-stripping, dust deflectors, sash balance and sash-locking means for car windows is manufactured by the Grip Nut Company, of Chicago. From the illustrations and description it will be noted that one of the essential features is the ingenious arrangement of inside and outside flexible weather strips. The inside window stops and finish are placed away from the sash and the sash is fitted loosely, thus allowing clear-



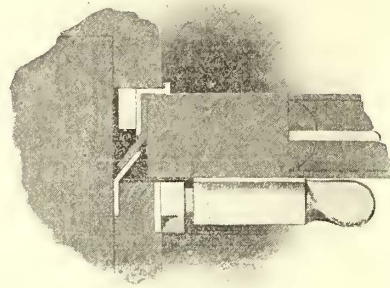
Gravity Wedging Sash Locks of Different Designs

ance edgewise to prevent binding. The necessary opening around the loosely fitted sash is made air-tight and dustproof by the weather strips forming a flexible joint. The strips also cushion the sash broadside against the outside stops and centralize the sash between the two window jambs. It is stated that in this way friction is reduced to a minimum, an easily operated sash is provided and all rattle is eliminated.

The gravity wedging lock is a device to prevent rattling and to keep the sash from falling. The lock bolt is beveled 45 deg. and settles into a corresponding downward and outward beveled rack. A gradual wedging of the sash against the stops in its downward movement effects a progressive

stop, preventing the usual sudden jar which loosens the screws and fixtures, breaks glass, etc. The sash is securely locked against the outside stop.

Various designs of racks are made, some of which are shown in one of the illustrations.



Section Through Window Post, Showing Weather Strips

The pressed rack is a neat design as it is set in flush with the stop. The individual stops also have the anti-rattling wedge features and are reinforced at the bottom, doubling the usual support in the wood to prevent splitting and pulling out of screws. These individual stops are asserted to be as effective as continuous stops and cost considerably less. The

company makes over 40 combination designs suitable for any desired construction of windows in either wood or steel cars.

**STEEL BOATS FOR PARKS**

In response to the demand for park boats embodying graceful outlines, safety and durability to the greatest extent, the Michigan Steel Boat Company, of Detroit, Mich., has designed and built several interesting types of steel boats for this kind of service. It is unnecessary to refer to the stability of this company's rowboats other than to mention the case where several intrepid explorers used one of these boats to go down the Grand Canyon of the Colorado River, and finished their journey with the boat still intact.

This company also makes power boats, the latest design being termed the "1909 18-ft. Express." This is fitted with double-cylinder engines of from 2 hp to 14 hp. In a trial trip with a 12-hp to 14-hp double-cylinder engine, one of the new boats made practically 20 m.p.h. for five consecutive hours. The engine is placed forward; just aft of it is a panel bulkhead, over which the steering wheel is placed in automobile fashion. Side seats accommodating



Steel Power Boat for Park Service

four passengers are in the forward cockpit, while two large tonneau automobile seats in the aft cockpit serve for six persons. The hull is made of heavily galvanized steel cut in regular pattern strips, lock-seamed and welded together by pneumatic hammers. The boat has a V-transom stern and is fitted with air-tight compartments. When so ordered, the engine is equipped with a fuel feeder in place of a carbureter, and when this is attached the engine will run on kerosene, gasoline, alcohol or naphtha.

An Italian company, with a capital of \$300,000, is being organized to construct and operate an electric tramway from Biella to L'Hospice d'Oropa.

# News of Electric Railways

## Cleveland Traction Situation

Judge Tayler of the United States Circuit Court at Cleveland has granted the receivers of the Municipal Traction Company authority to purchase 80 new motor equipments for cars now in operation. The receivers have filed a petition with the court asking for authority to rebuild the track on Superior Avenue, from Payne Avenue to Ansel Road; Payne Avenue, from Superior to East Fifty-fifth Street; Cedar Avenue, from Fortieth to East Fifty-fifth Street; Thirty-fourth Street, from Broadway to Kingsbury Run Viaduct; Scranton Road, from Clark Avenue to Paraffine Avenue; Prospect Avenue, from East Twenty-second Street to East Fortieth Street; two strips on West Twenty-fifth Street and one on Harvard Street. In all, 23 miles of line are involved. It is stated that at least 15 miles more are in need of repairs. The court will hear the petition on Feb. 26. The work thus proposed, it is roughly estimated, would involve an expenditure of \$500,000.

The receivers have been given authority to pay the interest on \$5,251,000 of consolidated 5 per cent bonds of the Cleveland Electric Railway and \$1,000,000 first mortgage 5 per cent bonds of the East Cleveland Railroad, due March 1, as well as interest on the floating debt secured by bonds. The total will be about \$151,000.

A report made by the receivers for the first 15 days of February under the increased fare shows that the receipts were \$234,474, compared with \$177,805 for the same period in January. The average rate of fare for the time was 4.35 cents, while for the corresponding 15 days of January it was 3.19 cents. This showing is better than the estimate made by the receivers when they asked the Council for a 5-cent fare over all the system, with six tickets for 25 cents. Then they placed the approximate average of 4.223 cents. Superintendent Bemis of the water works department stated that the average under the present arrangement would be 4.005 cents per passenger.

Mayor Johnson has issued another circular letter regarding the reports of the earnings of the company. He has eliminated from the reports of the receivers all charges except for money actually spent each month, and claims that the receipts for the quarter ended Dec. 31, 1908, exceeded the expenditures by \$230,111. He says that a surplus of \$9,977 would have remained after allowing a profit of \$220,134 to the stockholders. The letter states that the expenditures for expenses and maintenance were \$136,792 less than was shown by the reports.

Little progress has been made toward arriving at a conclusion on a franchise. While nothing has been given out by the committee which has this in hand, it is believed by many that Mayor Johnson is blocking progress by his determination to have an option clause which will permit the city to name a purchaser for the property at 110 after two years from the date of the signing of the grant.

The division superintendents of the Cleveland lines were reassigned on Feb. 20, and the arrangement of lines that existed under the management of the Cleveland Electric Railway was re-established. Charles Rohn now has charge of both the Euclid Avenue and Cedar Avenue lines; A. E. Duty has been transferred to the East Fifty-fifth Street lines, and Charles Brown, who has been division superintendent of the latter, has been made dispatcher on the Cedar Avenue line.

The case of the Central Trust Company against the Municipal Traction Company, which resulted in the appointment of receivers for the Municipal Traction Company, has been appealed to the United States Circuit Court of Appeals at Cincinnati in the hope that the Municipal Traction Company may regain possession of the property.

## Attitude of Detroit Company Toward Special Franchise Committee

Under date of Feb. 11, 1909, J. C. Hutchins, president of the Detroit (Mich.) United Railway, replied as follows to M. J. Murphy, chairman of the committee on conference of the Committee of Fifty selected by the Mayor of Detroit to consider the traction situation in that city with a view to arriving at the terms of an ordinance to grant the Detroit United Railway an extension of its franchise:

"Dear Sir:—I am in receipt of your favor of Feb. 10, advising that, as chairman of the committee on conference, you have been requested to ask if this company will be willing to give certain information for the purpose of facili-

tating the work of the Committee of Fifty in assisting the Mayor in arriving at a solution of the street car problem. It is noted that the information particularly desired is as follows:

"The committee on extensions and rearrangements desires a conference with the proper officers of the Detroit United Railway in reference to their work.

"The committee on appraisals would like a complete inventory of the property of the Detroit United Railway within the city limits, both tangible and intangible.

"The committee on costs of service would like the permission of the Detroit United Railway to place an expert accountant, with possibly one assistant, at work on the company's books to enable the committee to arrive at the cost of service; and also desires all information relative to stocks, bonds and mortgages.

"And you ask to be advised whether this company will be willing to accede to the request of these committees, and at what time and in what way it will be convenient for us to see representatives of the various committees.

"I beg to assure you that we will willingly do everything in our power to facilitate the work you have in hand. I feel that the custody of the interests I represent is as much in the hands of the citizens of Detroit as in my own, and I much appreciate the efforts of your committee in these matters. The work of the several committees is so interlaced that the work of any one committee depends much upon the work of the others. I understand it to be the purpose of the general committee to engage the services of expert engineers and actuaries to recommend the principles upon which a study of this problem is to be made and to perfect the details of the inquiries to be made. Doubtless this will result in the formation of well-defined plans for the prosecution of the work and under which all confusion and repetition may be avoided.

"We will be very glad, indeed, to meet with your committee and the committees named in your letter, or with the entire Committee of Fifty for a discussion of these matters in any way it may be arranged and at such time and place as will suit the convenience of the committees.

"Again assuring you of our desire to place your committee in position to make its inquiry thorough and to facilitate its work in any way that we can, I am, Yours very truly."

**Winona Interurban Railway Moves Offices.**—The general offices of the Winona Interurban Railway, which have been at Winona Lake, Ind., since the line was opened, and the offices of the Winona Light & Water Company will be moved to the Rigdon Hotel Block, Warsaw, Ind., which has been leased for five years. H. S. Dickey, general superintendent of the company, has announced that cars will soon be put in operation on the Peru Division between Warsaw and Mentone.

**Organization of the Wisconsin Society of Engineers.**—The first annual meeting of the Wisconsin Society of Engineers will be held at the Engineering Building at the University of Wisconsin at Madison, Wis., on Feb. 24, 25 and 26. Twenty-one papers are to be presented. Among them is one by F. G. Simmons, superintendent of way of the Milwaukee Electric Railway & Light Company, on the electric interurban roads of Wisconsin. Prof. W. D. Pence will read a paper on the organization of the engineering staff of the Railroad Commission, and B. W. Mead one on the development of hydraulic power and hydro-electric plants.

**New York Subway Loop to Be Modified.**—The Public Service Commission of the First District of New York proposes to submit to the Board of Estimate of New York a plan for widening the six tracks on that part of the bridge subway loop from Pearl Street to the Brooklyn Bridge. It is estimated that the additional property needed to be condemned for the six-track station planned near the bridge will cost about \$1,000,000. The expense of constructing the two extra tracks will be about \$550,000, and the strengthening of the subway to bear the weight of buildings on the parts of the site not required for the new municipal building will cost about \$325,000.

**Bonus to Employees of British Columbia Electric Railway.**—The British Columbia Electric Railway, New Westminster, Vancouver and Victoria, B. C., recently announced that the bonus for the year to be given to the employees in accordance with the profit-sharing plan begun in 1903, will be \$66.78 for each employee. This will involve a distribution of about \$45,000. The amount divided among the men is

one-third of the balance after 4 per cent has been paid on the common stock of the company. The previous payments to each employee were as follows: 1903, \$25; 1904, \$35; 1905, \$40; 1906, \$45; 1907, \$63. In order to participate in the distribution, service in the employ of the company from July 1 of the previous year to the date of distribution is necessary.

#### Chicago Street Railway Rehabilitation and Consolidation.

—In rehabilitating the tracks of the Chicago City Railway and the Chicago Railways the downtown terminals with few exceptions have not been rebuilt. The reason has been given that were each road to rebuild terminal tracks to suit its particular needs and then a consolidation be effected a considerable investment would be rendered useless for unified operation. The first cost for rebuilding the downtown terminals is placed at \$1,500,000 and those advocating a merger of the two properties state that a large part of this investment will be useless for unified operation. The Board of Supervising Engineers, Chicago Traction, has decided that, inasmuch as the two companies are not in immediate prospect of coming to an agreement regarding consolidating, it will order that each company proceed with the rehabilitation of its downtown terminals for separate operation.

**Exhibition of Railway Appliances at Chicago.**—An exhibition of appliances used in the construction, maintenance and operation of railways will be held at the Coliseum, Chicago, Ill., from March 15 to March 20, inclusive, under the direction of the Road & Track Supply Association, which heretofore has held a small exhibit of models and drawings in the parlors of the Auditorium during the annual meeting of the American Railway Engineering & Maintenance of Way Association. The main floor of the Coliseum contains 45,317 sq. ft. of floor space, of which 32,517 sq. ft. will be devoted to exhibits and 12,800 sq. ft. to aisles. In addition to this, exhibits will be shown in the annex to the Coliseum, which contains 9582 sq. ft. of floor space, of which 6138 sq. ft. will be devoted to exhibits and 3444 sq. ft. to aisles. Applications for space should be made to John N. Reynolds, secretary-treasurer of the Road & Track Supply Association, 160 Harrison Street, Chicago, Ill.

**City Street Railway Inspection Bureau Proposed for Cincinnati.**—As a result of a discussion of the subject of street railway inspection by the members of the Street Railway Committee of the City Council of Cincinnati and a number of others, it is possible that a street railway municipal inspection department may be established, with a chief inspector and a number of assistants, whose duty it shall be regularly to inspect and approve the equipment of the street railways operating in Cincinnati. J. B. Foraker, vice-president of the Cincinnati Traction Company; Starbuck Smith, of the Federal Improvement Association; former Councilman John James, President Laidlaw and William Wallace, director of the Board of Public Service, and others were present. Mr. Foraker pointed out that the personal element entered into the subject, and that it was impossible in selecting employees to judge how any particular man would act in an emergency. A false move by an employee at the crucial moment will precipitate disaster, despite the fact that the man may have at his command equipment that is perfect.

**Storm Interferes with Traffic in West.**—The snow and sleet storms which were general throughout the Central West during the week beginning Feb. 14 seriously interfered with the operation of both electric railways and steam railroads. Conditions were perhaps worst in and about Cleveland, which seems to have been the centre of the storms. On Feb. 15 and 16 northern Ohio was covered with a coating of snow and ice, with the result that some of the electric railways abandoned their schedules for a time on account of broken trolley and feed wires and trees across the tracks. The Lake Shore Electric Railway operated practically on schedule between Cleveland and Lorain, but west of Lorain it encountered much trouble and one car was delayed for several hours. The Cleveland, Southwestern & Columbus Railway had to suspend operating entirely on one of its branches for several hours. The Northern Ohio Traction Company, Cleveland, Painesville & Eastern Railroad, the Ohio Electric Railway and most of the other systems also reported trouble at various points. The storm extended south as far as Lexington, Ky., and seriously handicapped the Lexington & Interurban Railway for a brief period. Railroad trains were many hours late, being compelled to proceed slowly because of the crippled condition of the telegraph lines.

**Continued Hearing on Cambridge Subway Stations.**—A continued hearing on the design of the stations in the Cambridge subway was held by the Massachusetts Railroad Commission on Feb. 18. Cambridge was represented

by Mayor Wardwell, City Solicitor Pevey, City Engineer Hastings and W. B. Parsons, New York, consulting engineer. The Boston Elevated Railway was represented by its counsel, Frederic E. Snow; C. S. Sergeant, vice-president, and George A. Kimball, chief engineer. Plans for the stations at Harvard and Central Squares and Sixth Street were submitted to the board by the city and explained by its representatives and compared with the plans prepared by the company. The entire day was devoted to an exhaustive discussion of the former plans with cross-examination by the Boston Elevated Railway. The company showed in general that the plans submitted by the city were liable to result in severe congestion on platforms; have much less total traffic capacity than those prepared by the road; are liable to encroach on the private grounds of Harvard University; are open to the objection of allowing passengers to make round-trip journeys without the payment of a second fare; are ill-adapted to the turning of the subway trains at the end of the run near Harvard Square; are liable to be productive of congestion on stairways; are uncertain as to the possibilities of expansion, objectionable on account of their effect in two stations in limiting the movement of surface travel by vehicles and pedestrians, indefinite in cost of construction through the effect of land damages in offsetting closer relations of cars and trains at single platforms and involve troublesome arrangements of turnstiles to prevent the movement of traffic in the wrong directions.

#### LEGISLATION AFFECTING ELECTRIC RAILWAYS

**California.**—A bill has been prepared for introduction which provides for the construction of railroads with money furnished by the State, the roads to be leased for private operation. Senators Wright, Campbell and Stetson have all introduced railroad measures affecting steam railroads, one of which increases the jurisdiction of the commission.

**Connecticut.**—The Railroad Committee of the Legislature has adopted a set of rules which will limit the amount of stock and bonds to be issued by electric railways to a fixed sum. Hereafter it is also proposed to fix a limit for the utilization of a grant and then not to extend this time. Hereafter every application for a renewal of rights will be acted upon separately. A resolution has been introduced in the Senate amending the charter of the Windsorville & East Hartford Street Railway Company, to allow the company to construct an electric railway from the northern terminus of its existing rights in Broad Brook to the Connecticut State line, passing through East Windsor, Ellington and Somers.

**Illinois.**—The first really significant bills affecting the electric railways are expected to be introduced shortly. A series of six bills already drawn give the Railroad and Warehouse Commission power to compel the establishment of through routes, to regulate the rates to be charged on such routes, jurisdiction over express companies, the right to compel the placing of switches at junction points, and authority to regulate the increase of capital stock or bonds issued by railroad companies. Of these bills the one relating to the issuance of stocks and bonds is considered the most significant.

**Indiana.**—The bill to compel the separation of grade crossings is being opposed by the interurban electric railway interests, as it would impose most of the cost of each separation upon the electric railways. A. W. Brady, president of the Indiana Union Traction Company, appeared before the Committee on Railroads and said that the bill was unfair to the electric railways. Representatives of the electric railways also were in conference with the Railroad Commission regarding the bill. A hearing was held on the trespassing bill, which makes it a misdemeanor to walk railroad tracks. While the general opinion prevailed that a measure of this kind would perhaps reduce the number of accidents to trespassers, the opinion was expressed that it would work a hardship to many railway employees who now are in the habit of walking to and from their work over the railway. The House bill providing that passengers who are compelled to stand a distance of 8 miles shall not be obliged to pay more than half fare was reported for indefinite postponement. The House, however, refused to accept the report, and the bill was passed to engrossment. In view of this action, it is thought that the bill will pass the House. It is not expected to pass the Senate. An employers' liability bill has been introduced in the Senate. It relates more particularly to common carriers. A similar bill has been introduced in the House.

**Kansas.**—The hearing before the Senate committee on the public utilities bill, introduced by Senator Hamilton, brought out a number of defects in the measure which it was concluded to rectify at once, and the bill is being re-

drawn. The Republican party was pledged to utility legislation, and Governor Stubbs recommended action, as previously noted in the *ELECTRIC RAILWAY JOURNAL*. Despite this, there is very little enthusiasm for the Hamilton measure. After giving a hearing to those opposed to the bill the committee extended an invitation to those in favor of it, but no one appeared to urge its passage. The opinion has been expressed that the measure should include only the public utilities of cities of the first class. Governor Stubbs, however, is understood to be opposed to limit the measure in this way.

**Maine.**—The committee on taxation of the House has two bills before it which affect public service corporations. One provides that corporations shall be taxed upon their physical valuation; the other provides that the present tax measure be amended so as to increase the tax rate. Both the Boston & Maine Railroad and the Maine Central Railroad have appeared before the committee in opposition to the measures.

**Massachusetts.**—The Committee on Street Railways has reported favorably upon the bill authorizing electric railway companies to transport military supplies and equipment over their lines, subject to the regulation of the Railroad Commission. The bill accompanying the petition of Hugh H. O'Rourke for legislation requiring street railway companies to use fenders on their cars has also been reported. Leave to withdraw has been reported by this committee on the bill to require street railways to equip their cars with apparatus for applying hot sand, and on the bill to require the Boston Elevated Railway to equip its elevated structure with exits. Unfavorable report has also been made on the bill accompanying the petition of Mayor Hibbard of Boston for legislation to provide for the maintenance and repair by street railway companies of reserved or park spaces in highways. The committee has reported favorably on the bill to allow the Old Colony Street Railway to operate its cars on the tracks of the Fore River Shipbuilding Company, of Quincy, Mass.

**Michigan.**—Senator Snell has introduced a bill in the State Senate fixing all passenger rates on interurbans in the State of Michigan at 1 cent per mile, and providing a penalty for violation of the law.

**New Hampshire.**—The bill authorizing electric railways to carry freight came before the House Committee on Feb. 10. Representatives of a number of electric railways and of the Boston & Maine Railroad were present. The Boston & Maine Railroad, through its representative, expressed itself as being in favor of the measure now under consideration.

**Ohio.**—Senator McKee has introduced a bill which gives the Railroad Commission authority over all stock, bond and note issues of all railway, street railway and interurban railway companies where the life of such issues are of greater duration than one year. It also provides that all bond issues for improvements shall be approved by the commission, and that where companies merge, their combined capital stock shall not aggregate a greater amount than the sum of their individual capital stocks. For the purpose of securing information regarding these matters the books of the companies shall be open to the commission. The Woods tax commission bill has been re-committed to the tax committee of the House. It is said that before the bill appears before the House again an effort will be made to give the commission full control of the franchise privilege, provided for in the bill. The House has passed the Edwards bill, which provides that police and firemen shall be carried free by electric railway companies.

**Utah.**—A bill has been introduced in the Senate in accordance with the recommendations of Governor Spry to create a public service commission to supervise the operation of steam and electric railways and other public service corporations. The commission is to consist of three members, to be appointed by the Governor with the consent of the Senate. The members themselves are to select their own chairman. The salary of each commissioner is to be \$3,500 a year, and the offices of the commission to be at Salt Lake. The commissioners are to be appointed for a period of six years, but one member of the first commission is to serve until Feb. 1, 1911; another until Feb. 1, 1913, and the third until Feb. 1, 1915, thus bringing about the appointment of a new commissioner every two years. The commission is to report each year to the Legislature. As presented, the bill gives the commission authority to compel the railroads to file tariffs and schedules with it in accordance with a form of report which the commission shall prescribe. The authority is also to be vested in the commission to readjust rates when in the opinion of the commission they are discriminatory.

# Financial and Corporate

## New York Stock and Money Market

The collapse in the stock market which occurred to-day was the sharpest and most extensive since the panicky times of the fall of 1907. While the breakdown in the price combination of the steel manufacturers is correctly held responsible for having started the present demoralization, there are many other developments which have contributed to the weakness of the entire list. It is pretty well understood that the dividend-earning capacity of Steel common relies upon the excess profits which that organization can make. With ordinary business and ordinary prices, the Steel corporation can pay its fixed charges, earn its 7 per cent dividend on the preferred and lay up a little surplus; it must have either extraordinary business or extra good prices to allow it to earn a reasonable dividend on the \$508,495,200 of common stock. Many of the holders of these shares evidently came to the conclusion that with the price at 50 it was a good time to dispose of their holdings, and the liquidation in this issue within the past two market days has been tremendous. Even after the market closed to-day Steel was sold on the outside at prices lower than the closing figures on the Exchange floor.

The liquidation, however, did not stop with steel shares; railroads were also weak, especially Reading, which recorded a decline of more than 10 points for the day. This was attributed to the report that the United States Supreme Court had adversely decided the commodities case. While this proved to be untrue, the fact that the court did, in three important cases, decide against corporations, strengthened the belief that the adverse decision is coming. Liquidation was general all through the list and the total sales were more than 1,500,000 shares. The traction shares were weaker, but inactive.

The money market continues to be fairly easy and rates are reasonably cheap. Bonds are still eagerly taken and investment money always appears to be plentiful. The quotations to-day were 1 $\frac{3}{4}$  to 2 $\frac{3}{4}$  per cent for call loans and 2 $\frac{3}{4}$  to 3 per cent for 90 days.

## Other Markets

In a Boston market that was generally weak and uncertain, the traction issues to-day showed considerable firmness. Trading in these securities was not extensive, but prices showed no disposition to recede. Boston Elevated and Boston Suburban preferred were more in evidence than the others.

In the Chicago market, only odd lots of traction shares have been offered during the week and there has been practically no interest indicated. Even the various series of Chicago Railways were out of the trading. Prices are firm at the levels that have prevailed for several weeks.

Traction issues have been rather active during the past week in the Philadelphia stock market, and to-day showed some disposition to sell lower in sympathy with the general weakness of the market. Philadelphia Electric and Rapid Transit, which were the leaders in the trading, have each lost in price during the week and each shows more selling pressure. Union Traction is also lower.

In the Baltimore market, the bond issues of the United Railways Company continue to be the leaders in public interest. The 4s seem to be especially in demand and prices, in consequence, are a trifle stronger. There were rather heavy sales to-day at the flat price of 86. Traction stocks are neglected.

Quotations of various traction securities as compared with last week follow:

	Feb. 16.	Feb. 23.
American Railways Company, Philadelphia.....	*45 $\frac{1}{2}$	46
Boston Elevated Railway.....	129	129
Brooklyn Rapid Transit Company.....	72	67 $\frac{7}{8}$
Chicago City Railway.....	*185	*185
Cleveland Railway.....	—	—
Consolidated Traction Company of New Jersey.....	a74	a76
Consolidated Traction Company of New Jersey, 5 per cent bonds.....	a107	a107
Detroit United Railway.....	*61 $\frac{1}{2}$	62
Interborough-Metropolitan Company.....	15 $\frac{7}{8}$	13 $\frac{1}{2}$
Interborough-Metropolitan Company (preferred).....	43 $\frac{1}{2}$	38
Manhattan Railway.....	a148 $\frac{1}{2}$	*148 $\frac{1}{2}$
Massachusetts Electric Companies (common).....	14 $\frac{3}{4}$	14
Massachusetts Electric Companies (preferred).....	68 $\frac{3}{4}$	*68 $\frac{3}{4}$
Metropolitan West Side Elevated Railway, Chicago (common).....	*16	*16
Metropolitan West Side Elevated Railway, Chicago (preferred).....	*48	*48
Metropolitan Street Railway.....	*42	*42
North American Company.....	81 $\frac{3}{8}$	78
Philadelphia Company, Pittsburg (common).....	*42	41 $\frac{7}{8}$
Philadelphia Company, Pittsburg (preferred).....	*44 $\frac{1}{4}$	*44 $\frac{1}{4}$
Philadelphia Rapid Transit Company.....	28 $\frac{3}{4}$	26
Philadelphia Traction Company.....	93	*93
Public Service Corporation, 5 per cent collateral notes.....	a100 $\frac{1}{4}$	a100 $\frac{1}{4}$
Public Service Corporation certificates.....	a78	a80
Union Traction Company, Minneapolis (common).....	107	103 $\frac{1}{2}$
Union Traction Company, Philadelphia.....	*53 $\frac{3}{4}$	51 $\frac{3}{4}$

a Asked. \*Last sale.

### Annual Report of the Capital Traction Company

The report of the Capital Traction Company, Washington, D. C., for the year ended Dec. 31, 1908, follows:

CAR EARNINGS.	
Passengers .....	\$1,827,625
Freight .....	1,296
Mail .....	2,889
Total car earnings.....	\$1,831,810
MISCELLANEOUS EARNINGS.	
Advertising .....	\$9,000
Rent of land and buildings.....	360
Total miscellaneous earnings.....	9,360
Total gross earnings from operation.....	\$1,841,170
Less operating expenses (43.07 per cent of gross earnings)....	793,141
Net earnings from operation.....	\$1,048,029
MISCELLANEOUS INCOME.	
Interest from deposits for taxes, interest and insurance reserve.....	\$1,627
Income from securities owned by insurance reserve..	6,145
Other miscellaneous income, including rent of land and buildings not used in connection with operations .....	7,032
	14,804
Gross income less operating expense.....	\$1,062,833
DEDUCTIONS FROM INCOME.	
Taxes .....	\$94,830
Interest on funded debt.....	126,000
Renewals (Chevy Chase line).....	70,117
	290,947
Net income.....	\$771,886
DEDUCTIONS FROM NET INCOME.	
Dividends .....	\$720,000
Surplus for year.....	\$51,886
Surplus at beginning of year.....	128,901
Surplus at close of year.....	\$180,787
Number of passengers carried at 4 1/6 cents.....	34,057,267
Number of passengers carried at 5 cents.....	8,055,702
Number of passengers carried on commutation tickets.....	567,252
Total number of revenue passengers.....	42,680,221
Transfer passengers.....	15,331,824
Total number of passengers.....	58,012,045
The balance sheet as of Jan. 1, 1909, follows:	
ASSETS.	
Construction .....	\$8,306,636
Equipment .....	4,714,566
Real estate.....	1,921,242
Insurance reserve.....	128,000
Extension (joint work C. T. and A. & P. R. R.).....	110,000
Reserved for accrued taxes and insurance.....	48,808
Reserved for accrued interest on funded debt.....	10,500
Cash balance Dec. 31, 1908.....	112,244
	\$15,351,996
LIABILITIES.	
Capital stock.....	\$12,000,000
Bonds .....	2,520,000
Bills payable.....	533,000
Tickets unredeemed.....	58,900
Accrued taxes and insurance.....	48,808
Accrued interest on funded debt.....	10,500
Profit and loss surplus.....	180,788
	\$15,351,996

George E. Hamilton, president of the company, in presenting the report, said in part:

"The rebuilding of the Chevy Chase line, long contemplated, became absolutely necessary and accordingly this work was entered upon in September, 1908, and will be completed by July, 1909.

"On May 23, 1908, an act was passed by Congress authorizing the extension of street railway lines to the Union Station: Requiring the Capital Traction Company to make certain extensions in the eastern section of the city, and giving to the Interstate Commerce Commission the power and authority to compel all street railway companies in the District of Columbia to 'supply and operate a sufficient number of cars, clean, sanitary, in good repair, with proper and safe power, equipment, appliances and service, comfortable and convenient, and so operate the same as to give expeditious passage, not to exceed 15 m.p.h. within the city limits or 20 m.p.h. in the suburbs, to all persons desirous of the use of said cars, without crowding said cars.' Under this act the approaches to the Union Station to be used and operated jointly by the several companies are being constructed by the several companies jointly, and this joint construction is now nearly completed. The Capital Traction extension from Florida Avenue to Seventh Street N. W., by way of New Jersey Avenue to the Union Station, is now well under way and will, it is expected, be in operation by March 1, 1909. The eastern extensions on Florida Avenue, from New Jersey Avenue N. W. to Eighth Street east, on Eighth Street east southwardly to Pennsylvania Avenue and on F Street from Eighth Street east west-

wardly to the Union Station will be begun March 1, 1909, and for these eastern extensions materials have been contracted for and all necessary arrangements made to complete the work within the time limited by Congress.

"To meet the new conditions created by the act referred to, 39 pay-as-you-enter cars have been ordered for urban service, 15 pay-within cars for use on the Chevy Chase line, and the 12 double-truck semi-convertible cars, already received and in use on the Fourteenth Street line, will, it is expected, be equipped with pay-as-you-enter appliances. The 66 cars ordered will be in operation during the year.

"To accommodate and operate this new equipment, it became necessary to make an addition to the car barn at the Navy Yard, and for this a half-square of ground adjoining the old barn at this point has been purchased. Additions to power plants were also required, and accordingly a new substation has been built on company's property in Square 635, and the power station and equipment at the Grace Street power station materially increased.

"To provide for the greater safety of passengers and to avoid the cost of claims and litigation, the company is not only considering approved safety appliances in the purchase of new cars, but it has, during the year, inaugurated a merit system under which a substantial bonus may be earned by every conductor and motorman for each year of continuous, efficient and satisfactory discharge of duty in the operation of cars."

### Cleveland, Painesville & Eastern Railroad Company

The Cleveland, Painesville & Eastern Railroad, Cleveland, Ohio, reports earnings as follows for the year ended Dec. 31, 1908:

	1908.	1907.
Gross earnings.....	\$295,811	\$296,317
Operating and taxes.....	167,297	157,196
Net earnings.....	\$128,514	\$139,121
Interest charges.....	87,999	86,552
Surplus .....	\$40,515	\$52,563

The balance sheet as of Dec. 31, 1908, shows:

ASSETS.	
Cash .....	\$3,612
Current assets.....	122,228
Investment .....	3,654,068
Prepaid accounts.....	4,490
Securities owned.....	159,245
Stores .....	16,245
Willoughbeach park.....	24,790
	\$3,984,678
LIABILITIES.	
Capital stock.....	\$2,000,000
Bonds .....	1,631,000
Accident fund.....	13,304
Bills payable.....	49,620
Current liabilities.....	108,998
Surplus .....	181,757
	\$3,984,678

E. W. Moore, president of the company, in presenting the report, said in part:

"During the past year large expenditures have been made in maintaining and improving the track and roadway. In addition to general track renewals all bridges and culverts were gone over and placed in good condition.

"Eight of the old cars have been rebuilt. All cast iron wheels have now been replaced by rolled steel wheels, 16 cars having been equipped during the past year.

"Notwithstanding the business depression of 1908, the season at Willoughbeach Park has been very satisfactory. The net earnings for the season of 1908 were \$1,022 as against \$1,447 for the season of 1907, an increase of \$475.

"It will be observed that the gross earnings show a decrease of only \$506 over the previous year, which is largely accounted for by the fact that this property is located in a residential section and therefore not so much affected by industrial conditions. While the statement shows an increase in operating of over \$10,000, same is accounted for by the large expenditures made in the maintenance of track, roadway and equipment, so that the general physical condition of the property is better now than at any time in the history of the company."

### Franchise Tax Valuations in New York City

The State Board of Tax Commissioners completed its special franchise tax valuations for New York City on Feb. 18. The total valuation for the year 1909 amounts to \$486-



213,500, as compared with a total of \$492,492,970 for 1908, and a total of \$466,855,000 for 1907. Among the principal assessments in New York City for this year, as compared with the assessments for last year, are the following:

	Final 1908.	Tentative. 1909.
Brooklyn City & Newtown Railroad.	\$3,000,000	\$3,000,000
Brooklyn Rapid Transit System.....	55,437,900	56,212,100
Coney Island & Brooklyn Railroad...	2,750,000	2,750,000
Hudson & Manhattan Railroad.....	6,900,000	8,000,000
Long Island Electric Railway.....	475,000	475,000
Manhattan Railway.....	78,500,000	78,500,000
New York & Queens County Railway	2,386,200	2,385,800
Richmond Light & Railroad Company	500,000	684,800
Interborough Rapid Transit Company	24,012,000	24,012,000
Third Avenue Railroad.....	19,562,000	19,396,000

**Fort Smith Light & Traction Company, Fort Smith, Ark.**—The Fort Smith Light & Traction Company has called for payment on March 1 at 105 at the office of the Knickerbocker Trust Company, New York, trustee, 31 of its 10 per cent gold coupon notes dated March 1, 1907, having a par value of \$100 and 10 of the par value of \$1,000.

**Hudson & Manhattan Railroad, New York, N. Y.**—The Guaranty Trust Company, New York, N. Y., has brought out \$920,000 5 per cent car trusts of the Hudson & Manhattan Railroad. The bonds are dated March 1, 1909, and are due in semi-annual amounts of \$46,000, payable on Sept. 1 and March 1 till 1919.

**Joplin & Pittsburg Railway, Pittsburg, Kan.**—The Joplin & Pittsburg Railway has purchased the property of the Girard Coal Belt Electric Railway, which operates from Girard, Kan., in a northeasterly direction through Arma and Franklin to Croweburg, with a branch to Radley and Dunkirk.

**Lincoln (Neb.) Traction Company.**—The Lincoln Traction Company has been formed under the laws of Nebraska with \$1,500,000 of preferred stock and \$2,000,000 of common stock to consolidate the Lincoln Traction Company and the Citizens' Railway Company. The directors of the company are W. E. Sharp, C. T. Boggs, M. W. Woods, C. S. Allen, J. W. McDonald, Paul F. Clark, Thomas Auld, George J. Woods, J. H. Smith, M. L. Scudder and J. E. Miller.

**Louisville & Eastern Railroad, Louisville, Ky.**—Negotiations are being conducted with the holders of the construction notes of the Louisville & Eastern Railroad with a view to transferring their holdings to the Louisville Traction Company, which now holds most of the stock and bonds of the Louisville & Eastern Railroad.

**Mahoning & Shenango Valley Railway & Light Company, Youngstown, Ohio.**—At the annual meeting of the Mahoning & Shenango Valley Railway & Light Company, N. McD. Crawford, O. T. Bannard, and E. N. Sanderson, New York; James Parmalee and Myron T. Herrick, Cleveland; P. F. Miles and T. H. Given, Pittsburg; Alexander McDowell, Sharon, and George Johnson, New Castle, were elected directors of the company. Officers were re-elected as follows: N. McD. Crawford, president; Leighton Calkins, secretary; A. C. Rogers, treasurer.

**Manistee Light & Traction Company, Manistee, Mich.**—A committee of bondholders of the Manistee Light & Traction Company, consisting of Charles A. Stone, Arthur Wainwright, Fred A. Bradlee, Boston, Mass., has called for the deposit with the City Trust Company, Boston, Mass., of the \$600,000 of outstanding first mortgage bonds of the company under the terms of the deposit agreement dated Jan. 16, 1909. The company defaulted in the payment of the interest on its bonds due Jan. 1, 1909, and in the payment of taxes on its property due Jan. 1, 1908, and Jan. 1, 1909, and is now in the hands of a receiver.

**New Orleans, La.**—The Hibernia Bank & Trust Company has decided to exercise its option on \$2,400,000 of 4½ per cent bonds of the New Orleans Railway & Light Company. These bonds form the collateral for a \$2,000,000 loan contracted by the company on June 30, 1908, which wiped out its floating indebtedness.

**Winnipeg (Man.) Electric Street Railway.**—At the annual meeting of the stockholders of the Winnipeg Electric Street Railway held in Winnipeg on Feb. 10, the following directors were elected: William MacKenzie, William Whyte, D. D. Mann, Sir William Van Horn, A. M. Manton, F. M. Morse, N. Sutherland, D. B. Hanna, and R. J. MacKenzie. The report for the year ended Dec. 31, 1908, showed gross receipts of \$2,206,094, as compared with \$1,722,406 for 1907; operating expenses of \$1,088,872 for 1908, as compared with \$775,731 for 1907, and net earnings of \$1,117,122 for 1908, as compared with \$946,675 for 1907.

## Traffic and Transportation

### Hearing by Massachusetts Railroad Commission on Boston & Worcester Six-Cent Fares

The Massachusetts Railroad Commission gave a hearing on Feb. 16, on the petition of the Mayor and City Solicitor of Marlboro, Mass., regarding the increase in the rate of fare on the Boston & Worcester Street Railway from a 5-cent to a 6-cent unit. Similar petitions by the Selectmen of Southboro and South Framingham were heard at the same time. John T. Burnett, formerly secretary of the Boston Elevated Railway, who represented Southboro, stated that while the Selectmen of that town object to a 6-cent fare, they feel that it may be necessary for the company to impose the 6-cent fare and prefer to leave the whole question in the hands of the commission.

W. M. Butler, president of the Boston & Worcester Street Railway, conducted the case for the company. He stated that the directors and officers felt that it was necessary to increase the fare in order to secure a revenue sufficient to pay the cost of operation and fixed charges, including depreciation in particular, and a reasonable dividend. In 1905 the surplus of the company was \$20,679; in 1906 it was \$25,238; in 1907, \$14,951, and in 1908, \$1,418. During 1908 the company did not earn its dividend of 6 per cent by about \$7,000, and the shortage had to be made up from the small total surplus remaining in 1907. The road has been in complete operation about five years and no charge has as yet been entered for depreciation. Meanwhile the road has been well maintained, but Mr. Butler said that it would be impossible to continue the present standard unless a depreciation account was begun.

Regarding the lines of the company in Marlboro, where objection has been raised to the establishment of a 6-cent fare, Mr. Butler submitted a table showing the financial condition of the Marlboro Street Railway from 1890 to 1903, when it was taken over by the Boston & Worcester Street Railway. In seven of the years covered the company had a deficit, and in 11 of the 14 years no dividend was declared. In one year 4 per cent was declared; in another 2 per cent, and in a third 1 per cent. One year the operating expenses were greater than the net earnings and in general the net earnings were from \$3,000 to \$5,000 per year. The total investment increased from about \$107,000 in 1890 to \$233,000 in 1902. No charges for accidents were taken into account in these figures, and nothing has been allowed for depreciation. When the Marlboro Street Railway was taken over the Boston & Worcester Street Railway spent more than \$60,000 in Marlboro and Hudson to put it in proper condition. Hence the propriety of raising the fare in that locality.

The Marlboro cross-town line is maintained at a large annual cost to the company for the convenience of its patrons. A table was presented showing that in December, 1908, 2206 trips were made on this route. On 1387 of these trips from 0 to 5 passengers were carried; on 455 trips, 6 to 10 passengers; on 165 trips, 11 to 15 passengers; on 93 trips, 16 to 20 passengers; on 59 trips, 21 to 25 passengers; on 16 trips, from 26 to 30 passengers; on 4 trips, 31 to 35 passengers; on 1 trip, 36 to 40 passengers; on 2 trips, 41 to 45 passengers; on 3 trips, 46 to 50 passengers, and on 22 trips, over 50 passengers. The company has continued the practice of carrying workmen at morning, noon and night for 3 1-3 cents without transfer, in spite of the increase of fare. At this point Mr. Butler recalled that, while the total cost of the Marlboro Street Railway was about \$233,000, it was sold at receiver's sale to the Boston & Worcester Street Railway for \$105,000, illustrating a depreciation of \$128,000 in from eight to ten years.

The company endeavored to make the fare increase as reasonable as possible by providing that there should be no change in the price of round-trip tickets existing between different points on the system; by selling books of 50 tickets at a cost of \$2.75, or 5½ cents per ride, at the principal ticket agencies of the road, and finally, by selling 6-cent tickets for the convenience of patrons who desired not to be burdened by handling the extra cent required. The increased cost of wages and materials justified the increase in fare. No figures were presented to show this condition on the Boston & Worcester Street Railway, but it was pointed out that this road, like all others, has suffered from a constant tendency toward higher operating expenses. The company has 78 miles of track; has never paid more than 6 per cent dividends, and needs a substantial depreciation fund.

Arthur E. Stone, auditor and general passenger agent of the Boston & Worcester Street Railway, stated that the

earnings on the Marlboro cross-town line averaged \$1.04 per car-hour. The cost of operation on the road as a whole was \$2.50 per car-hour. Without considering interest and taxes, a careful estimate of the cost of operation on the Marlboro cross-town line gave \$1.25 per car-hour as a minimum, or about 20 cents per car hour more than the receipts. This means a loss of about \$1,400 per year, not considering interest or taxes. As about 22 per cent of the passengers carried on the Marlboro cross-town line ride on workmen's tickets at 3 1-3 cents each, it is evident that the trips in which the traffic is heaviest are generally the low-revenue runs. Under the 6-cent fare the average rate per mile figures from 1.5 cents downward in the different zones. The Marlboro cross-town line is about 1.5 miles long.

Mr. Stone presented a table of fares on the Boston & Worcester Street Railway fixed by the directors on Dec. 17, 1908. From Boston to Worcester (Newton-Brookline line to Lincoln Park, Worcester), in each direction through running, there are nine local fare collections of 6 cents each. Between the Newton-Brookline line and South Framingham, in either direction, there are four zones of 6 cents each. Between Natick Common and the Newton-Brookline line are three zones, 6 cents each; between any point on the Marlboro cross-town line and Hudson, and anywhere in Marlboro, 6 cents, and in 14 local-fare limits on the system the rate is 6 cents. The through fare in either direction between Boston and Worcester is 45 cents. Round-trip tickets are sold at 80 cents over this route. There are corresponding round trips of lower fare, dependent upon the distance, in a general way, between different points on the system. Ten, 20, 30 and 50 ride tickets are also on sale between certain points, and strip tickets are on sale for public and normal schools. The single cash fare unit is 6 cents.

James F. Shaw, president of the American Street & Interurban Railway Association, who built the Boston & Worcester Street Railway, testified that after the Marlboro Street Railway was taken over the system was practically rebuilt, \$60,000 being expended on track and line work and \$35,000 on the power station in Marlboro. The regular cars operating on this portion of the system are practically new, old cars being used as extras only when traffic is very heavy. In Framingham, between the New Haven crossing and the Southboro line, the Boston & Worcester Street Railway has expended more than \$400,000 in street construction and land damages, and before the double tracking is completed half a mile of line will have to be built that will cost more than \$100,000, including land damages. A new car house in Framingham cost \$35,000 and within the last four years the company has expended more than \$500,000 on its main power plant in Framingham; in fact, more than \$1,000,000 has been spent by the company altogether in Framingham during the last four years, and \$250,000 has been expended for street improvements in Southboro in connection with the double tracking of the line through the town. Street improvements on the entire road aggregate \$1,250,000, or an average of 56 cents per passenger. Mr. Shaw called attention to the fact that the interest charge on the street improvements alone is \$62,500. As a separate organization the Marlboro Street Railway could not pay dividends and give proper service.

Chairman Hall raised the question of agreements between the municipal authorities and the predecessors of the Boston & Worcester Street Railway and emphasized the importance of determining whether any contracts, if such exist, estop the company from putting in issue the reasonableness of the rate. He suggested that counsel supply the board with certified copies of the orders of location bearing upon the case in the different towns, and submit briefs and argue the case on March 18. The hearing was then continued until that date.

#### President Winter of Brooklyn Rapid Transit on City Fares

E. W. Winter, president of the Brooklyn (N. Y.) Rapid Transit Company, was asked recently by the *ELECTRIC RAILWAY JOURNAL* for an expression of his views regarding the question of fares on city railways. He said:

"The fact must be recognized that transportation is a commodity and that it must be paid for on the basis of what it costs the seller. It is as foolish to furnish for 5 cents a ride as long as is now supplied over some routes as it would be for a merchant to buy calico at 5 cents and sell it for 4½ cents. Some plan must be hit upon which will be at once fair to both passenger and company. I think this should start with a reduction in the transfer privilege. The electric railway companies give out more transfers than are needed because it is human nature to accept anything offered for nothing, even if the person accepting the transfer

knows he cannot use it. These excess transfers are often given away, and we have to carry another passenger for the original 5 cents.

"The plan tried successfully in Newton, Mass., of charging 1 cent for each transfer, looks feasible. This is not hard on the passenger and it relieves the company of carrying many people for nothing.

"The cost of transportation is not usually considered by the public. Our own Coney Island business looks like a rich harvest. On the contrary, it is done at a loss if the entire year be balanced up. The great trouble with it is that we are nearly always running long trains of empty cars in one direction or the other. The ride which a person may take on the New York subway for a single fare is too long. Long trips have to be averaged up with the short rides to see a profit in the haul. If enough people were to take advantage of the opportunity to ride from Atlantic Avenue to the Bronx or Van Cortland Park the Interborough Rapid Transit Company would soon be in trouble, for it costs more than 5 cents to carry a passenger that distance. On the lines of the Brooklyn Rapid Transit Company about 3½ mills of every nickel paid in represent net earnings—4 cents and 5 mills are represented in transfers, operating expenses and charges."

#### Central Electric Railway Accounting Conference

C. B. Baker, secretary of the Central Electric Railway Accounting Conference, has issued the following notice:

"A meeting of the Central Electric Accounting Conference will be held at the Lima House, Lima, Ohio, at 11:00 a. m. Saturday, March 6, 1909. All members are urged to attend this meeting, as the committee on permanent organization will make a report at this meeting and it will be decided whether the conference is to be abandoned or regularly organized to carry on the work for which it was originally formed two years ago.

"The committee on uniform blanks will present a report and will furnish samples of the proposed planks to all members for their consideration and adoption.

"The committee appointed at the last meeting to handle all questions concerning the classification of operating revenues, operating expenses and expenditures for road and equipment under the Interstate Commerce classification, will also present a report showing the result of their efforts.

"All accounting officials of electric railway lines, both interurban and city, in the Central States, are invited to be present at this meeting and to join the conference, as the work accomplished during the past two years shows that much good can be done by the earnest co-operation of accounting officers of electric railway lines in bringing about uniformity in accounting methods and settlement of inter-line accounts."

#### Massachusetts Commission Decides in Favor of Athol & Orange Street Railway in Fare Case

The Massachusetts Railroad Commission has issued an order dismissing the petition of citizens of Athol, Mass., relative to service and reduced fares on the Athol & Orange Street Railway. The board says:

"The petition contains two requests; first, that the board recommend additional car service between the upper and lower villages in Athol, and, second, that the board recommend a workingman's ticket between these villages at a price less than a 5-cent unit rate.

"After the filing of the petition the company made certain changes in its time table, and the petitioners did not desire to be heard upon that aspect of the case. The sole question, therefore, to our consideration, is whether recommendation should be made that a workingman's ticket be installed by the company at a rate of less than 5 cents per ride. No recommendation of this character has ever been made by the board, and a careful review of the facts leads us to the conclusion that none should be made in this case."

An account of the hearing held on this petition was printed in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16, 1909.

**The Gateway Route.**—At the meeting of the directors of the Indianapolis & Louisville Traction Company, Louisville & Northern Railway & Lighting Company and the Indianapolis, Columbus & Southern Traction Company on Feb. 18, it was decided hereafter to designate the lines of the companies as "The Gateway Route," this title to be used on all literature and traffic circulars of the company.

**Inter-Urban Railway, Des Moines, Issues Time Table.**—A new time table has been issued by the Inter-Urban Railway, Des Moines, Ia., covering the company's lines between Des Moines, Altoona, Mitchellville, Colfax, Granger,

of all the different divisions and the schedules of local and fast freight on the Beaver Valley and the Colfax divisions are given. Attention is called to the interchange freight arrangements of the company and the joint through rates on all classes of commodities established with the principal railways entering Des Moines. The publication is concluded with a map of the system.

**Pacific Electric Railway Files Tariff.**—The Pacific Electric Railway, Los Angeles, Cal., has filed tariffs for interstate traffic with the Interstate Commerce Commission. The freight traffic of the company is increasing steadily. The company recently delivered 90 cars of machinery for a sugar factory in Santa Ana. This shipment originated in Canada and was turned over to the Pacific Electric Railway at Los Angeles by the San Pedro, Los Angeles & Salt Lake Railroad. Since the opening of its La Habra line the Pacific Electric Railway has done a large business in car-load lots of fruit which are turned over to the steam railroads at Los Angeles for shipment east.

**Bridge Rush Hour Service in New York.**—Bridge Commissioner Stevenson, of New York, has issued a statement regarding the traffic on the Brooklyn Bridge surface lines for 1908, showing that there was an increase of 13½ per cent in the number of cars operated across the bridge as compared with 1907 during the hour between 5 p. m. and 6 p. m., the height of the rush hour. The average number of cars operated in this hour was 305. A new maximum monthly average was established in April, when an increase of 18 per cent over the same month of the year previous was shown. During April the average number of cars which crossed the bridge in the hour indicated daily was 318. The minimum increase in December was 1 per cent.

**New Fare Tariff on the Schenectady Railway.**—The Schenectady (N. Y.) Railway has filed with the Public Service Commission of the Second District of New York a new schedule of tariff rates on the interurban lines from Schenectady to Troy, Albany and Ballston. The change is to take place on March 1 and at that time the company will put into effect the old commutation tickets for the regular passengers on the routes mentioned. Excepting these, cash fares will be collected under the same system which is at present in effect—5 cents in the city limits and the remainder outside of the limits. The sale of six tickets for 25 cents will also be discontinued. The new schedules follow: Between Ballston and Schenectady after March 1, 25 cents each way, with no round-trip tickets; between Albany and Troy and Schenectady, 25 cents each way, and no round-trip tickets; between Schenectady and Ballston, 25 cents each way, instead of 30 cents. A monthly commutation rate of \$10.40 is to be established between Schenectady and Albany, Troy and Ballston.

**Appeal from Finding of New York Commission Before Court of Appeals.**—The appeal in the certiorari proceedings brought by Adrian H. Joline and Douglas Robinson, receivers of the Metropolitan Street Railway, New York, against the Public Service Commission of the First District of New York, came up for argument before the Court of Appeals on Feb. 8. This is the case growing out of the attempt of the commission to fix a joint rate of 5 cents divided between the Metropolitan Street Railway and the Central Park, North & East River Railroad for a ride over lines between Thirty-fourth Street and 116th Street. After the companies had failed to obey the order directing them to agree upon a reasonable joint fare, the commission in October fixed a fare of 5 cents. The two companies thereupon obtained writs of certiorari to review the proceedings of the commission. The commission then made a motion in the Appellate Division to quash the writs, but the motion was denied, and the commission appealed to the Court of Appeals.

**Service in Lexington, Ky.**—In a recent souvenir edition of a Kentucky newspaper, the Lexington (Ky.) Railway presented a large advertisement outlining the service which it offers and the improvements which have been made recently in its railway and lighting departments. During the year ended Dec. 31, 1908, the company carried about 3,500,000 passengers, an increase of 57,000 over the number carried in 1907. It is stated that the normal increase should have been 170,000, but that on account of economies by the public during the business depression the expected increase was not realized. During 1908 750,732 car-miles were run, an increase of 10 per cent. Considerable track has been rebuilt with 80-lb. rails and rock ballast, and extensions have been laid. The company expects to complete the rebuilding of its city cars this spring. Similarly, improvements have been made in the electric lighting and ice businesses operated by the company. The interurban lines carried 1,418,305 passengers during 1908. Of this number, 25,036 rode on school tickets. A new car shop is nearing completion.

**Annapolis Reawakened by Electric Railway.**—"The Reawakening of Annapolis" is the title of an interesting illustrated feature article written by John S. Mosby, Jr., for the Washington Post of Feb. 7, 1907. Mr. Mosby says very pertinently that few cities in the United States combine the old and the new in such striking contrast as does Annapolis. It is ideally located on Chesapeake Bay, and is not indebted alone to the old and the new military academies for its prestige, as seems to be the impression in places distant from it and Washington and Baltimore. After the Revolution Annapolis outstripped many other cities for a time, but with Washington as the seat of the national government and the progress made by Baltimore, it gradually was outstripped itself by these cities. Mr. Mosby says: "The awakening kiss was given to Annapolis when the Washington, Baltimore & Annapolis Electric Railway was placed in operation, and it is just to credit to the Washington, Baltimore & Annapolis Electric Railway, whose line first established quick and comfortable communication with the city, a large part of the quickening in every line of business and industry that Annapolis has felt during the past year. It is hardly 10 months since the first car, rolling down the main street of the old town, brought to it a gospel of glad tidings of great joy. But since that time things have happened. Every line of business has improved, everybody in Annapolis feels better, and a good many of them feel richer. Annapolis has 'arrived.'"

**New Transfer System in Buffalo.**—The International Railway, Buffalo, N. Y., is soon to put into effect a new system of transfers, to be known as the "destination transfer." Under the new system, passengers will be required to ask for transfer to the line of ultimate destination instead of for the intermediate or connecting line, as is the present custom in case an intermediate line has to be taken. The transfers issued when the fare is paid and punched for the line that will carry passengers to their destination line will be collected on the intermediate lines and the transfers issued by the intermediate line will be punched for the same line of ultimate destination as was punched on the original transfer. The names of all the lines will be printed on the face of the new transfers, and the transfer junctions and regulations will be printed on the back. Thus passengers will be permitted to choose an intermediate line where two or more routes are operated between the line on which the fare is paid and the line of ultimate destination. This will frequently save time, as it will be possible for passengers to take the first connecting car of any intermediate line. Since Jan. 1 passengers in Buffalo desiring to transfer have been required to request transfers at the time of paying fare. Formerly transfers were issued by conductors whenever asked for and were even distributed at junction points, causing unnecessary annoyance and delay, especially during rush hours. The new system will prevent "looping," as no transfers will be issued beyond the destination shown by the original transfer.

**Hearing on Service of the Springfield (Mass.) Street Railway.**—The Massachusetts Railroad Commission gave a hearing on Feb. 19 on the complaint of citizens of Springfield regarding service on the lines of the Springfield Railway east of Oak Street and State Street and St. James Avenue. The company was represented by Bentley W. Warren, counsel, and H. C. Page, general manager. Mr. Warren read a letter from L. S. Storrs, president of the company, which stated that there is a certain basis in fact for the demand for improved service in this district. So far as justified there are two grounds for improvement recognized by the company. One is the need of additional rolling stock and the other congestion in traffic on Main Street during certain hours when travel is heaviest. It was generally agreed among the petitioners that more cars would greatly improve the situation. Mr. Storrs stated in his letter that the company could advantageously use at least 12 additional double-truck closed cars, costing \$70,000. At present the company has a floating debt of about \$500,000. If it could obtain authority to fund this floating debt by an issue of bonds and also obtain authority to issue additional bonds it would purchase the equipment needed. The only remedy in prospect for the congestion on Main Street is a different routing of cars during rush hours. Mr. Storrs said that the advice of the commission regarding additional locations or changing the routes of some of the existing lines of cars would be of material assistance as a guide to the local authorities. Mr. Page pointed out that the company has 58 closed single-truck cars and 70 double-truck closed cars. Of these three is a fair average of those out of service at any one time. The regular schedule calls for 78 cars and the peak traffic for about 125 cars. The company will be glad to confer with citizens about practicable schedules. The commission took the case under advisement and will make its usual investigation.

## Personal Mention

Mr. Samuel Riddle has resigned as general manager of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind. Mr. Riddle has been connected with the company for two years.

Captain William B. Rockwell has been appointed general manager of the Syracuse & Suburban Railroad, Syracuse, N. Y. Capt. Rockwell was formerly general manager of the Syracuse, Lakeshore & Northern Railroad, Syracuse, N. Y.

Mr. H. M. Littell, assistant to the general manager of the Pacific Electric Railway, Los Angeles, Cal., will hereafter, in addition to his other duties, exercise full jurisdiction in all matters pertaining to the maintenance of operated tracks and structures of the company.

Mr. J. M. Bramlette has been appointed superintendent of construction of the Northern Construction Company, Leslie, Mich. Mr. Bramlette was formerly superintendent of construction of the Chicago & Milwaukee Electric Railway and previous to that was general superintendent of the Michigan United Railways, Lansing, Mich.

Mr. Chester P. Wilson was erroneously reported in the last issue of this paper as having accepted the position of general manager of the Des Moines City Railway and Inter-Urban Railway companies. Mr. Wilson's title is general superintendent of these companies. Mr. Wilson's appointment in no way interferes with the position of Mr. A. G. Maish, who is general manager of the Des Moines City Railway Company.

Sir Clifton Robinson, general manager of the London United Tramways Company, Ltd., is the subject of a sketch on "Men of the Day" in a recent issue of "Vanity Fair." He is spoken of as having probably done more than any other living man to make it easy for the millions of London toilers to sleep outside of the city limits in pure air amid healthful surroundings, and is described as being fond of all outdoor sports and motoring. An excellent portrait accompanies the article.

Mr. P. N. Jones, whose appointment as general superintendent of the Pittsburg (Pa.) Railways Company was announced in the ELECTRIC RAILWAY JOURNAL of Feb. 20, 1909, was born near Springfield, Ohio, in 1865, and was educated



P. N. Jones

at the Ohio State University, from which he was graduated in 1892 as a mechanical and electrical engineer. In the same year he became a shop apprentice with the Short Electric Railway Company, Cleveland, Ohio, with which he remained until the company was absorbed by the General Electric Company. He then engaged in experimental work with the Lincoln Electric Company, Cleveland, Ohio, for a time, becoming attached in May, 1904, to the staff of the Westinghouse Electric & Manufacturing Company, Pittsburg. Mr. Jones remained in the mechanical department of the Westinghouse Electric & Manufacturing Company five years and then became identified with the commercial department of the company as salesman. On Jan. 1, 1903, he was appointed manager of the Cleveland office of the company, and on April 1, 1903, was made sales manager for the Pittsburg district, from which position he resigned on Oct. 1, 1905, to become electrical and mechanical engineer of the Pittsburg Railways Company, in charge of power stations and equipment. Mr. Jones is a member of the Engineers' Society of Western Pennsylvania and is an associate member of the American Institute of Electrical Engineers.

Mr. A. W. Berresford, of Milwaukee, has been nominated by a number of his friends as a candidate for one of the four managers of the American Institute of Electrical Engineers to be elected this year. In a circular signed by 16 representative members the statement is made that it is of advantage to the institute that representation in the board of managers should be as widely distributed geographically as practicable, consistent with the ability of its members regularly to attend its meetings, and that Mr. Berresford is fortunate in this respect, because, while a resident of the

Middle West, his business connections require his being in New York at regular intervals, which may be made synchronous with the monthly meetings of the board of managers. Mr. Berresford has had 16 years of engineering and business experience, beginning with his graduation from Cornell University in 1893, and extending to his present position of general manager of the Cutler-Hammer Manufacturing Company. He is a member of the national committee of the International Electrotechnical Commission, was a member of the standards committee at the time the present rules were formulated, has served for the past two years on the membership committee, and is a member of the circuit breaker committee of the National Board of Fire Underwriters.

## OBITUARY

Eli Halderman, who was well known throughout Indiana as a contractor and builder of street railways in the early days of the industry, died at Indianapolis on Feb. 18. He organized and was president of the first street railway in Marion, Ind., which is now part of the system of the Indiana Union Traction Company, and also was connected with the company that built the interurban railway between Marion and Summitville.

Edwin Reynolds, formerly consulting engineer of the Allis-Chalmers Company and at one time mechanical engineer, second vice-president and general superintendent of the Edward P. Allis Company, Milwaukee, is dead. Mr. Reynolds' engineering practice extended to almost all branches of engineering, but he was especially well known through his work in steam engineering and in connection with the Edward P. Allis Company, which was merged into the Allis-Chalmers Company. During the time of Mr. Reynolds' connection with the Edward P. Allis Company the "Reynolds-Corliss" engine grew from the small unit of 80 hp to 100 hp into the 5000 hp to 10,000-hp engine. Mr. Reynolds was born in Mansfield, Conn., on March 23, 1831, and after attending the country school at that place was apprenticed at 16 years of age to learn the trade of machinist at Mansfield. Subsequently he worked as machinist in shops in Connecticut, Massachusetts and Ohio, and in 1858 became superintendent of the shops of Stedman & Company, Aurora, Ind., which built engines, sawmills and drainage pumps for the Mississippi plantations. In 1867 Mr. Reynolds entered the employ of the Corliss Steam Engine Company, Providence, R. I., and in 1871 became superintendent of the company, a position which he retained until 1877, when he became associated with the late Edward P. Allis in Milwaukee and began the development of his own inventions. Mr. Reynolds was one of the leaders in the introduction of compound and triple-expansion engines in factories and power houses, and is said to have been the first to build a low-speed direct-coupled type of engine and generator. Mr. Reynolds was also interested in general business affairs, and during his connection with the Edward P. Allis Company was a stockholder and director of the German-American Bank, Milwaukee Boiler Company, Central Improvement Company and the Badger State Long-Distance Telephone Company. The University of Wisconsin conferred the honorary degree of LL.D. on Mr. Reynolds.

## NEW PUBLICATIONS

Land and Business of Engineering and Contracting. By C. E. Fowler, C. E.; New York; McGraw Publishing Company; 1909; 152 pages (9 in. x 5½ in.) and index. Price, \$2.50 net.

This work summarizes the legal relations of contractor and engineer, presents several types of specifications and reproduces a large number of forms useful in estimating cost of work.

Practical Calculations of Transmission Lines. By L. W. Rosenthal, E. E.; New York; McGraw Publishing Company; 1909; 93 pages (9¼ in. x 6 in.). Price, \$2.00 net.

The increase in the mileage of the average electric railway and the growing popularity of hydro-electric transmissions make this book of timely interest. The formulas are comparatively simple and the tables are well arranged for easy reference. One chapter is entirely devoted to d.c. railway distribution and is accompanied by several examples. Single-phase railway problems are also considered.

Shop Tests on Electric Car Equipment. By E. C. Parham and J. C. Shedd. New York; McGraw Publishing Company; 1909; 115 pages (7¼ in. x 5 in.) and index. Illustrated. Price, \$1.00 net.

There is no end to the making of theoretical books, but the kind which tell how to do things are not crowding each other very hard. The present work is based on long railway testing experience in various shops. A catechism in the last pages of the book will be found useful for rehearsing the reader's knowledge of the methods described.

## Construction News

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

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

### RECENT INCORPORATIONS

**\*San Diego & El Cajon Valley Interurban Railway, San Diego, Cal.**—This company has been incorporated to build an electric railway from La Mesa Springs northeast through Alta to a point near Lakeside, a distance of 15 miles. Directors: William B. Gross, Edward Fletcher, Pasadena; Thomas Ballantyne, El Cajon.

**Terre Haute, Merom & Southwestern Traction Company, Terre Haute, Ind.**—This company has been incorporated in Indiana to construct and operate an electric railway from Terre Haute to Merom, connecting intermediate towns in Vigo and Sullivan County. The railway is partly completed, several miles of rails having been laid. Capital stock, \$10,000, which is to be increased to \$200,000. Directors: D. M. Roberts, W. S. Roney, J. F. Enusch and G. S. Patterson.

**\*Androscoggin Railroad, Lewiston, Maine.**—A bill has been introduced in the Legislature incorporating this company, which proposes to build a street railway in the towns of East Livermore, Livermore and Turner from the terminus of the Auburn & Turner Railroad in Turner to some convenient point in East Livermore. Capital stock, \$300,000. Incorporators: Hewitt M. Lowe, Turner; John A. Jones and Albert M. Kavanaugh, Lewiston; Harry Manser, Auburn; Frank W. Brigham, Boston.

**Missoula (Mont.) Street Railway.**—This company has been incorporated in Washington to build an electric street railway in Missoula. The City Council has just granted the company a 50-year franchise. Capital stock, \$100,000. Directors: J. R. Wharton, W. A. Clark, Jr., and W. M. Bickford, Butte; S. R. Inch, Missoula, and C. B. McBroom, Spokane, Wash. [E. R. J., Jan. 16, '09.]

**\*City Traction Company, Oswego, N. Y.**—This company has been incorporated in New York to build and operate an electric railway from Oswego to Seneca Hill, in Oswego County. Capital stock, \$550,000. Directors: C. B. Benson, Minetto; William Nottingham and Clifford D. Beebe, Syracuse; Harold C. Beatty, Skaneateles.

**\*Crook County Water, Light & Power Company, Bend, Ore.**—This company has been incorporated in Oregon to build an electric railway from Redmond to Prineville, also to build and operate power plants. Capital stock, \$50,000. J. H. Jackson, Redmond, president.

### FRANCHISES

**\*Dothan, Ala.**—Col. A. J. Smith will, it is reported, apply for a franchise for a street railway which will be extended via Cottonwood and Cottondale to Marianna, Fla., and via Echo and Clopton northward, possibly to Eufaula.

**\*Los Angeles, Cal.**—The City Council has passed an ordinance granting to H. F. Vollmer a franchise for a double-track electric railway from Fifty-fourth Street and Hoover Street westerly along Fifty-fourth Street to Dalton Avenue.

**Geneva, Ill.**—The City Council has granted a 50-year franchise to the Chicago, Wheaton & Western Electric Railway. The city receives \$30,000. The company proposes to build an electric railway which will reach the region north of Wheaton, and will connect the Aurora, Elgin & Chicago Railroad with West Chicago. [E. R. J., Oct. 17, '08.]

**Monmouth, Ill.**—The City Council has passed an ordinance granting the Rock Island Southern Railroad a 40-year franchise for an electric railway over North Street, South Main Street and the public square.

**Seymour, Ind.**—The County Commissioners have ordered another election in Jackson Township, the township in which Seymour is situated, to vote on the question of a subsidy to aid in the construction of the Brownstown Water, Light & Traction Company's proposed railway between Seymour and Brownstown, a distance of 11 miles. The tax proposed is 1 per cent, which would raise about \$40,000 in the township. [E. R. J., Jan. 16, '09.]

**Pittsburg, Kan.**—The City Council has granted the Joplin & Pittsburg Railway a 30-year franchise for a street railway in Pittsburg. [E. R. J., Feb. 20, '09.]

**Baltimore, Md.**—The Maryland Electric Railways Company has applied to the City Council for a franchise in Baltimore to connect with the Baltimore & Ohio Railroad and enter Camden Station.

**Great Falls, Mont.**—By a vote of 292 to 100, the freehold-

ers of Great Falls have granted to G. Calvin Bower and his associates a franchise for a street railway over certain streets of Great Falls in connection with their proposed electric railway between Great Falls and Choteau. [E. R. J., Jan. 30, '09.]

**Vernon, N. Y.**—The Town Board of Vernon has granted a franchise to the Oneida Railway to construct a street railway from Sherrill to Kenwood.

**Portland, Ore.**—The Portland Railway, Light & Power Company has applied to the Council of Fairview for a 30-year franchise for its branch to run through Fairview.

**Bedford, Pa.**—An ordinance has been passed by the City Council granting the Altoona, Hollidaysburg & Bedford Springs Railway a franchise for a street railway over certain streets of Bedford. The company plans to build an electric railway connecting the three cities named in the title. About 18 miles, from Altoona to Roaring Springs, are under construction. [E. R. J., Jan. 16, '09.]

**Temple, Tex.**—The City Council has granted a franchise to Max Ellser and associates of New York, N. Y., to construct and operate an electric street railway in the city of Temple for a period of 30 years, work on same to commence within eight months from date of passage, and the line to be in operation within 18 months from the time construction is begun. The City Council of Waco recently granted a similar franchise to the same parties. The intention of the parties is to construct an interurban railway connecting Temple and Waco. [E. R. J., Feb. 13, '09.]

**Salt Lake City, Utah.**—The Utah Light & Railway Company has applied to the County Commissioners for a further extension of its franchise to build its proposed extensions to Bingham Junction and Gandy.

**\*Pasco, Wash.**—J. B. Hubrich has applied to the City Council for a franchise for a street railway system, guaranteeing to have cars running within one year from granting of franchise. It is planned to operate gasoline motor cars.

**Seattle, Wash.**—The corporations committee of the City Council is said to have practically concluded its detailed consideration of the subway franchise asked by W. S. Boody and W. L. Dudley, who claim that Lloyd, Ettlinger & Company, of London, are their backers. The committee decided to accept the new plan of routes asked by the promoters subject to the approval of City Engineer Thomson and A. V. Bouillon, superintendent of public utilities. The life of the franchise was definitely extended from 50 to 65 years, the city to take over all but the rolling stock of the system at the end of that time. [E. R. J., Nov. 28, '08.]

### TRACK AND ROADWAY

**Bentonville, Ark.**—It is stated that the Western Surety & Investment Company, Minneapolis, Minn., has established its headquarters at Bentonville and is making preparations to begin the work of constructing the electric interurban railway from Bentonville to Joplin, Mo., then to Gentry, Tarrytown, Springdale and back to Bentonville. [E. R. J., Jan. 23, '09.]

**Denver, Colorado Springs & Pueblo Interurban Electric Railroad, Denver, Col.**—This company, which was recently incorporated to build an electric railway between Denver, Colorado Springs and Pueblo, announces that surveys are now being made and it is the intention to start construction early this spring. Office, Cooper Building, Denver. [E. R. J., Feb. 20, '09.]

**Washington, Baltimore & Annapolis Electric Railway, Washington, D. C.**—It is stated that this company has closed an agreement with the Washington Railway & Electric Company in Washington, whereby the interurban cars will be permitted to run downtown to within a block of the Treasury building.

**East Pensacola City Company, Pensacola, Fla.**—This company will receive bids until March 10 for the construction of a wooden railway trestle about 1400 ft. long. The company expects to begin work about March 1 on its proposed street railway from Pensacola to East Pensacola, a distance of 1½ miles. Office, 231 Brent Building, Pensacola. [E. R. J., Feb. 6, '09.]

**Athens (Ga.) Electric Railway.**—It is stated that this company has decided to double track a large portion of its line on Prince Avenue and to build three blocks of new line in order to perfect its street railway system.

**Spokane, Wallace & Interstate Railway, Wallace, Idaho.**—Wm. J. Hall writes that this company has made the final surveys and has secured considerable right-of-way for the electric railway it proposes to build between Wallace, Wardner, Burke, Mullan, Cœur d'Alene, Idaho and Spokane, Wash., a distance of about 100 miles. No contracts have been awarded as yet. It is planned to begin construction this year. The track, which will be single, will

be laid with 70-lb. rails. Direct current will be transmitted at 1200 volts. No definite arrangements have yet been made in regard to the furnishing of power for the operation of the system. The repair shops will be built at Wallace. The company expects to operate 24 passenger, 2 express motor and 118 freight cars, also 4 50-ton electric locomotives for freight service. Amusement parks will be established at Osburn, Mission and Cœur d'Alene. Capital stock, authorized, \$3,500,000; issued, \$100,000. General office, Wallace. Officers: F. F. Johnson, Wallace, president; Alfred Page, Wardner, vice-president; Wm. J. Hall, Wallace, treasurer; H. F. Robertson, Wallace, chief engineer.

**Evansville, Suburban & Newburgh Railway, Evansville, Ind.**—It is stated that this company has plans under consideration for extensions to its system to Chrisney and Lynnville. In return for the building of these extensions, the townships through which the railway will pass have voted favorably on the granting of a 2 per cent subsidy to the company. Operation will be begun with steam service which will handle both freight and passenger cars. Later, as business justifies, these lines will be electrified.

**Indianapolis & Western Railway, Indianapolis, Ind.**—It is stated that this company, which operates an electric railway between Indianapolis and Danville, is not only planning to complete its extension to Amo this summer, but will also extend it on southwest from Amo to Sullivan, a distance of 75 miles. The proposed extension would run through Stilesville, Broad Park, Belle Union, Cloverdale, Bowling Green and Clay City.

**Wicomico Electric & Power Company, Salisbury, Md.**—This company is reported to have organized for the purpose of building an electric railway from Salisbury to Nanticoke, a distance of nearly 25 miles. Bids have been received but contract has not yet been awarded. Officers: Marion V. Brewington, president; L. W. Dorman, vice-president; H. James Messick, second vice-president; Jesse D. Price, general manager; William M. Cooper, treasurer; Mark Cooper, secretary. [E. R. J., Dec. 12, '08.]

**Kansas City & Southeastern Traction Company, Kansas City, Mo.**—This company, which proposes to build an electric railway between Kansas City and Jefferson City, has increased its capital stock from \$180,000 to \$5,000,000. Charles A. Sims, president. [E. R. J., Jan. 30, '09.]

**Kansas City & Olathe Electric Railway, Kansas City, Mo.**—It is stated that this company is planning to extend its railway from its present terminus at Shawnee, Kan., to Topeka by way of Lawrence. The line was originally projected by way of Olathe, but in order to shorten the line the final survey was changed to run west several miles north of Olathe. The road is now built and in operation from Rosedale, Kan., to Shawnee, a distance of 7 miles, with the power plant located at Merriam, Kan. The mileage of the completed line will be 66 miles. The survey takes the line from Shawnee to Mill Creek, a distance of 5 miles, for which the contract for construction has already been let. From Mill Creek it runs in a southwesterly direction to Eudora and through the south limits of Lawrence, and then by way of Clinton, northwesterly to Topeka. A branch line is to be built from Mill Creek to Lenexa, where connection will be made with the Missouri & Kansas Interurban Railroad, now in operation between Kansas City and Olathe. Provision also has been made for extending the line from Rosedale to Argentine and Kansas City, Kan., with a line down the Kaw River valley from the proposed Seventh Street bridge, across the Kaw River, to the State line on the east bank of the river. F. P. Dickson, Gumbel Building, Kansas City, president.

**Springfield (Mo.) Traction Company.**—This company, which proposes to extend its system from Springfield to Carthage, 60 miles, has its engineering corps in the field surveying the proposed route. The surveyors have reached a point about 18 miles west of Carthage. The route being surveyed now is known as the northern route and passes through Lawrence County and does not parallel a railroad.

**New York, N. Y.**—The Public Service Commission, of the First District, has ordered the New York & Queens County Railway to show why it should not double track the lines between Flushing and Jamaica and between Flushing and College Point. The hearing is ordered for March 1.

**Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y.**—This company has recently started operating its extension from Baldwinsville, N. Y., north to Fulton, 15 miles, and will probably build a further extension from Fulton northwest to Oswego, about 20 miles, during this year.

**Crescent Electric Railway, Vade Mecum, N. C.**—It is announced that this company will let construction contracts in March. The company itself proposes to do most

of the work. The railway will extend from Winston-Salem to Stuart, Va., via Rural Hall, Capella Gap, Vade Mecum, Moore's Springs, Piedmont, Danbury and Sandy Ridge, N. C., a distance of 68.9 miles. Surveys are made, right-of-way secured, and about 20 miles are ready for track-laying. H. P. MacKnight, Southern Pines, N. C., chief engineer. [E. R. J., Oct. 31, '08.]

**\*Lawton, Okla.**—It is stated that James M. Sims and C. L. Carson, St. Louis, Mo., and W. D. Todd, Warren, Pa., are planning to build an electric railway to connect Lawton and its new additions with Fort Sill and a nearby summer resort in the mountains. It is said that a franchise will be asked at once, both the City Council and the people at a special election having to take action, and active work will begin within 60 days. The length of the railway will be about 15 miles.

**Schuylkill Railway, Girardville, Pa.**—This company advises that it is having the final locations made for an extension of its railway from Shenandoah to St. Clair, near Pottsville, a distance of about 9 miles. Construction is to be started early this spring. J. H. Eby, Lancaster, will be engineer in charge.

**Mercer County Street Railway, Greenville, Pa.**—This company, which proposes to build an electric railway from Greenville to Mercer and Sharon, has purchased the charter of the New Castle-New Wilmington Railway, including the franchise of New Castle and 11 miles of right-of-way between the two towns. Under this charter the company proposes to extend an electric railway directly to Greenville and from Greenville to Conneaut Lake, with a Sharon-Mercer line intersecting at Big Bend. The main line will be 44 miles long and the intersecting line 16 miles. Officers: F. P. Filer, Mercer, president; S. D. Downs, Greenville, vice-president; L. W. Orr, Mercer, secretary and treasurer. [E. R. J., Jan. 9, '09.]

**Central Pennsylvania Traction Company, Harrisburg, Pa.**—This company expects to place contracts during the next two weeks for about 2 miles of rails for city extensions.

**Pittsburg (Pa.) Railways.**—This company has just opened for traffic its new extension from Pittsburg to Washington.

**Pittsburg & West Virginia Railway, Pittsburg, Pa.**—Announcement is made that it is the intention of this company to construct an electric railway from Fairmont, W. Va., via Morgantown, Point Marion, Smithfield, Fairchance and terminating at Uniontown, with a branch or line running from Morgantown through Mount Morris, Waynesburg and terminating at Washington, Pa., with an additional branch running from Waynesburg via Rice's Landing, Millsboro, Brownsville, California and terminating at Allentown, in Washington County, making a total length of about 140 miles. The company proposes to construct a local line in Grafton, W. Va., consisting of about 5 miles, which will be the key for the future extension from Fairmont via Grafton to Clarksburg. At Fairmont the railway will connect with the Fairmont & Clarksburg Traction Company's line south to Clarksburg, a distance of 33 miles. At Washington the new line will connect with the Wheeling & Elm Grove Railroad Company's line, now building from Wheeling. At Allentown, Pa., the Pittsburg & West Virginia Railways Company's line will connect with the Pittsburg Railways Company's Charleroi line, giving an outlet to Pittsburg down the Monongahela valley. It is stated that within 30 days the company will begin surveying the route. W. E. Hildebrand, Pittsburg, is the promoter of the project. The engineering end will be in charge of James Ryan, Pittsburg. Among those interested in the enterprise are: J. C. Sturgess, David Elkins, E. M. Grant and J. L. Lyons, Waynesburg. The Pittsburg & West Virginia Railway Company is incorporated under the laws of West Virginia for \$3,000,000, giving the privilege of carrying both freight and passengers, and with right of eminent domain.

**Seattle-Everett Interurban Railway, Seattle, Wash.**—This company, together with the Everett Railway, Light & Water Company, has contracted with the Stone & Webster Engineering Corporation for the construction of an interurban railway from Halls Lake to Everett, a distance of 13 miles. There is already built a 9-mile section of interurban railway between Seattle and Halls Lake and this, together with the new section, will form a through interurban connection between Seattle and Everett. The Seattle Electric Company will provide the connecting line between the interurban at the city limits and its own system. The road will be built entirely on private right-of-way. Catenary overhead construction will be used and current will be supplied from a substation to be located half-way between the Fremont substation of the Seattle Electric Company in Seattle and the power station of the Everett Rail-

way, Light & Water Company in Everett. The Fremont substation receives current from either the Puyallup water power plant or the Georgetown turbine station. From this substation the current will be carried at 13,000 volts to the new substation for the interurban. The present arrangements provide for improvements in the present line from Seattle to Halls Lake as well as all the work involved on the new section.

#### POWER HOUSES AND SUBSTATIONS

**Russellville Water & Light Company, Russellville, Ark.**—This company, which has taken over franchise of Russellville & Ozark Mountain Light & Transit Company, has awarded a contract to Fred Wilson, Pine Bluff, Ark., for the construction of a power station and dam on the Illinois River near Russellville, where there is a fall of 22 ft. The dam, when completed, will be 400 ft. wide, with a 25-ft. head of water. Four turbine wheels will develop about 500 hp. The company expects to equip its present power station with additional machinery, including one 150-kw generator to be used in conjunction with a 100-kw machine now in service. [E. R. J., Nov. 28, '08.]

**Bangor Railway & Electric Company, Bangor, Maine.**—It is stated that this company has plans under consideration for a new dam to be built during the coming summer to take the place of the old wooden dam that is now in service at the power station in Veazie. The new dam, according to the present plans of the company, will be of concrete and will cost between \$75,000 and \$100,000. It has not been decided whether to build a hollow dam or one of mass concrete. It will be about 500 ft. in length and will extend straight across the river. There will be no spillway as in the present dam, the feature being eliminated in the contemplated design.

**Rochester Railway & Light Company, Rochester, N. Y.**—This company has let a contract to the Westinghouse Electric & Manufacturing Company for three 1000-kw, 60,000-volt, stepdown transformers to be placed in Station No. 33, in Elmwood Avenue. These transformers will be used to reduce the voltage from Niagara Falls from 66,000 to 550 to be transmitted by underground cable to operate the street railway in the city. The station has an output of about 6000 kw. A contract was also placed with the General Electric Company for a 136-ton, 3000-hp frequency changer. The set consists of two 3000-hp generators, one of 25 cycle and the other of 60 cycle.

**Lehigh Valley Transit Company, Allentown, Pa.**, will install an additional 5000-kw turbo-generator in its power station at Allentown, Pa.

**Corry & Columbus Street Railway, Corry, Pa.**—This company advises that it is in the market for a generator and gas engine.

**Wautaga Electric Company, Johnson City, Tenn.**—This company expects to place contracts during the next three weeks for two 120-kw motor generator sets.

#### SHOPS AND BUILDINGS

**Shelburne Falls & Colerain Street Railway, Shelburne Falls, Mass.**—This company announces that it will build a new car house in the near future. F. L. Reed, manager.

**Cincinnati (Ohio) Traction Company.**—This company has completed the work of reconstruction of its car house at Vine Street and Rochelle Street.

**Portland Railway, Light & Power Company, Portland, Ore.**—This company's car shops at Twenty-third Street and Washington Street were partly destroyed by fire on Feb. 9. The entire carpenter shop was destroyed. The damage is said to be about \$25,000.

**Youngstown & Ohio River Railroad, Youngstown, Ohio.**—It is stated that this company has purchased land in Youngstown as a site for a passenger station, freight house and yards.

#### AMUSEMENT PARKS

**Kankakee (Ill.) Electric Railway.**—This company advises that it has placed a contract with the Breinig Construction Company, Terre Haute, Ind., for the construction of a roller coaster.

**New Orleans Railway & Light Company, New Orleans, La.**—This company is said to have under contemplation plans for taking over the management of a new lake resort, being the old Spanish Fort, situated on Lake Pontchartrain directly across the lake from the resort now under control of the company known as West End. It is not intended to operate Spanish Fort during the present summer, as it will be necessary to build a new track which it is contemplated will tap the West End line at a point near West End and run down the lake shore to the old fort. It is said that the company proposes to make a number of improvements in developing the new resort.

## Manufactures & Supplies

#### ROLLING STOCK

**Detroit (Mich.) United Railways** denies that it is planning to receive bids soon for 50 city cars, as reported in the issue of Feb. 20.

**Philadelphia (Pa.) Rapid Transit Company** has purchased from the Pressed Steel Car Company 10 steel passenger cars for subway service.

**Pittsburg (Pa.) Railways Company** is having one pay-as-you-enter car built by the Niles Car & Manufacturing Company, Niles, Ohio.

**Shelburne Falls & Colerain Street Railway, Shelburne Falls, Mass.**, will purchase a combination car equipment for hauling standard freight cars.

**Oklahoma (Okla.) Railway Company** is reported to have placed an order for 10 cars with the American Car Company, St. Louis, Mo.

**Portland Railway, Light & Power Company, Portland, Ore.**, is reported to have lost five of its cars by fire recently, when part of its shops were burned.

**Southern Railway, Light & Power Company, Nashville, Tenn.**, has placed an order with the St. Louis Car Company for two car bodies, each 21 ft. in length.

**Municipal Traction Company, Cleveland, Ohio**, has been authorized by Judge Tayler, of the United States Circuit Court at Cleveland, to purchase 80 new motor equipments for cars now in operation.

**Wausau (Wis.) Street Railway** is in the market for one interurban car. It is reported the company will buy a total of three cars this spring through the Knox Engineering Company, 1410 Fisher Building, Chicago.

**Emigration Canyon Railroad, Salt Lake City, Utah**, has purchased two motor and two trailer cars from the American Car Company, St. Louis, Mo. The company will probably purchase two additional trailers this spring.

**United Railways Company of St. Louis, Mo.**, has built in its shops at St. Louis one steel passenger car, 47 ft.  $2\frac{3}{4}$  in. in length, and will build other cars of the same type at its shops as soon as financial arrangements can be made.

**Omaha & Council Bluffs Railway, Omaha, Neb.**, which company was preparing specifications for 25 cars, as announced in the *ELECTRIC RAILWAY JOURNAL* of Jan. 30, 1909, has begun the construction of these cars in its shops at Omaha.

**Beaumont (Tex.) Traction Company** is having five double-truck, 25-ft. cars built by the St. Louis Car Company. That this company would buy these equipments was mentioned in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6, 1909.

**Spokane & Inland Empire Railroad, Spokane, Wash.**, will use the 10 cars which it was reported in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6, 1909, to have ordered from the St. Louis Car Company on the lines of the Spokane Traction Company.

**Milwaukee & Fox River Valley Railway Company, Fond du Lac, Wis.**, which was reported in the *ELECTRIC RAILWAY JOURNAL* of Nov. 21, 1908, to be in the market for cars, has ordered two 50-ft., three-compartment interurban cars from the Cincinnati Car Company.

**Blue Hill Street Railway Company, Canton, Mass.**, suffered a loss of \$150,000 on Feb. 21 when its central car house and repair shop was destroyed by fire. Twenty electric passenger cars, 16 of which were of the heavy, semi-convertible type, were burned, besides snow plows and work cars.

**Texas Traction Company, Dallas, Tex.**, is having one combination work car and locomotive built by the St. Louis Car Company, St. Louis, Mo. Mention of the proposed purchase of this car was made in the *ELECTRIC RAILWAY JOURNAL* of Nov. 21, 1908. The car will be delivered in March.

**Spokane, Wallace & Interstate Railway Company, Wallace, Idaho**, will begin work this year on an interurban road 100 miles long, between Wallace, Idaho, and Spokane, Wash. It expects to order 24 passenger cars, 2 motor express cars, 118 freight cars and 4 50-ton electric locomotives. William J. Hall, Wallace, Idaho, is general manager.

**San Francisco, Oakland & San José Railway, Oakland, Cal.**, in addition to the 10 interurban cars which are nearly completed and the 5 new cars being built in the shops of the Oakland Traction Company, will construct at the Emeryville shops 20 more cars. The company will also immediately commence constructing several motor cars at its Oakland shops.

Rock Island Southern Railroad, Monmouth, Ill., which was reported in the *ELECTRIC RAILWAY JOURNAL* of Jan. 2, 1909, as having placed an order for 17 combination baggage and express cars and eight trailers with the St. Louis Car Company, St. Louis, Mo., has changed the order to 20 passenger and five combination passenger and express cars. These cars are each to have an overall length of 57 ft.

#### TRADE NOTES

**Electric Service Supplies Company, Chicago and Philadelphia,** has removed its Atlanta office from 107 Forsythe Street to 1630 Candler Building.

**C. W. Leavitt & Company, New York, N. Y.,** announce that on March 20 they will remove their offices to the Hudson Terminal Building, 30 Church Street, New York.

**Oliver Roto Company, Chicago, Ill.,** has been incorporated with a capital of \$10,000 to do a general electric business. G. Raymond Collins, C. A. Fry and Hugh A. Caperton are the incorporators.

**Perry Ventilator Company, New Bedford, Mass.,** has received the order for ventilators for the new cars of the Syracuse, Lake Shore & Northern Railroad Company which were recently ordered from the Cincinnati Car Company.

**Lord & Burnham Company, Irvington-on-Hudson, N. Y.,** has opened a branch office of its ventilating department in the Heed Building, Philadelphia, in charge of Albert H. Bates, who has been representing the company from the factory.

**Northern Equipment Company, Chicago, Ill.,** has been incorporated with a capital of \$20,000 to engage in the manufacture and sale of steam power and electrical appliances. The incorporators are Charles M. Clark, R. Blom and F. Cederberg.

**The Rail Joint Company, New York,** has begun the manufacture of a modified design of the Continuous rail joint adapted for frogs, switches and guard rails. It has been successfully applied in a number of installations during the past year.

**Chicago Contracting & Engineering Company, Chicago, Ill.,** has been incorporated with a capital of \$30,000 to install and operate power and heating plants, and to operate machine and repair shops. The incorporators are John M. Blakely, Arthur B. Wells and H. H. Talcott.

**Ohmer Fare Register Company, Dayton, Ohio,** has recently received 16 patents for improvements on fare registering and recording machines. All of these patents cover inventions of John F. Ohmer, singly or jointly with other inventors. The Patent Office records show that more patents have been issued to John F. Ohmer than to any other inventor of Dayton.

**American Specialty Company, Chicago, Ill.,** in a note in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16, was erroneously reported to have sold its business on Jan. 1, 1909, to Warren Webster & Company, of Camden, N. J. Warren Webster & Company took over the business of the American Engineering Specialty Company on that date. The American Specialty Company is still in the field.

**Independent Pneumatic Tool Company, Chicago, Ill.,** has appointed Manning, Maxwell & Moore, Seattle, Wash., its exclusive representatives for the sale of Thor pneumatic tools and appliances in Washington (excepting Clarke County) and Alaska. It has also appointed the Portland Machinery Company, Portland, Ore., exclusive agents for its tools and appliances in Oregon and Clarke County, Wash.

**George B. Dusinberre, Cleveland, Ohio,** who is well known to the electrical fraternity both as a consulting engineer and on account of his former connection with the Westinghouse Electric & Manufacturing Company, has recently been appointed sales agent for the Middle West for the American Electric Fuse Company, Muskegon, Mich., and for the Duplex Metals Company, New York. Mr. Dusinberre will continue to make his headquarters in Cleveland and has moved his office to 414 Prospect Avenue.

**Dorner Railway Equipment Company, 806 Great Northern Building, Chicago, Ill.,** reports that it has been designated to act as agent for the sale of the open and closed cars that have been replaced by the new pay-as-you-enter cars on the various lines of the Chicago Railways Company. The company also reports that it has sold to the Menominee & Marinette Light & Traction Company, Menominee, Mich., four GE-54 motors and four K-10 controllers, and that it has sold two National air-brake equipments to the Sheboygan Light, Power & Railway Company.

**Wonham, Magor & Sanger, New York,** have taken over the business of Wonham & Magor, and have moved their offices from 29 Broadway to 30 Church Street, New York. The firm acts as representative for H. K. Porter Company,

locomotives; Verona Tool Works, track tools and unit locks; Whiting Foundry Equipment Company, cranes and cupolas; Continental Car & Equipment Company, dump-cars; American Automatic Switch Company, automatic switches and signals, and is exclusive agent in North and South America for the "H. B." universal life guard.

**Western Electric Company's** sales organization, at its conference in Chicago, held a dinner of old-time employees on Jan. 29. Those who attended the luncheon and the dates they entered the employ of the company are as follows: E. W. Bennett, 1874; J. C. Cannon, 1877; F. B. Uhrig, now Western district supervisor of the company, Kansas City, 1881; D. L. Harmon, now a banker at Indiana Harbor, Ind., 1883; C. D. Wilkinson, manager of the Minneapolis house, 1886; William Carpenter, of the Walworth & Neville Manufacturing Company, 1887; R. C. Hearsley, 1888, and E. S. Holmes, now manager of the Indianapolis house, 1890.

**William Pestell,** formerly superintendent of motive power, Worcester Consolidated Railway, has become associated with the sales department of the Allis-Chalmers Company and will represent that company at Boston. Mr. Pestell has had a long electric railway experience. From 1892 to 1901 he was associated with the Lynn & Boston Street Railway Company, now the Boston & Northern, as electrical engineer. From this road Mr. Pestell went with the Worcester Consolidated Street Railway Company as superintendent of motive power and machinery, and remained there from 1901 until 1903. In the latter year he accepted an offer from J. G. White & Company, New York City, and was assistant mechanical engineer of that firm for two years. He resigned in October, 1905, to accept the office of president and general manager of the Worcester Steel Foundry Company, Worcester, Mass., which he held until recently. While with the Worcester and Lynn companies Mr. Pestell served on several engineering association committees. He has also contributed important engineering articles to the technical press.

#### ADVERTISING LITERATURE

**Ohio Brass Company, Mansfield, Ohio,** publishes in the February issue of its monthly bulletin a number of illustrations of its catenary construction as installed on several lines.

**Frank Ridlon Company, Boston, Mass.,** has issued a list of available second-hand motors and generators and measuring instruments. The motors include many 500-volt machines suitable for shop installations.

**Murphy Iron Works, Detroit, Mich.,** are publishing a pamphlet with a large number of illustrations showing the Murphy furnaces in paper mills. This type of furnace, of course, is also suitable for electric railway power houses; in fact, they are in use by a number of large railways, among them being the New Orleans Railway & Light Company.

**Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.,** announces the following publications: No. 1165, for motors for 1909; No. 1148, mercury rectifier battery charging outfits; No. 1158, electric motor friction brakes. Pamphlets are also being issued on the type A mercury rectifier, suction sweepers and small direct-connected generating sets of Westinghouse generators and American Blower Company's engines.

**Crocker-Wheeler Company, Ampere, N. J.,** has published a list of its engine-type d. c. generators, giving the names and addresses of companies and individuals using these machines. Industrial plants, street railways, railroad and other machine shops, office buildings, stores, schools and residences are included. In several items no address is given, these representing U. S. battleships equipped with Crocker-Wheeler generators.

**Wonham, Magor & Sanger, New York,** have issued the first American publication on the "H. B." life guard. This is the wheelguard which has been adopted as the standard for all of the electric lines of the Third Avenue Railroad Company, New York, and is one of those in use by the Metropolitan Street Railway Company, New York. A description of this device was published in the Dec. 26, 1908, issue of the *ELECTRIC RAILWAY JOURNAL*.

**Ingersoll-Rand Company, New York,** announces the following publications: Form No. 3011, "Duplex Steam-Driven Compressors;" form No. 4002, "Rock Drills;" form No. 9002, "Air Receivers, Pressure Tanks and Moisture Traps;" form EE-36, "Small Power-Driven Air Compressors;" form 21-A, "Electric-Air Rock Drills and Channellers;" form 36-A, "Compressors;" 47-A, "Rock Excavating Machinery;" 74-B, "Pneumatic Pumping Systems;" AA-37, "Steam-Driven Straight-Line Two-Stage Air Compressors."