

Street Railway Journal

VOL. XXI.

NEW YORK, SATURDAY, FEBRUARY 21, 1903

No. 8

PUBLISHED EVERY SATURDAY BY THE
McGRAW PUBLISHING COMPANY

MAIN OFFICE:

NEW YORK, ENGINEERING BUILDING, 114 LIBERTY STREET.

BRANCH OFFICES:

Chicago: Monadnock Block.

Philadelphia: 929 Chestnut Street.

Cleveland: Cuyahoga Building.

London: Hastings House, Norfolk Street, Strand.

Cable Address, "Stryjourn, New York,"—Lieber's Code used.

TERMS OF SUBSCRIPTION

In the United States, Canada and Mexico.....\$4.00 per annum
Single copies, first issue of each month, 25 cents; other issues, 10 cents.

To all Countries outside of the United States, Canada and Mexico... } \$6.00
£1-5s
M 25
Fr. 31

Single copies, first issue of each month, 40 cents; other issues 15 cents.

Subscriptions payable in advance, by check or money order. Remittances for foreign subscriptions may be made through our European office.

Entered as second-class matter at the New York Post Office.
Copyright, 1902, McGraw Publishing Co.

EDITORIAL NOTICE

Street railway news, and all information regarding changes of officers, new equipments, extensions, financial changes and new enterprises will be greatly appreciated for use in these columns.

All matter intended for publication must be received at our office not later than Tuesday morning of each week, in order to secure insertion in the current issue.

Address all communications to

THE STREET RAILWAY JOURNAL,
114 Liberty Street, New York.

The New Association

At last the electric railways of this country have an organization which appeals directly to the electrical and mechanical men. This is naturally one result of the evolution in the transportation field. The higher the development of a business the more it is necessary to specialize. It has been evident for some time that the electric railway business has developed to a point where the convention proceedings of the American Street Railway Association are too general in character to get the best results in the discussion of mechanical and electrical matters. The men of intimate practical knowledge of mechanical and electrical details have heretofore taken little advantage of the opportunity to make themselves heard at the national conventions, and this is not altogether strange, for presidents and general managers have always been the active spirits in these meetings, and the master mechanics have, in the main, attended as spectators, and devoted their time principally to the inspection of exhibits or an exchange of views with those engaged in similar pursuits.

The time is certainly ripe for the new American Railway Mechanical and Electrical Association. The meeting at Cleveland this week was a most enthusiastic gathering; the attendance was large, and the results entirely satisfactory. The addition of this allied organization to the next national meeting will mark a new era in electric railway conventions. The organization scheme has been conservatively worked out, vesting

the voting power in companies, but giving an opportunity to master mechanics and engineers personally to become associate members, with all privileges save voting. That the authority of a company should be behind each vote seems advisable, since in future action is likely to be necessary on standards, which will permit interchange of rolling stock on interurban roads and other matters involving large expenditures by companies themselves. Now that the new association is ready to go ahead on definite lines, and already has an influential membership, there should be no hesitation on the part of any company about joining the movement and getting the many benefits that will result from membership. That all the conditions may be understood, the constitution and by-laws are printed in full in this number, along with a summary of the proceedings of the recent Cleveland meeting at which they were adopted.

Report of the New York Railroad Commissioners

The report of the State Board of Railroad Commissioners on the New York traffic situation was made public Feb. 11, and is published in full in this issue. The report is an able document and we recommend a careful perusal of it to our readers. It may be roughly divided into four sections: First, a general discussion of the problem and of the causes which led to the existing traffic congestion in New York; second, a consideration of the complaints made by the Merchants' Association; third, recommendations for limited early relief; fourth, suggestions for securing permanent relief.

The childishness of the demand to secure better transportation facilities by the mere putting on of more cars is conclusively shown by the Commissioners who rightly put the greater part of the blame for the present condition of affairs on the past dilatoriness of the city authorities. If any industrial or transportation enterprise should have been conducted with the same absurd disregard for the future as have been the affairs of New York City by the municipal authorities, bankruptcy would have been the result long ago. As an instance of this the report quotes a conspicuous example in the bridge communication between Brooklyn and Manhattan. In spite of the enormous demand for transportation between these two boroughs only a single bridge connects them, and that was completed and put in use twenty years ago. The same lethargy has characterized the action, or inaction, of the city authorities in various other directions, and the resultant loss to the city has been incalculable. We sincerely trust that, costly as this experience has been, its lessons will not be lost upon the city authorities. The present is as critical a time as any in the history of the city as far as transportation relief is concerned, and if the same disregard for the future of the city be followed now as has been pursued in the past the result may be even more disastrous than that caused by previous errors of judgment.

The complaints made by the Merchants' Association are then considered. As pointed out in a recent editorial in this paper a number of the recommendations of the Merchants' Association were withdrawn after consultation with the Board and eight only were retained. As thus modified the position of the Association, as we have pointed out, did not differ in any material point from that of the expert of the Board or even of

the railway company itself, with the single exception of the demand made by the Association for the employment of two conductors on each car. On the question of two conductors for each car "the Board does not believe that it would tend to check overcrowding of the cars or better the car movement, which are the two chief aims in the present effort to find relief. So far as the exemption of passengers from injury are concerned, the facts of record show that the percentage of casualties arising from causes which a second conductor might avert is very small, and that in all other than rush hours the second conductor on a car would be a superfluity and a nuisance." The Board, in our opinion, could very properly have added that besides being a nuisance the employment of a second conductor would be an absolute menace to the safety of passengers, owing to the inevitable division of responsibility between the two conductors. But it is gratifying that the Board has taken the stand which it has on a proposal having the mischievous character which this demand possesses.

Certain recommendations are made by the Board for limited early relief, and relate principally to police improvement in the regulation of wagon traffic. When this has been accomplished it is believed that the company can successfully operate a considerably larger number of cars than at present. The significant statement is also made that the Board is considering the advisability of a regulation that, during evening rush hours, the northbound cars in certain parts of the city shall stop only at the intersections of the odd numbered streets, and that during the morning rush hours the southbound cars shall stop only at the even numbered streets. No recommendation of this kind has yet been made by the Board, but we believe that it would be a step in the right direction. There is absolutely no reason why, with streets only 250 ft. apart, stops should be made on every corner. It is not only expensive in the way of wheels, brake-shoes and power, but affords a serious delay to the movement of the cars. This is one direction in which foreign railway practice is superior to our own, in that stops are only made at definite points, which are a considerable distance apart.

Taxation of Street Railway Properties

A contributor to "Municipal Affairs," who discusses the transportation problem of the larger American cities, suggests immunity from taxation for the street railway companies. It is contended that if the corporations were relieved of this expense and the patrons of the system permitted to enjoy the advantages derived from its expenditure, the public would be greatly benefited. The condition of the masses might be materially improved by placing within their reach transportation facilities that would enable them to live in suburban districts, where they could enjoy light and air and sunshine, and not be huddled and herded like cattle in tenement districts. "Instead of expending millions through its health and police departments in the effort to make the tenement districts habitable," says the author already quoted, "cities might, with more judgment, remit taxation of street railways and other urban transit lines and at the same time secure a reduction in the rates of fare." City officials throughout New York have displayed an eagerness to tax corporations, especially in the matter of franchises, that leaves little room for hope of immediate relief.

We do not believe that there is any general demand for reduction in the rate of fare charged by the street railway companies, and the action of the Chicago City Council, Feb. 9, in dismissing a proposal of this kind, supports this opinion, but a more liberal policy toward the companies in other matters would enable them to do much in the way of improvements. This

change should not be restricted to financial affairs, by any means, but should be extended to all the relations between the corporations, the city and the public. At present every effort toward improvement and extension is met with objections on the part of politicians, and a demand for "remuneration," although in most cases extensions mean heavy expenditure without any immediate return; in fact, many of the improvements that have been made in the suburban service of New York and other large cities have not yielded any return for a long time, and often these lines are operated for years at considerable loss. The experience of practical railroad managers does not lend much encouragement to the idea proposed in "Municipal Affairs;" the tendency is all in the other direction, as was illustrated in the treatment of the Pennsylvania tunnel project. Yet it is encouraging to find recognition of the fact that the present attitude of cities toward street railway companies is detrimental to the best interests of the community served, and it is possible that the present discussion of the problems involved may result in diffusion of this knowledge among the public generally, and secure better treatment of the transportation companies at the hands of municipalities.

Chicago Transfer Problem

In all discussions of plans for improving the transportation facilities of Chicago the necessity for a universal transfer system is urged, and, so far as the public is concerned, it is contended that important concessions must be made by the companies along this line before any further extensions of franchises are granted. The recent decision of the Supreme Court of Illinois confirming the position taken by the city that companies controlled and operated by the same management or interests are to be considered as comprising one system, that only one fare may be collected in such cases and that transfers must be issued, has given much encouragement to the advocates of the one-city-one-fare idea, and has brought into greater prominence the plan to extend this arrangement to all divisions of the city, so as to embrace the lines of the Chicago City Railway Company as well as the Chicago Union Traction Company and the Consolidated Traction Company.

There are, however, many objections to such a plan from the operators' viewpoint, and these will have to be taken into consideration in fixing the terms between the city and the railways, and between the several operating companies themselves. In the Arnold report on the Chicago situation this problem received a great deal of attention, and several plans were discussed with the view of showing the difficulties that would be encountered as well as the advantages to be derived from such a radical change.

It would be impossible to introduce a universal transfer system in Chicago under divisional ownership and the present routing of cars without doing great injustice to the operating companies and inviting wholesale abuse of these privileges. The experience of the Chicago Union Traction Company and the Consolidated Traction Company, since the transfer decision of the Supreme Court went into effect, confirms this view and emphasizes the necessity of rearranging the downtown terminal facilities of the several systems and providing additional accommodations before attempting to exchange traffic between the South Side lines and those of the North Division and West Division. At present, as has been shown in the Arnold report, the cars entering the retail and office district of Chicago cannot take care of the traffic that is offered, and for this reason many people who live within 2 miles of their places of business do not rely upon the street cars during the rush hours. When it

is remembered that it is within the section in which this congestion is experienced that the transfers between the several divisions of the city would have to be made, it will be recognized at once as an impracticable plan under existing conditions. Of course, a consolidation of all the street railway interests of the city would make it imperative under the law to furnish transfers, but with joint ownership of tracks in the downtown districts this would not be necessary unless a special arrangement was entered into between the city and the companies. The city may insist upon universal transfers as a condition of settlement of the transportation problem, and it seems to be the general belief that this will be the attitude of the municipal administration when the subject comes up for final determination. Under the circumstances it is interesting to examine the conditions of operation and the plans proposed for relieving the congestion and making possible the granting of transfers to all parts of the city.

First of all, the population of Chicago is so distributed that the districts served by the several companies are very unequal, that of the North Division and West Division being greatly in excess of that of the South Side, and it is presumed, therefore, that the number of persons transferred from the North Side and West Side lines to the City Railway system would have approximately the same relative proportion; but it is believed that this would be equalized by return fares. About 80 per cent of the total travel is to and from the business district, and a large percentage of passengers would take advantage of this privilege if prompt service and convenient transfer points were offered. At present the holder of a transfer from one line to another in the business center would be compelled to walk from one to four blocks, and under the double-fare system passengers desiring to utilize both systems must often walk considerable distances in changing from one to another. This disadvantage discourages travel, and would doubtless be eliminated in any plan adopted for a reorganization of the transportation business either under unified management or with the view of exchanging traffic. A general plan of unified operation has been proposed by Mr. Arnold, including a comprehensive subway system and a belt surface line connecting railway stations and other important points. The principal advantages of this proposed plan, which was described and illustrated fully in the *STREET RAILWAY JOURNAL* of Jan. 24, as Subway Plan No. 2, are the elimination of the surface cars from the downtown district, with the exception of the belt line mentioned; improved terminal facilities afforded by the subways, and the introduction of a universal-transfer system, in which, it is claimed, no injustice would be done the railways. Under this arrangement three main subways will enter the downtown district from the West Side, extending to the Lake Front, with auxiliary lines affording loops and additional transfer points, and three low-level tunnels used by the North Side and South Side cars, which will be carried beneath the subways from the West Side. In support of this plan it is pointed out that the business center of the city would be underlaid with a system of subways intersecting each other at right angles and at a sufficient number of points to enable passengers to travel from almost any point in the business district to almost any other point at the least possible inconvenience. A feature that commends it to favorable consideration is the obstacles it places in the way of those who would use transfers improperly. In order to get on a car the passenger must pay a cash fare and pass through a subway entrance. In transferring from a high-level subway car to any other high or low-level subway car, the passenger cannot go to the surface to dispose of his transfer,

but must take some car and use his transfer himself. Once he goes to the surface to dispose of the transfer it loses its value, as no one can enter the subway on a transfer. There would be no demand for a transfer by any one already in the subway, because persons entering the subway must first pay cash fare, and once in they are all on the same footing.

Outside of the business district conditions will remain the same so far as transfers are concerned. There will probably be more or less petty swindling as long as surface lines are operated and transfers are given, but in the downtown section where the several systems converge, and it is proposed to extend the transfer privileges from one system to the others, a new condition is created, and unless some plan is adopted that will protect the companies from the abuse of these privileges they ought not to be expected, and they cannot in justice be required, to adopt a universal transfer system. Mr. Arnold's plan looks practical on paper; whether it will prove adapted to Chicago's needs remains to be seen. He has evidently done his utmost to guard the companies' interests as well as provide the city with an efficient system. In the present condition of affairs it forms an interesting contribution that may well be studied by all who are interested in the problem of relieving the situation in Chicago.

Gaging the Third Rail

The installation of the third rail on an interurban road differs materially in some respects from its installation on elevated roads. On an elevated road nothing but accurately sawed ties are used for any of the construction. On an interurban road it is likely to be the case that hewn ties are used for both track and third rail, with the result that great care must be exercised at every tie where the third rail is supported, to see that it is accurately gaged, not only as to distance from the track rails but also as to height. Although there has not been any serious trouble on any third-rail interurban lines with flashing at the contact-shoe, what little trouble there has been is in no small measure due to variations in the height of the third rail. It seems to be true with the third rail, as it is well known to be with the trolley, that the best preventive of trouble through poor contact is a smooth, well aligned track. If the track is not smooth and evenly ballasted there will be vibration of the truck frame, of course, which tends to make poor contact between the shoe and third rail. If, added to this, there is a variation in the height of the third rail relative to the track rails, the case is made much worse. Any increase in speed, of course, magnifies the difficulties with poor contact. A shoe which may ride evenly on the third rail all the time at 30 miles an hour will jump considerably at 60 miles an hour. There are certain inherent reasons why a contact-shoe, dependent upon a spring, should maintain a more even contact with the third rail than one dependent upon the weight of a heavy cast-iron shoe. The explanation of this is obvious. The inertia of a cast-iron shoe, heavy enough to make good rubbing contact, is so great that it will not quickly change its direction with the variations due to vibrations of the truck frame carrying the shoe or variations in the third-rail gage. If a somewhat lighter shoe be used, and the spring be depended upon to give contact pressure, there will not be the amount of inertia in the shoe that there would be in the former case, and it will take up the vibrations more quickly.

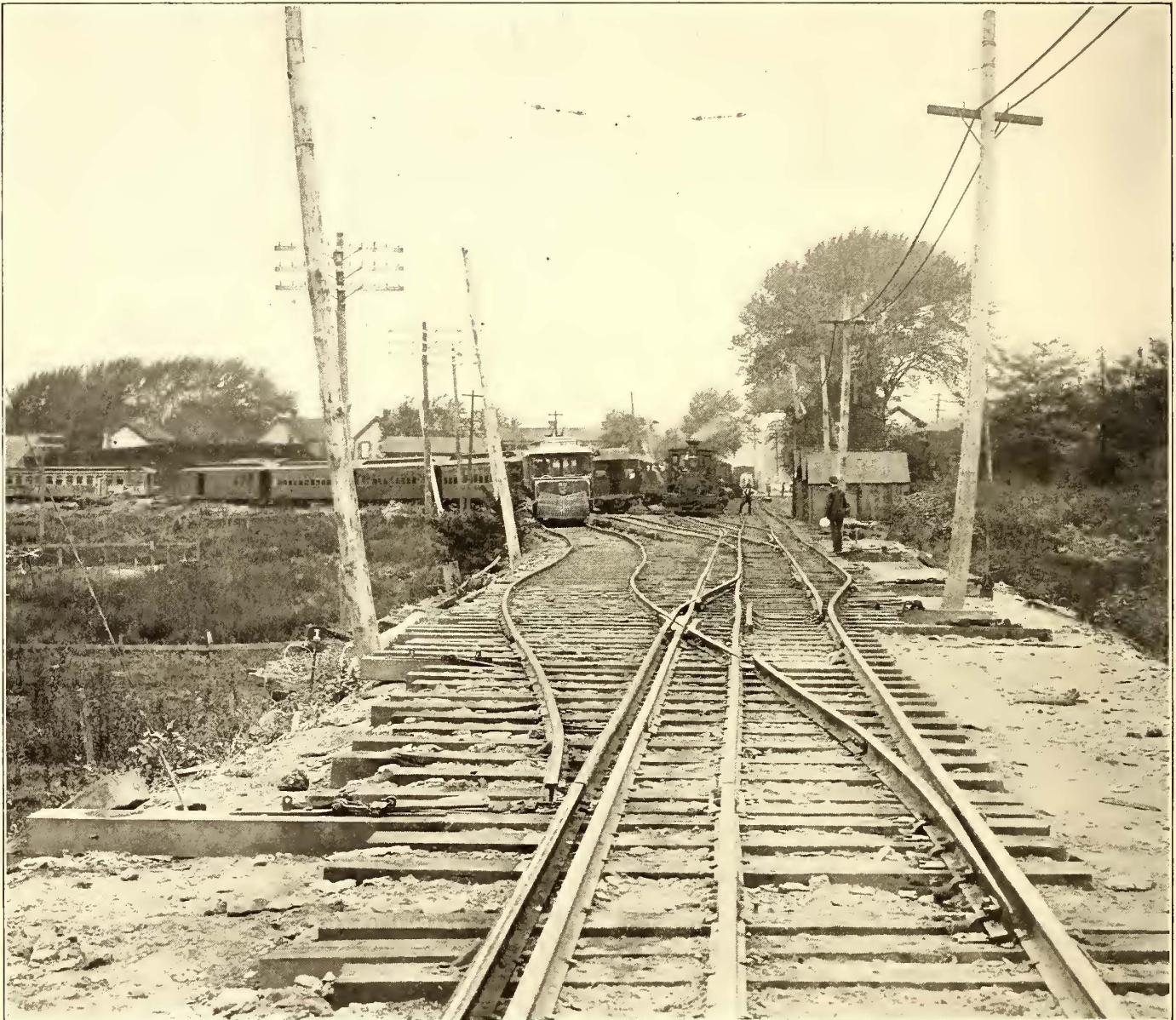
The third rail appears to be something that we will have with us as long as low voltage direct-current motors are used in heavy electric railway work, so that problems connected with it should receive full consideration at this important juncture.

STEAM RAILROAD CONVERTED TO ELECTRIC SYSTEM

Another example of the conversion of an old steam railway line into a modern electric system is afforded in the Cincinnati, Georgetown & Portsmouth Railroad, which has just been placed in operation with the new equipment. The conditions under which the change was made and the effect which the transformation will have upon the policy of the company and the possibilities of the property form an interesting chapter in the history of electric railroading.

The Cincinnati, Georgetown & Portsmouth Railroad Com-

pany of the promoters of the Toledo, Fremont & Norwalk Railway, now a part of the Lake Shore Electric system. Plans were immediately made for changing from narrow gage to standard gage and equipping the road with electricity. The company decided to retain its original charter, and the change of power was made under an act passed by the Ohio Legislature in 1896, covering "electricity as a motive power upon railroads," and making the following provision: "Upon any railroad heretofore or hereafter constructed in this State, electricity may be used as a motive power in the propulsion of cars; provided, however, that before any line of poles and wires shall be con-



YARDS OF CINCINNATI, GEORGETOWN & PORTSMOUTH RAILWAY, SHOWING COMPLICATIONS OF TRACKS CAUSED BY THREE GAGES

pany was chartered in 1872 to build and operate a steam railroad from Cincinnati through Hamilton, Clermont, Brown, Adams and Scioto Counties to Portsmouth. The line was completed to Georgetown in 1874, and has been operated as a steam road to that point ever since. While the road was always in fair financial condition, the depreciation of the equipment caused the operating expenses to form a high percentage of gross earnings, while the inability to improve the passenger service and reduce the rates, together with the disadvantage of a narrow gage of 3 ft., made it impossible to keep pace with the demands of a growing territory.

On Oct. 1, 1901, the property was purchased by W. R. Todd & Company, Cincinnati bankers, and A. W. Comstock, of Detroit, the latter an experienced electric railway man and one

constructed through or along the streets, alleys or public grounds of any municipal corporation, plans of such construction shall be submitted to and approved by the Council of such municipal corporation."

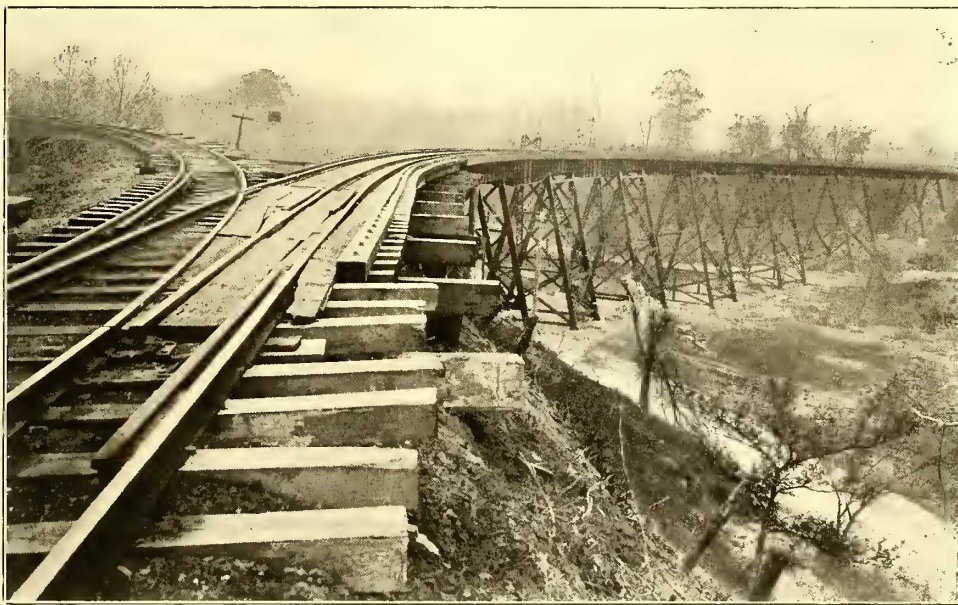
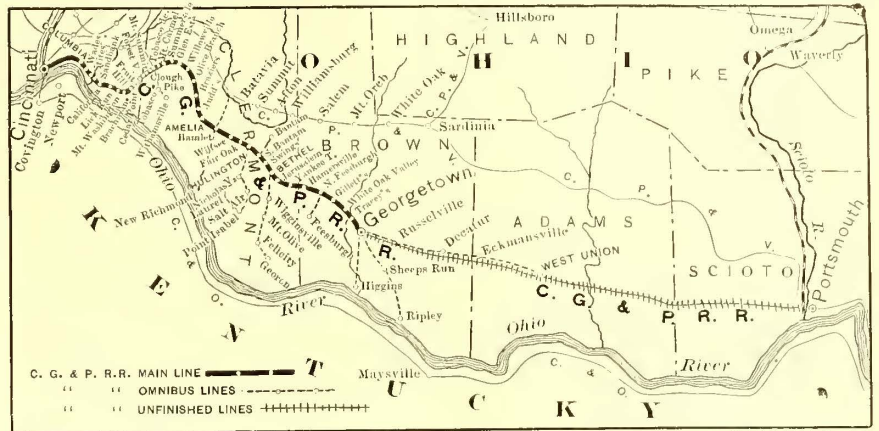
It will be seen, therefore, that this line differs from the majority of electric railroads operating in Ohio, and that it enjoys all the privileges of a steam road.

The first step made by the new owners was to change the line to standard gage. This was done in the short space of four hours. All the spikes on one side of one of the rails, and all but every fifth spike on the other side of the same rail were drawn beforehand. The last narrow-gage train, an excursion party in ten coaches, drawn by two locomotives, went over the line in the morning, and the crowd came back in the afternoon

on a standard-gage train. The old narrow-gage train still stands on the siding at Georgetown, and it will probably remain there until it is sold as scrap. The company leased several standard gage equipments, and during the electrification two passenger trains a day were operated each way. Two branches were built while the change of equipment was going on, one from the main line at the Cincinnati Water Works to Coney Island, on the Ohio River, a distance of 9 miles, where a very popular summer resort is located, and the other from Olive Branch, a distance of 3 miles, to Batavia, the county seat of Clermont County.

Through a queer combination of circumstances the first-mentioned branch was laid with a broad gage (5.25) as well as standard gage. The old steam road operated only to Carrel Street station, formerly known as

was made, thirty-seven wood and steel trestles. Nearly all of the wooden structures have been abandoned, and in their place fills made, while the balance have been strengthened so as to



LONG STEEL BRIDGE AND JUNCTION

Columbia, where connection was made with the Pennsylvania suburban trains. The new company made a traffic arrangement with the Cincinnati Traction Company to operate into the center of the city over its tracks, a distance of 5 miles, but as the city company employs the wide gage and double trolley system, the railway company will be unable to take advantage of this arrangement until the plans of the new terminal company, formed by the Cincinnati Traction Company, materialize. In the meantime, desiring to secure the full advantage of the Coney Island business, the company purchased a number of cars conforming to the city gage and equipped with double trolleys, and these were placed in operation as soon as the spur line could be completed. Thus, between Carrel Street and the Coney Island junction, for several weeks, there was probably the most remarkable complication of gages ever known in the history of railroading. At the same time there were in actual operation narrow-gage passenger trains, standard-gage construction trains and broad-gage street cars. The complication of tracks at the Carrel Street terminal yard is shown in one of the accompanying illustrations.

ROADBED CONSTRUCTION

In addition to changing the gage the new owners have made vast improvements in the roadbed. The line traverses high table land, and owing to the difficulty in reaching it through heavy cuts and deep fills, there were, up to the time the change

permit heavy freight trains to pass over them. Nearly 400,000 cu. yds. of material were used in making these fills, and at the present time the roadbed is in excellent condition. New 70-lb. steel rail has since been laid over half the road, and 60-lb. rail on the rest. New standard gage white oak ties have been laid over the entire length of the road, and the roadbed ballasted with washed gravel. Several very fine steel bridges were built a few years ago, and, fortunately, they were made standard width, to provide for possible broadening of gage. One of these bridges, which is 1800 ft. long, 600 ft. being iron work, forms the subject of one of the accompanying illustrations. It is 110 ft. above water.

The right of way is owned in fee for almost the entire distance. It is 60 ft. wide through the country, while in several of the towns it is wider, furnishing ample space for sidings. The



TYPICAL BRIDGE OVER HIGHWAY CROSSING

track is fenced on both sides with American Steel & Wire fencing, and there are cattle guards at all crossings. A private right of way, 60 ft. wide, has been secured, and surveys made to extend the road to West Union, the seat of Adams County, which at present has no railroad facilities of any kind. This will add 25 miles to the main line, giving the system a total of 72 miles, including 8 miles of siding. This extension will be built this year, and it is quite probable that in another year the line may be extended to Portsmouth. The maximum grade on the extension will be 1 per cent. The average grade on the present line is less than 1 per cent, although there are several rather severe grades for short distances. The accompanying

he spent his early years and the tannery where he worked until he went to West Point, are pointed out to every visitor.

It is a noteworthy fact that while the greater number of Ohio towns have shown steady gains in population this territory stood still for a score of years. Within the last three or four years, however, the country seems to have taken on new life. The remarkable growth of Cincinnati and nearby cities, the increased demand for food products, the advent of the telephone, and now the marked improvement in the railroad facilities seem to be changing the entire aspect of this territory. A sample of the primitive life which is fast being superseded is shown in the cut of a "squatter's" home. A man, his wife, ten children and several dogs occupy this residence. The company desired to build a new bridge on a line with the house, but the occupants declined to vacate, so the company decided to build its track over them. The passenger in the handsomely appointed electric car can look down the chimney of this relic of the early days of the nineteenth century.

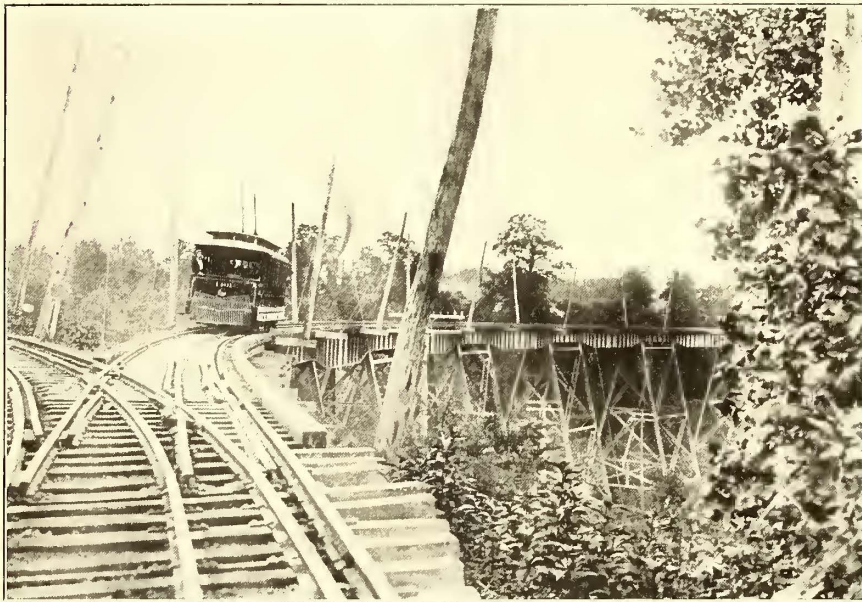
The population of the several towns on the line follows:

Cincinnati	450,000
California	800
Mt. Washington	1,000
Forestville	300
Mt. Carmel	1,000
Summerside	200
Olive Branch	300
Batavia	2,500
Amelia	1,000
Bethel	2,500
Hamersville	800
Georgetown	3,000
Russellville	800
Eckmansville	1,000
West Union	2,500

Other tributary population is about 20,000.

PASSENGER, FREIGHT AND EXPRESS SERVICE

Freight has always been the heavy end of the business of the Cincinnati, Georgetown & Portsmouth. This has been divided into two classes, the ordinary freight, and what has been designated as "fast freight," more properly express. The reason for this appellation is that being a railroad company it is not chartered to engage in the express business. The relation existing between the road and other steam roads has always been very friendly, and there is no reason to believe that the change of power will make any difference in these

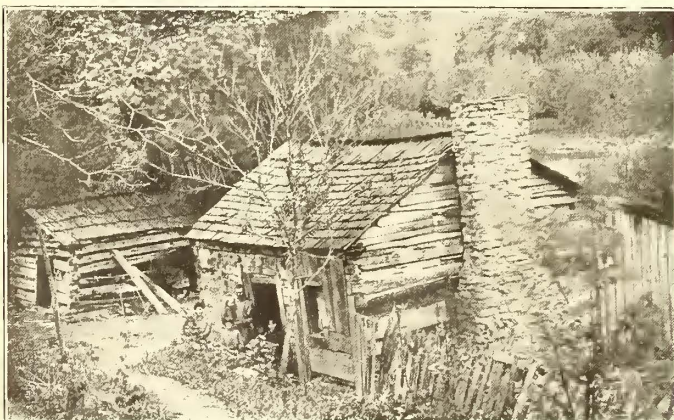


STEEL BRIDGE AT JUNCTION OF TWO DIVISIONS, SHOWING COMPLICATIONS OF THREE GAGES

map shows the route of the line with extensions, proposed and tributary lines.

INDUSTRIES AND POPULATION

The country traversed is largely agricultural. There are thousands of acres of fruit farms and immense quantities of tobacco are raised in this district. At Georgetown the company maintains a large tobacco warehouse, and at this point



PRIMITIVE HOME DIRECTLY UNDER LONG TRESTLE OF CINCINNATI, GEORGETOWN & PORTSMOUTH RAILWAY

millions of pounds of fine tobacco are handled. There are a number of fruit canneries, which do a very large business, and there are a large number of poultry farms, which furnish the road with much freight. At Bethel there is a shoe factory which employs 300 people and produces 10,000 pairs of shoes per week. Georgetown has a woolen mill, a pump factory and several flour mills. The town prides itself as having been the boyhood home of General U. S. Grant, and the house in which



STEEL TRESTLE 110 FT. ABOVE WATER

relations. Since the road has been changed to standard gage freight cars have been interchanged with other roads on the ordinary per diem arrangement. The company owns ten standard coal cars, ten flat cars, ten box cars, ten stock cars and ten coal cars. At present regular freight trains are operated by steam locomotives, but the company is having constructed two 50-ton electric locomotives. These are being designed to haul ten loaded cars up a 3 per cent grade. Freight

is handled at ordinary freight rates, and the forms and methods of billing are the same as are generally employed on steam roads.

In its express business the company has developed a number of novel features which may be studied to advantage by electric railway managers, for never was a territory better served by a transportation company. Express is handled on standard steam express cars, which at present are hauled as trailers, but the company has already arranged for the early delivery of three electric express and mail cars. The express cars are shunted to the Pennsylvania tracks at Carrel Street, and attached to the Pennsylvania suburban trains operating to the station in the heart of the city. At its city office, 333 Walnut Street, the company maintains an express station, and goods may be shipped from this point from the Pennsylvania station or from Carrel Street.

Express wagons are operated from the Walnut Street office, and collections and deliveries are made throughout the business district of Cincinnati free of charge. Agents are maintained at all towns and express messengers are on all express cars. The company collects notes, bills, and drafts for city merchants who ship goods into the country, or for country merchants who ship into the city. A charge is made for the collection, and the money is carried at rates shown in the express tariff. Money is also handled for the country banks and for the pay rolls of factories along the line. Milk is delivered to hotels, restaurants or depots, collections are made at stated periods and the money returned to the consignor.

Rates for express service are 25 per cent below those of ordinary express companies, and are determined by weight and bulk of packages rather than by class. The express tariff is shown in the accompanying table.

Formerly the company operated a telephone system, with public toll stations in all towns, but this has recently been leased to the City & Suburban Telegraph Association, of Cincinnati. The lines have been improved, and are now largely used by country people in ordering goods in Cincinnati. One line is retained by the company exclusively for despatching trains. Frequently patrons telephone to the company's office and direct the agent to purchase certain goods for them. Postal card blanks are supplied to patrons in the several towns, and when they have sent an order to the city merchant the company is notified to collect and deliver the goods.

It goes without saying that the most important change in the road has been in the passenger service. In place of two trains per day the company now operates cars every hour. Rates have been reduced about one-third, and are now about 2 cents a mile. The road traverses a beautiful scenic route, and travel on Sundays and holidays is particularly heavy, as a fare and a half rate for the round trip is made for these days. Tickets are sold to the center of the city in connection with the Pennsylvania suburban trains, or passengers can save 10 cents by taking the cars of the Cincinnati Traction Company at Carrel Street, thereby securing transfers to all parts of the city. Ultimately the passenger cars of the Cincinnati, Georgetown & Portsmouth will enter the city over this route. Low rates are made to commuters, and a 500-mile book, good for any member of a family within a year, is sold at \$8. The mileage must be signed by the person using it. For commuters a single form of ticket is used for all towns, the agent in selling the book punches through the entire pad the points between which the ticket is good, thereby saving the cost of a great variety of tickets. School tickets are also sold under this plan. They are good for forty-six rides during a month, and may be purchased by persons under 18 years of age, who must satisfy the agent, however, that they are actually attending school. Tickets are sold by Cincinnati, Georgetown & Portsmouth agents over all steam lines in that part of the country, and baggage is checked through over other roads. Stage routes connecting a number of hamlets and towns in Clermont, Brown and Adams Counties connect with Cincinnati, Georgetown & Portsmouth cars at Forestville, Hamlet, Bethel and Georgetown, and tickets are sold over these lines or packages to these points may be shipped in care of the company. Mail is also handled for a large number of towns throughout this district.

Near Olive Branch the company built a large lake to furnish a water supply for its power house, and it is planning to establish a summer resort at this point. The plans contemplate a large hotel and park. In addition to this there are parks and picnic grounds at Cedar Point, Cranes Grove, Berry's Grove and Amelia. These, in connection with the Coney Island resort on the Ohio, give a very large summer traffic.

ROLLING STOCK

The new passenger coaches purchased by the company, ten in number, were built by the St. Louis Car Company. They are 50 ft. over all, 8 ft. 10 ins. wide and 9 ft. 4 ins. from sill to roof. They are constructed for high-speed service, bottom framing reinforced with steel channels along side sills, and steel I-beams in center or intermediate sills. The sides are double sheathed with windows arranged in pairs, similar to Pullman construction; the lower sash is arranged to raise. Interior finish is white oak with ceiling of the same material. They are provided with smoking compartments and toilet room, and are heated by Smith hot-water heaters at the rear end. Pantasote curtains are used, and the seats are of the St. Louis Car Company's walk-over type with canvas-lined rattan. Cars are

TARIFF RATES

ON THE

CINCINNATI, GEORGETOWN & PORTSMOUTH RAILWAY

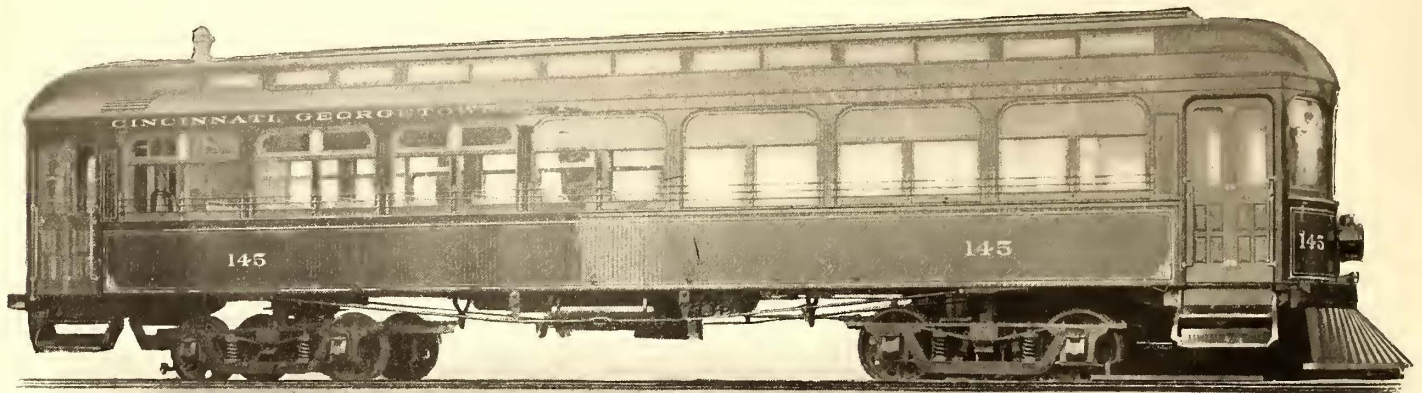
STATIONS.	M	L	Per 100 Lbs. of Freight								MONEY.									
			5 Lbs.	10 Lbs.	15 Lbs.	20 Lbs.	30 Lbs.	50 Lbs.	100 Lbs.	\$5.00	\$20.00	\$100.00	\$500.00							
EAST AND WEST BOUND.													CINTI. & COL. SAME.							
CINCINNATI.....																				
COLUMBIA.....5	20	20	25	25	25	25	30	35												
CALIFORNIA.....7	20	20	25	25	25	25	30	35	15	25	35	45								
MT. WASHINGTON.....10	25	20	25	25	25	25	30	35	15	25	35	45								
BRACHMANS.....10	20	20	25	25	25	25	30	35	15	25	35	45								
CEDAR POINT.....11	25	20	25	25	25	25	30	35	15	25	35	45								
FRUIT HILL.....12	25	20	25	25	25	25	30	35	15	25	35	45								
FORESTVILLE.....13	25	25	25	25	25	25	30	35	15	25	35	45								
CHERRY GROVE.....14	25	25	25	25	25	25	30	35	15	25	35	45								
MT. SUMMIT.....15	20	20	25	25	25	25	30	35	15	25	35	45								
CLOUGH PIKE.....14	25	25	25	25	25	25	30	35	15	25	35	45								
MT. CARMEL.....16	25	25	25	25	25	25	30	35	15	25	35	45								
KYLES.....17	20	25	25	25	25	25	30	35	15	25	35	45								
GLEN ESTE.....18	25	25	25	25	25	25	30	35	15	25	35	45								
WILLOWVILLE.....20	25	25	25	25	25	25	30	35	15	25	35	45								
OLIVE BRANCH.....20	25	25	25	25	25	25	30	35	15	25	35	45								
CENTERVILLE.....21	30	25	25	25	25	25	30	35	15	25	35	45								
JUDDS.....22	30	25	25	25	25	25	30	35	15	25	35	45								
AMELIA.....24	30	25	25	25	25	25	30	35	15	25	35	50								
HAMLET.....25	30	25	25	25	25	25	30	35	15	25	35	50								
WILTSEE.....27	30	25	25	25	25	25	30	35	15	25	35	50								
FAIR OAK.....28	30	25	25	25	25	25	30	35	15	25	35	50								
HULINGTON.....29	30	25	25	25	25	25	30	35	15	25	35	50								
SOUTH BANTAM.....30	30	25	25	25	25	25	30	35	15	25	35	50								
SWINGS.....31	30	25	25	25	25	25	30	35	15	25	35	50								
BETHEL.....33	30	25	25	25	25	25	30	35	15	25	35	50								
JERUSALEM.....36	40	25	25	25	25	25	30	35	15	25	35	50								
YANKEETOWN.....38	40	25	25	25	25	25	30	35	15	25	35	50								
HANESVILLE.....39	40	25	25	25	25	25	30	35	15	25	35	50								
NORTH PEESBURGH.....41	40	25	25	25	25	25	30	35	15	25	35	50								
GILLETS.....42	40	25	25	25	25	25	30	35	15	25	35	50								
WHITE OAK VALLEY.....44	40	25	25	25	25	25	30	35	15	25	35	50								
TRACTS.....45	40	25	25	25	25	25	30	35	15	25	35	50								
GEORGETOWN.....47	40	25	25	25	25	25	30	35	15	25	35	50								

Money, \$1,000.00 to \$5,000.00, charges will be 40 cents per thousand.
 Rate on Calves to Columbia, 40 cents each; to Cincinnati, 60 cents each.
 Rate on Berries to Columbia, from west of Amelia, 25 cents; same delivered in Cincinnati, 40 cents per stand.
 Rate on Milk from all stations to Columbia, 2 cents per gallon; to Cincinnati, 3 cents per gallon.
 To find rate between stations, take number of miles between the stations, then follow down the column of miles and take rate opposite.
 Agents must use judgment when billing bulky and light shipments to double or treble the weight in order to secure correct charges for space occupied.
 Live Stock crated must be charged double rates.
 Agents must invariably take receipts for all goods delivered.
 Empty will be returned free, but must be delivered at Pan Handle Baggage Room.

NOTICE.—Under the heading "East and West Bound" the figures at the left show rates between Columbia and all points, while those set to the right show rates between Cincinnati and all points.

vestibuled at both ends, and each platform is provided with double steps and folding drop floor. The bodies are mounted on St. Louis Car Company's 23-B high-speed trucks, M. C. B.

batteries of boilers of 500 hp each, there being two 250-hp Cahall boilers in each battery. They have 3000 sq. ft. of heating surface each, and built to run at 150 lbs. steam pressure. Each



NEW 50-FT. PASSENGER COACHES

type, equipped with four Westinghouse 56-motors. These cars stop only at regular stations, which, together with the fact that

battery has a steel stack, 6 ft. in diameter and 125 ft. tall. These are cross-braced and guyed to the roof of the building. The



MOUNT WASHINGTON SUB-STATION AND PASSENGER DEPOT

the road is entirely private right of way even through towns, permits of a very fast schedule.

Two express, mail and baggage cars and one combination baggage car are equipped in the same manner. The twelve broad-gage cars, six closed and six open, already mentioned, are of the latest double-truck city pattern, and were built by the Cincinnati Car Company. They are equipped with four 40-hp Westinghouse motors. All of the freight cars are equipped with Westinghouse air brakes and automatic couplers, M. C. B. type.

POWER HOUSE

The power house at Olive Branch is a fine brick structure, 151 ft. 10 ins. x 95 ft. 10 ins., with steel roof trusses and slate roofing on 2-in. tongued and grooved sheathing. The engine room measures 151 ft. 10 ins. x 45 ft. 6 ins., and the boiler room is of similar length, measuring from center to center of walls 48 ft. 6 ins. The boiler house is arranged for four

foundation is constructed for an additional battery of boilers, if required in the future. In the boiler room there are two Worthington boiler feed pumps, each of sufficient capacity for feeding 2000 hp of boilers. These are arranged to take water either from the hot well or from the lake. The water supply was obtained by building a dam across a natural ravine, through which flowed a small stream. The width of this lake will average about 300 ft. x 3000 ft. long, with an average depth of 14 ft., giving an ample and permanent supply of pure water, which requires no treatment. In the boiler room there is also one 2000-hp Stillwell-Bierce open type feed-water heater. The main header is of heavy wrought iron pipe, 16 ins. in diameter, with rolled steel flanges. Bends in the piping are all wide curves. Valves are of the Fairbanks type and are equipped with automatic direct-lift damper regulators. The steam piping and fittings are extra heavy.

Coal storage is arranged along one side of the boiler room, so that cars can be run on a trestle and dumped into bins



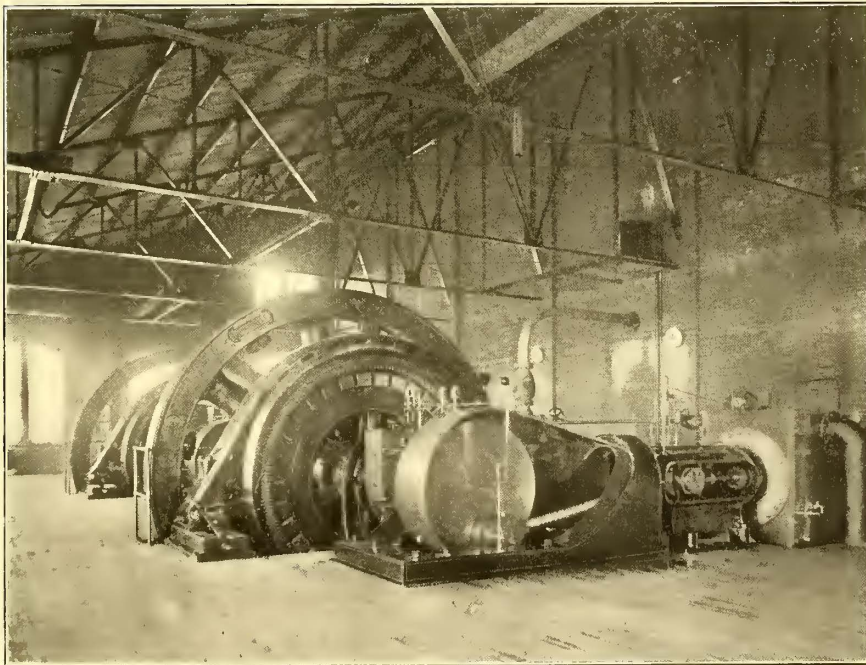
POWER HOUSE, POND AND PARK OF CINCINNATI, GEORGETOWN & PORTSMOUTH RY.

below, which have a capacity of 400 tons, facilitating handling.

The engine room floor is 8 ft. above that of the boiler room. Engine foundations are of stone with Portland cement mortar. There are foundations for three cross-compound engines, together with foundations for exciter engines, rotary converters and a switchboard. There is a space at one end of the engine room, measuring 14 ft. x 45 ft., partitioned off for the transformer room. At the opposite end of the engine room is a pump pit measuring 22 ft. x 45 ft., the floor of this pit being 14 ft. below the level of the engine room floor.

There are at present installed two cross-compound condensing Hamilton Corliss engines. The dimensions of cylinders are, high pressure, 24 ins., low pressure, 44 ins. x 42-in. stroke. They are intended to operate at 90 r. p. m., and are designed for a normal capacity of 1400 hp. Connected to these engines by shaft are Westinghouse 600 kw, 3000 alternations, 360-volt 25-cycle alternating-current generators of the revolving field type. There are also in the engine room one Harrisburg exciter engine, direct-connected to a 50-kw Westinghouse generator; also one Westinghouse motor-driven exciter set, consisting of one 75-hp, 360-volt three-phase motor, direct connected to a 50-kw, 110-volt generator. The engine-driven exciter set is used for starting, and when the generators are up to load it is shut down, and the motor-driven exciter set is thrown on. At this end of the power house there are also two 250-kw, 25-cycle, 360-alternating current, 600-volt direct-current rotary converters, together with a marble switchboard, carrying a complete equipment for the control of generators and rotary converters and having panels for the control of long-distance transmission circuits.

In the transformer room there are six 200-kw, 360-15,000-volt step-up transformers of the Westinghouse oil cooled type.



ENGINE ROOM IN MAIN POWER HOUSE

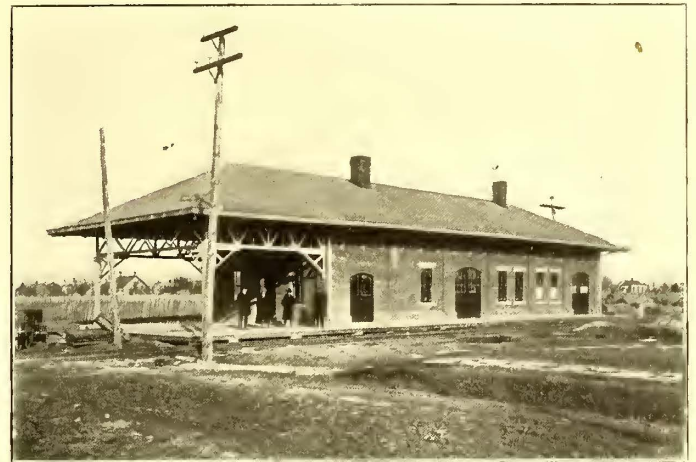
together with circuit breakers and lightning arresters for long-distance transmission.

The condensing apparatus, which is located in the basement, consists of one central condenser of sufficient capacity for the operation of three units, for which the station is designed. There is a Worthington compound pump having 22-in. suction and an auxiliary pump to draw air from the condensing system. In the basement there is also a white star oil filter system, furnished by the Pittsburg Gage & Supply Company. Automatic sight-feed oilers on the engines lubricate all bear-

ings, and the oil runs by gravity to the filter, from which it is then pumped to a supply tank in the engine room.

SUB-STATION EQUIPMENT

On the present line there are three sub-stations, located at Mt. Washington, Bethel and Sunshine. The stations at Mt. Washington and Bethel, which are illustrated herewith, supply



BETHEL SUB-STATION, PASSENGER AND FREIGHT HOUSE

current to the trolley line a distance of 5 miles each way. These stations are also used as freight and passenger depots.

The sub-station at Mt. Washington is of brick, 72 ft. x 30 ft., the freight room, which is located at one end, being 13 ft. long, and the passenger waiting room at the other end being the same size. The electrical apparatus is in the center room, and consists of two 250-kw, 360 alternating-current, 600-volt direct-connected 25-cycle Westinghouse rotary converters and three 200-kw, 360-15,000-volt step-down transformers, together with switchboard having alternating and direct-current panels, lightning arresters, choke coils, circuit breakers, etc. The sub-station at Bethel is of similar design, excepting that the waiting room is 17 ft. wide and the freight room 19 ft. wide, the over-all dimensions being 81 ft. The general architectural design of this station is superior to the other stations, as Bethel is the most important town on the line. There is a covered platform, 25 ft. wide, to serve as a waiting place in summer. The electrical equipment at this station consists of two 150-kw rotary converters and three 100-kw, 360-15,000-volt step-down transformers, together with switchboard and auxiliary apparatus. The Sunshine sub-station is similar in size to the sub-station at Mt. Washington, except that the waiting room is omitted, while the electrical equipment is similar to the apparatus installed at Bethel.

LINE CONSTRUCTION

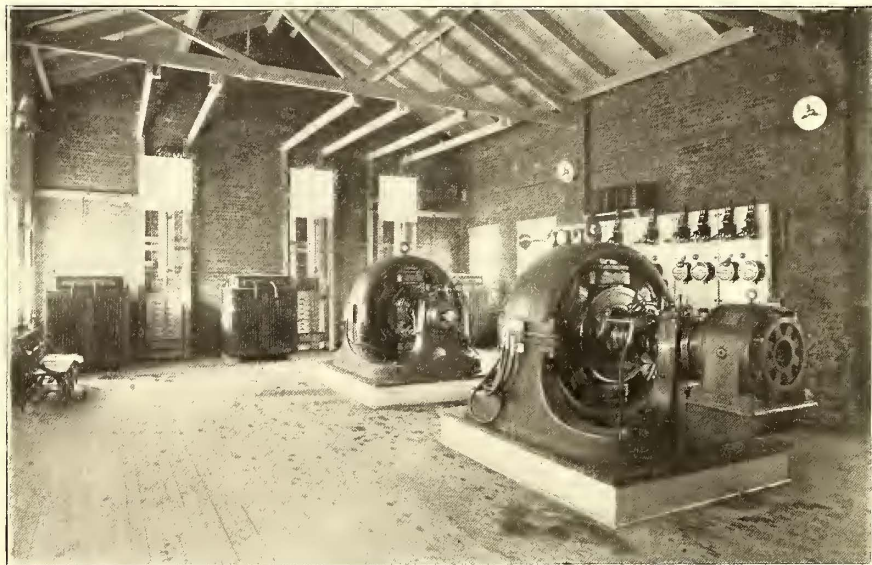
The line construction is of the span-wire type throughout. Two 000 trolley wires are supported by span wire from poles measuring 30 ft. on one side and 35 ft. on the other side of the track. The long-distance transmission wires, which are double-braided weather proof, are suspended on cross arms on 35-ft. poles. The arms are 4 ins. x 5 ins., and 1½-in. pins with hard wood maple braces are used. Insulators are of the Loche Victor 25,000-volt type. Provision is made in the construction of the transmission line westwardly from the power house for the installation of an additional three-phase circuit, to be used for the contemplated extension of the road. Both rails are

bonded with 0000 Protected rail-bonds under fish-plates. Both the S type, with 8-in. center, and the U type, with 4-in. center, are used. There are cross-bonds every 1000 ft., and all frog switches are bonded around with 0000 solid wire bonds.

The steam road had an ample car house and paint shop at the Carrel Street terminal, and the locomotive repair shop required but little change to make it suitable for the new work.

ORGANIZATION

Of course, it is altogether too early to attempt to estimate intelligently the increase in business and the saving in the



INTERIOR MOUNT WASHINGTON SUB-STATION

cost of operation that can be effected through frequent service, lower rates and the superior economy of electrical operation, and the month of December, 1902, cannot be accepted as a criterion for the future, particularly in view of the fact that the new system could not be expected to operate satisfactorily the first month. Nevertheless an interesting comparison can be made in the statements for December, 1900, when the road was a narrow-gage steam road; December, 1901, during which it was operated as a standard-gage steam road under a new and progressive management, and December, 1902, the first month for the electric service:

	Gross Earnings	Operating	Net
December, 1900.....	\$6,669	\$5,633	\$1,037
December, 1901.....	8,818	5,686	3,133
December, 1902 (estimated) ..	10,000	5,900	4,100

The company is capitalized at \$1,500,000, and there is a first mortgage bond issue of \$1,000,000, which covers also the proposed extension to West Union, less \$15,500 to the mile, a very low figure compared with many electric roads. The officers are: A. W. Comstock, Detroit, president; W. R. Todd, Cincinnati, vice-president; R. E. Field, Cincinnati, secretary-treasurer, and E. M. Stevens, general superintendent. These, with Judge John S. Conner, F. F. Dinsmore and Samuel Tappin, Cincinnati, and W. J. Thompson, Georgetown, constitute the directors. General Superintendent Stevens took charge the first of the year. He was formerly with the Westinghouse Electric & Manufacturing Company, and had charge of the erecting of the electrical equipment of the road. He is a practical electrical engineer and has had much experience in the building and operation of electric roads. The contractors for the reconstruction of the road were the Tennis Railway Equipment Company, of Cincinnati. The construction and installation of the electrical equipment were under the personal supervision of Graham Bright, who furnished much of the technical information presented herewith.

SURFACE RAILWAY OPERATION IN MANHATTAN*

These complaints, like others which have recently come before this Board from the Greater New York and have engrossed its attention to the exclusion of nearly all other business during the last eight weeks, relate chiefly to the overcrowding of street surface railroad cars, particularly in the Borough of Manhattan, and incidentally to the lack of sufficient car service in the Borough of the Bronx. In the endeavor to work out a plan for the general improvement of this service the Board gave two public hearings at the City Hall, in the Borough of Manhattan, in addition to which it examined at length the chief operating officers of the company and the company's traffic statistics and diagrams, besides making careful personal study of the situation by the members of the Board and its regular as well as special experts and inspectors.

It is unnecessary here to describe the situation beyond saying that all of the available street car facilities in the Greater New York, surface and elevated are inadequate for the reasonable comfort and rapid transportation of the people at the times when they most need to be transported, namely, during the hours between 7 a. m. and 10 a. m. and 5 p. m. and 7 p. m. This inability to handle traffic arises from the fact that practically the whole movement, in the morning hours, is from north to south, and in the evening from south to north, and that a large proportion of the whole number of passengers ride for long distances.

While these lines of overburdened cars are moving one way there is a corresponding number of empty or only half-filled cars moving in the opposite direction. Every north and south thoroughfare in Manhattan, except Fifth Avenue, is already occupied by a surface or an elevated railway or by both. New lines on the surface are out of consideration—there is no place for them. The only ways open to add to the trackage are by building several lines of underground railway and by making the elevated railway a two-story structure. These constructions would occupy three to five years for completion if begun now.

But what the public urgently need and should have, if obtainable, is immediate relief. It is not the purpose or the duty of this Board to deal in vague phrases or to mislead the public. The Board has been harshly and unjustly criticised, and without limitation, but not in a single instance has any one of these self-constituted judges made a practical suggestion toward the solution of the problem. The seemingly conclusive outcry, "Put on more cars," is absolutely childish in the face of complexities such as surround this case. If "putting on more cars" would meet the needs the Board would have solved the difficulty before the critics knew there was a difficulty. The real difficulty is to move the cars after they are on the tracks. Therefore, the Board expresses the opinion, frankly, that no measure of immediate relief during the rush hours is at present obtainable. The very first and largest measure of immediate relief that can be obtained is that which can be derived from the regulation of the movement of independent vehicles in the streets. Of course, it is not to be assumed that the vast private and commercial vehicular traffic of New York can, or must, or should be unduly hindered, or impeded or its rights invaded. It is this great activity of commerce which gives the city its imperial importance and which causes this very overcrowding of all its

*Report and recommendations of the Board of Railroad Commissioners of the State of New York, dated Feb. 11, 1903, in the matter of the Merchants' Association, of New York, and others against the Interurban Street Railway Company and the Union Railway Company, of New York.

traffic arteries. These intolerable local traffic conditions of to-day are due to the unexampled business activity of the whole country, coming down directly upon the stagnant, lethargic attitude of the municipal authorities for more than twenty years past. Think of it! A single bridge connects the former cities of New York and Brooklyn, and that one completed and put in use twenty years ago next May. And even that one was begun and carried far along in construction by private enterprise. The building of bridges or tunnels across the East River would make the landing and detrainment of large masses of people on Manhattan Island, at various points on its length, an easy matter. The building of new north and south lines of conveyance, even where practicable, will only add to the wearisome long distance riding of the night and morning. The added capacity of the new underground railway will be wholly lost sight of, or neutralized, by the growth of traffic within, probably, three years after it is opened for business. It is the judgment of this Board that at least two new lines of underground railway, wholly in Manhattan and The Bronx, and three new bridges or tunnels between Manhattan and the Boroughs of Brooklyn and Queens, should be at once begun. Unless some comprehensive work along these lines is forthwith undertaken and carried to completion with despatch, the city will find itself beset by stagnated traffic difficulties and dangers which will completely overshadow even the hard conditions which are to-day regarded as intolerable.

And it is pertinent for the Board right here to point out the place at which these increasingly distressing and dangerous conditions will be first felt, to wit: in the contracted and obstructed little Tryon Row plaza at the Manhattan end of the Brooklyn Bridge. All of the bridge traffic from Brooklyn debouches into this irregular space, as well as the business of the terminals of three active through lines and three local lines of surface cars and the City Hall station, itself a terminal of the Manhattan Elevated Railway. To this now seething mass of traffic, in a space seriously obstructed by iron columns of the elevated railway platform and the approach to the bridge, will be emptied and drawn to and fro every day the presumably large number of passengers using this terminal of the underground railway. This road is to have one of its principal stations alongside this little plaza. There is no speculation about estimating the result. It will make that which is already bad dangerously worse. And this remedy, though costly, is easy and just as obvious as the danger. It is to require the city of New York, the Manhattan Railway Company, the Interurban (Metropolitan) Street Railway Company and the Interborough (underground) Rapid Transit Company to purchase jointly the entire block of property fronting on Tryon Row, Park Row, Chambers Street and Center Street, and the small triangle bounded by Park Row and North William Street, and convert the space into a system of terminal elevated, surface and subterranean loops for the elevated, the surface and the underground railways. At the same time a freer movement would be afforded for vehicles by opening the way for clear entrance into the new Elm Street extension and other thoroughfares. This expense might very properly be shared by the city as the owner of the Brooklyn Bridge. The city has been for many years the owner of several parcels of the realty comprised in the Tryon Row, or "Staats Zeitung" block.

And while this branch of the situation is presented it is not inopportune for this Board to say that everything bearing upon it that has been done by the city government for many years has been tardily undertaken and slothfully carried out. Improvement at and on the bridge has been dickered over in matters costing only paltry sums; the Elm Street widening has lagged for years and still lags; there is no tunnel as yet and but one bridge between Manhattan and Long Island; departments of the city government only a few years ago systematically attacked the elevated railway company, tried to show that

the structure was rotten and worn out, endeavored to break down the company's credit and play with its stock in Wall Street, and made every possible attempt to deprive the company of the use of its tracks in the Battery Park. And so with the surface lines. Every attempt to lay a new track or make a new connection was denounced as "a grab;" the city has paid the full cost of the widening of Fifty-Ninth Street, between Fifth Avenue and Eighth Avenue, as it will also do for the widening of Eighth Avenue, on Central Park West, and for the widening of Fifty-Ninth Street east of Fifth Avenue, notwithstanding the street railway company was ready and offered to pay the whole expense. And it should be borne in mind that the company did not seek to lay down any new tracks in these widened thoroughfares, but only to help a freer car movement by giving greater room for all other vehicles. The Board might multiply examples and give some very specific instances to show that there has been a petty, demagogic policy persistently pursued against all interurban railway enterprises in New York city, probably instigated by and dating, of course, from the Broadway Railroad scandal of 1884, and that the tendency has been to treat the corporations as the public enemy. To this very combination of circumstances is in some degree due the difficulties and the backwardness and the incapacity of the service to-day.

THE COMPLAINTS CONSIDERED

Incidental to the general complaint of overcrowding or insufficient cars the Merchants' Association submitted some fourteen other subjects for remedy. Of these, in a consultation had between this Board and the Association's committee of engineers, the Association relinquished six of its demands as either impractical or undesirable, and has made public its official report to that effect, but expressing itself as in favor of putting the other eight recommendations into operation. These eight affirmative conclusions relate to the extension of the Eighty-Sixth Street crosstown line; the recognized inadequacy of the service and the unclean and badly-lighted cars used on the downtown crosstown lines; the need of shelter at exposed intersecting or transfer points in The Bronx Borough; the removal of unused car tracks from the pavements, under certain conditions; the employment of two conductors, or a conductor and a collector on each car; the more distinct marking of cars to indicate their routes; the proper municipal regulation of street traffic and the removal of obstructions; the enforcement of proper sanitary regulations and improved ventilation in cars.

The Board is in accord with the Association on each of these recommendations, except that requiring two conductors on each car, and will issue explicit directions to the Interurban Street Railway Company and the Union Railway Company, respectively, in relation thereto as the subjects affect each. On the question of two conductors for each car, the Board does not believe that it would tend to check overcrowding of the cars or better the car movement, which are the two chief aims in the present effort to find relief. So far as the exemption of passengers from injury is concerned the facts of record show that the percentage of casualties arising from causes which a second conductor might avert is very small, and in all other than rush hours the second conductor on a car would be a superfluity and a nuisance. Among the subjects relinquished by the Merchants' Association, and not further considered here, are the proposed diversion of the Broadway and Sixth Avenue cars, each to the lines of the other, at Thirty-Fourth Street; the forbidding of passengers standing between cross-seats in open cars; the proposed vestibuling of the surface cars; the diversion of Lexington Avenue cars from Broadway at Fourteenth Street, and of Broadway cars east and west on Fifty-Ninth Street, and the extension of the transfer system. The reasons adverse to these propositions were apparent to this Board, and were expressed by it from the beginning, and the Association has yielded only

to the force of these reasons, as presented and confirmed by its own experts.

SOME LIMITED EARLY RELIEF

Among the recommendations for improvement of the surface car service the Board places first those which promise the earliest forms of relief available and in which the city can take an active part.

The Board respectfully recommends and urges upon the municipal authorities of New York city:

The completion of the Elm Street widening improvement and the opening of that street to general traffic at once.

The formulation, adoption and enforcement of a code of regulations for vehicular traffic in the streets. This recommendation is deemed the most important because it is the source from which the largest and earliest measure of immediate relief can be obtained. The Board has assurances from the city authorities that they will co-operate in their proper departments for the prompt application of this remedy.

It is probable that about 25 per cent more cars can be operated on the congested lines during both rush and non-rush hours of the day time under proper traffic regulation and when the street conditions are made such as to permit this addition of cars, the Board will instantly require them to be put into service. There has been found a great discrepancy in the figures collected to show the actual maximum movement of cars across the complex intersections at Broadway, Sixth Avenue and Thirty-Fourth Street. The company's expert gave it as his opinion that 900 cars passing per hour was the maximum "with a perfectly free, unobstructed movement," and that even under existing conditions 600 car to 700 car movements an hour were feasible. Numerous tallies at these crossings, taken for whole days and for rush hours, by inspectors for this Board, failed to show more than about 625 car movements per hour, and these were during the afternoon "rush." The facts of the situation show that the vehicular obstructions on Broadway, especially below Fourteenth Street, are greatest between about 9:30 a. m. and 5:00 p. m.—those being the hours of largest commercial activity. And it is on this part of Broadway that the car movement is most irregular and sluggish. It is apparent that with recent unsystematized police improvement in the regulation of wagon traffic, conditions have been somewhat bettered as to the rapid, or free, movement of cars, and it appears to this Board also that still further improvement may be had along the same lines. It is not possible to-day to formulate an enforceable order to the company, but so soon as traffic regulations are put into effect the Board will require all the cars that can be operated to be put into service. To this end the Board recommends that the Interurban Street Railway Company add to its present main line equipment not less than 250 closed cars of the new standard size and pattern, exclusive of the 175 open cars now under contract for construction. The company has ample car equipment and electrical power capacity to move traffic considerably in excess of the maximum permitted by present conditions, but with improved conditions and the assumed normal growth of population, the Board believes that this addition to equipment should be made at the earliest practicable day to provide for the public necessities.

The Board invokes also the energetic action of the municipal authorities toward the removal of obstructions and encumbrances placed in the streets and public places by contractors, including those which have for more than two years in some instances been maintained by the contractors engaged in building the underground railway. Great as is the need of this improvement there does not seem to be good reason for allowing both sides of leading thoroughfares to remain open for years, blocking not only the ordinary traffic but practically blockading merchants in their stores and adding the immense carting business of the subway contractors themselves to the constructed passageways. If other underground railways are to be built

in Manhattan this greatest of all the attendant evils and inconveniences should be guarded against zealously. If experience is worth anything something should be learned from this present work to aid in preventing or avoiding similar public nuisances and encroachments on every man's right. Every resident of and visitor to Manhattan for two years past has suffered from this cause. One of the most frequent and prolonged causes of delay has arisen from the sinking of truck wheels through the worn or imperfect floor planking laid over the subway excavations. This is a matter also worthy of consideration and prevention by the city authorities having charge of streets and highways.

A further subject which is recommended by the Board to the city authorities and to the Interurban Street Railway Company is the making of an agreement between them for the removal of the rails from car tracks not now in use. The power to force the relinquishment of these tracks may be in doubt, and in any event long litigation might ensue; but what is urgently needed is public relief in every available form. If an agreement, a contract, be made by which the city binds itself to permit the rails to be relaid whenever the company proposes to relay them and to run car lines over them, no harm would result to the company's interests, and the streets might in the interval be repaved and made serviceable, as they are not at present, for ordinary traffic. There are, according to reports made to this Board, nearly $19\frac{3}{4}$ miles of unused single tracks in Manhattan, situated on fifty-nine different streets and avenues, and varying in length from 200 ft. to $2\frac{3}{4}$ miles, this last item being on Amsterdam Avenue.

The Board is considering the advisability of a regulation that, during evening rush hours only, all northbound cars shall, after passing Eighth Street, stop only at the intersections of the odd numbered streets, and that during morning rush hours all southbound cars shall stop only at the even numbered streets down to and including Eighth Street. This plan will reduce the number of stops by one-half and give longer free running, thus greatly facilitating the car movement. The transverse street blocks do not average more than 250 ft., and passengers would not be greatly inconvenienced by such a walk, which would be the maximum after leaving the cars.

If deemed necessary such a recommendation will be hereafter issued.

The Board suggests that whenever it can be done without manifest disadvantage the public use the side lines, as, for example, Second Avenue and Third Avenue on the east, and Eighth Avenue and Ninth Avenue on the west, instead of taking transfers to reach the congested, because more popular, center lines, such as Broadway, Madison Avenue and Sixth Avenue.

Among means for permanent betterment of the conditions the Board recommends for consideration: 1. The feasibility of construction of a tunnel, running from south to north, between Thirty-Second Street and Thirty-Fifth Street, on the line of the open plots of ground known as Greeley Square and Herald Square, in which subway the tracks of the Broadway line of surface cars may be carried beneath the crossing of the Sixth Avenue and Thirty-Fourth Street lines of cars. The Board has prepared a preliminary plan showing the advantage of this method of relieving the congestion at this now very much complicated crossing. It provides for taking the tracks entirely off from Broadway, between Thirty-Second Street and Thirty-Fifth Street, abolishing the present long "Broadway skew" intersections with the Sixth Avenue tracks and with the Thirty-Fourth Street tracks, and will increase the free carriage space and leave only a simple right-angled crossing of the Sixth Avenue and Thirty-Fourth Street lines. The plan also provides for a subway station and a safe subway crossing for foot passengers in a location that will, as soon as the new Pennsylvania Railroad station is completed, be by far the most congested and

dangerous crossing in the city. 2. The construction at the Manhattan end of the Brooklyn Bridge of an open plaza on the general lines mentioned in the earlier reference made herein to this subject. The early and definite determination of a plan for the improvement of this plaza is regarded by the Board as an imperative necessity.

The determination by the city authorities and the early completion of the plaza and approaches for the new Williamsburg Bridge. This matter will fix definitely the time within which the Interurban Street Railway Company can begin, as well as the character of, the work of electrifying its most southerly crosstown lines connecting with the great East Side. This large neighborhood, densely populated and industrially very active, is now mainly dependent upon lines of dilapidated horse cars, heated by old-fashioned stoves and badly lighted by oil lamps. No material improvement is practicable until the company is able to learn how and where and when it may connect with this bridge. In the meantime the Board recommends that particular attention be paid to the cleaning and repainting of these cars and that some betterment be made in the style of lamps used for lighting them.

The extension, as soon as practicable, of the Eighty-Sixth Street crosstown line through West Eighty-Sixth Street, and the electrification of this line (now operated as a horse railroad) from east to west. The co-operation of the Legislature and the city authorities is respectfully recommended to this end for the convenience of the general public living east and west of Central Park.

The earliest practicable completion by the company of the connection of the Second Avenue line at Grand Street and the Bowery with the tracks of the Third Avenue line, so as to give a more direct and shorter connection with the Brooklyn Bridge. This will give needed relief to Center Street and will enable all Second Avenue cars to run to Broadway at the postoffice. The special steel work for this connection was long since contracted for, but the delivery has been unavoidably delayed.

With respect to the cleaning and ventilation of cars: The Board has investigated the methods employed by the company in the cleaning of its electric cars and finds that due attention is given to the subject. The Health Commissioner has caused proper inspection to be made and has made recommendations accordingly. This Board has examined the methods of ventilation and finds wide differences of opinion as well as of results. It is a matter of great difficulty to both heat and ventilate a street car at the same time, to suit the desires of a number of passengers with widely varying wishes and in various degrees of health or debility. The subject properly belongs to the health authorities. The Board will make a further report, with especial reference to the Borough of the Bronx, in the near future.

Representatives of the Merchants' Association of New York visited Albany Tuesday and urged upon the Governor a recommendation that the membership of the State Board of Railroad Commissioners be increased from three to five, the two extra members to be practical engineers living in New York City. The suggestion was also made to increase the powers of the Board so that it could enforce its orders. At present the Board has power only to make recommendations to the railroad corporations.

The Merchants' Association is not in favor of the plan proposed by the West Side Association for a separate railroad commission for New York City.

The Merchants' Association has asked for the appointment of Mr. Briukerhoff, as an inspector, to see to it that the Board's recommendations regarding the betterment of transportation facilities on the New York lines were carried out. The Board is undecided as to whether it has power to make such an appointment.

PRESENT PRACTICE IN INTERURBAN ELECTRIC RAILROADING

BY W. W. BRIGDEN

The rapid advances made by interurban railways during the last few years has been marvelous, nevertheless there is little room for doubt that most of it could have been much better. Many steam railroad engineers will remember the days of the narrow-gage railroad when our friends, the promoters, told us that railway lines could be built for one-half to two-thirds the cost of those of standard gage, if we would only let them reduce the gage from standard to 3 ft. or 3 ft. 6 ins. It was not exactly clear how it was possible to make such a wonderful saving in construction by a reduction in the width of cuts and fills and in lengths of ties of from 1 ft. to 1½ ft., but it was accepted by many of the profession and very generally by the public. Clear-headed engineers of experience denounced the whole matter as a fallacy that would soon be exposed, but this had little or no effect on those who controlled many railroad lines, and narrow-gage construction was carried on at nearly the same cost as standard gage. Then, after a few years, it became necessary to interchange business with other lines, to widen the grading and put the narrow-gage lines to standard gage at enormous expense for construction, delays in traffic and change of rolling stock.

The constructors of interurban railways often follow in the lines of the narrow-gage projectors. An extremely narrow right of way is purchased, say 20 ft. wide, and the track is made to fit it, or worse, the line is laid largely along public highways. Sharp curves and heavy grades are introduced at many points to save present expense. But these will either handicap the road so that it can never do a first-class business or will require the reducing of curves and grades to meet the necessities of traffic, at a cost far beyond what it would have been if done in the beginning. It is said that in some cases alignment has been altered to avoid a tree. Ask any old trainmen what would become of a train of twenty or thirty freight cars, such as are run every day on steam roads, if it was pulled at 15 miles to 30 miles per hour along a road like this, with a descending 10 per cent grade 500 ft. long, followed immediately by an ascending one of the same slope, with occasionally a curve, of say 300 ft. radius, thrown in. The crew would have to be lashed to the cars or lie down and hold on for dear life, and the train would separate into sections that would strongly dispute with each other for the right of track, and the weakest would have to give way.

The matter of right of way is not always the fault of interurban officials, as in many States there is as yet no right of eminent domain for street railway lines. But in many cases land could be obtained of sufficient width if the railway company was willing to pay the price. Some few lines, constructed by people with abundant capital and under the supervision of steam railroad civil engineers of experience, have followed very closely the lines of the best steam railroad construction, and these roads will be found greatly superior to those constructed in the ordinary manner.

In many cases the contract for the construction of an interurban line is let to a construction company with little or no restrictions beyond the general manner in which the line shall be built. The nominal company has little or no money or means of obtaining money, and the construction company owns and controls everything, sometimes even to taking the line at the end of its construction. The construction company often pays and controls the engineer, although he may be appointed by the company. This, of course, is a state of affairs that can only result in disaster to the final owners of the road.

When we are aware that the increase in a number of our Northern States has been in the last year from 40 per cent to

100 per cent in the number of cars used, and that the number of miles of track has nearly kept pace with the number of cars, we are able to form some idea of the rapidity with which we are increasing our electric railway system. It seems that there is but one thing that will stop this boom, namely, the coming of the usual panic following great expansion like the present. This is sure to come, and when it does, nine-tenths of the street railway projects will fail of materialization until better times come again. Still it does not seem that capitalists should be discouraged when we consider the prosperity which has been enjoyed by most of these lines.

As soon as electric railways can make an average of from 20 miles to 30 miles per hour, and a number of them are already doing this, there should be a large diversion of the traffic due to the lower rates and the convenience of the electric lines. The distance, for example, from Battle Creek, Mich., to Detroit is about 120 miles. The time by the Michigan Central Railroad is from three hours to four hours and twenty minutes, but one train makes the trip in less than four hours. A good interurban line should be able to make this trip in about six hours. It is probable this time could be reduced by the electric railways after some practical experience, but should a difference of two hours remain it is quite evident that many people will travel by the interurban line, as the saving in fare would be about 60 cents, and this would pay for the extra time of nine-tenths of those who would desire to make the trip.

The first difficulty will be the passage through the larger cities and towns, where the speed must be reduced because of local regulations and the slow speed of local cars. Whether this difficulty can be remedied is more than the writer can say. In Battle Creek it would be almost impossible to construct a line passing through streets in the central portion of the city on which high speeds could be maintained. This would not be equally true in cities with uniformly parallel streets, but even there it would be no easy task, and it does not seem probable that anything like steam railroad speed could be reached. If lines were constructed not passing near the centers of cities it is probable that a large portion of the traffic in the cities in question would be lost or endangered by the inconvenience attending getting to and from cars. On the present interurban line from Detroit to Jackson the average speed exceeds 25 miles per hour between terminal city limits, and this, no doubt, can be increased somewhat. That the difficulties mentioned will ultimately be overcome is the belief of the writer, and the electric railway will equal the steam railway in speed.

As steam engines, boilers, generators, motors and cars are largely provided by great corporations whose reputations are at stake, and they have the knowledge necessary to bring about good results in these lines of electric railway construction, there is less opportunity to criticize than in those that have been mentioned.

SUBWAY CONSTRUCTION WITHOUT DISTURBING BUILDING FOUNDATIONS

The question of subway construction is now being actively discussed in Chicago, and, as stated before in these columns, the Washburn-Alexander syndicate, which is closely allied with the George A. Fuller Company, has already made some offers to the city. John Meiggs Ewen, consulting engineer of the George A. Fuller Company, appeared before a Council committee meeting recently in Chicago, and outlined plans whereby subway construction could be carried on in Chicago without danger of interfering with the foundation of buildings. Some difficulty of this kind has been experienced with the New York subway construction. In Chicago, where the soil is all clay, and of a kind that is noted for its creeping qualities, one of the chief difficulties to be avoided in subway construction would be the bulging out of the clay from under building foundations

should the street be excavated to a sufficient depth to build a subway without in some way bracing against this soil pressure. The plan outlined by Mr. Ewen is first to excavate trenches into which the side supporting columns of the subway will be placed. As fast as these trenches are dug jack-screw braces would be put in to prevent the trench from caving in or being closed by the soil pressure from the building foundations. After the side columns are put in and the roof girders are put across the street the concrete arch walls can be put in between the steel frame, and the steel and concrete structure will take the earth pressure from that time on. The excavation of the subway can then proceed.

TELEPHONES IN ELECTRIC RAILWAY SERVICE

BY FRANCIS G. DANIELL

The use of the telephone is becoming so universal in railway work that a few words descriptive of some of the methods followed may be of interest. There are so many different conditions that a special layout is necessary in nearly every case in order to get the best results.

Where there is a good local exchange in the territory to be covered it is usually better for the railway company to lease the right to use the telephone wires, rather than put up its own system, provided, of course, that satisfactory arrangements can be made. By doing this, even at what seems to be a large rental, the railway company is assured of a service maintained by men who are trained in their particular branch of business. Moreover, at times of storms the company is not obliged to depend upon its own men to make repairs. At such times the railway men are sure to have their hands full, and these extra strenuous periods are just those when the company wants a good telephone service if at all.

Another advantage in doing business with the local company is that the railway company has the benefit of the telephone company's underground conduits where they exist, which is an additional insurance against interruptions during bad weather.

All telephones which are not placed in an office or some place where they can be watched should be put in a box and locked. A good plan is to put a numbered key in each car in a small box under glass, which has to be broken to remove the key. This makes it possible to know every time a telephone is used, as the key is returned in an envelope with the conductor's report, giving the reason for its use. Keeping close watch of the key and of its use is very necessary, as instances have been known where keys have been sold to persons living near a pole-box, who thus got telephone service very cheaply, and by giving the name of some subscriber on the line have obtained long-distance connections at the expense of the railway company.

In the case of a large city railway system operating cars on a very short headway, it is desirable to have a telephone at every important point and all on circuits run direct to a switchboard in the main office of the railway company, in charge of a private operator. It is needless to say that there should be several mains connecting the switchboard in the company's office with the main switchboard in the central exchange. This will prevent delays which may be very serious during construction or in case of accident.

On a road in a moderate sized city, where the lines radiate from a common center, a very good plan is to have a private switchboard connected directly with the principal offices, car houses, parks, etc., and also a few circuits to the telephone central. The less important or more distant points on the railway system can then have pole-boxes connected to the regular telephone circuits. This plan saves the expense of an entire system of private lines and gives very good satisfaction, as on the smaller lines there is not much use for the telephones ex-

cept at night, and then the residences do not use the wires to any great extent. On a system which is pretty well scattered the last method answers very well, i. e., to have all the telephones on poles and bridged on the local circuits. This saves all expense of an operator and switchboard and gives an all-night service.

On any except the very largest systems it is a good plan to arrange to plug the private switchboard circuits onto the local company's board after the railway company's office closes for the night. This saves the expense of a night operator.

In deciding upon the system to be adopted the ratio of telephones to the number of cars should be considered.

On a large road using the system just described 125 cars were operated regularly, and forty pole-boxes besides the office telephones covered the needs of the system in good shape, as the road was nearly all double track. On the other hand, a 55-mile interurban railway, which requires only eight trains to give a half-hourly service, would have to have thirty pole-box telephones in order to have one every 2 miles. A better plan on such a system would be to use a portable set in each car, and have leads at certain poles into a box where the set could be plugged. This could be installed at only about one-third the expense of the pole-box plan, and would give a connection every half mile instead of every 2 miles. Where pole-boxes are used they should be so arranged that closing the door opens the circuit and prevents all possibility of lightning entering the instrument. In regard to contracts with the telephone company a great many different plans may be followed, based upon what is furnished. Some railway companies wish to own all the wires and fixtures except the instruments, others want to own all aerial lines and have the telephone company own the underground conductors; others prefer to rent the entire equipment from the telephone company.

The usual plan is to pay the telephone company a rental based on its regular rates for such service, that is, so much per instrument and so much per foot of conductor or conduit where the latter are used, and to allow the telephone company all necessary transportation for its employees when on company business. The rental is usually one-half the regular rates for the apparatus furnished.

MAKING UP LOST TIME

In order to maintain a prompt schedule and have cars always leave terminals on time the Elgin, Aurora & Southern Traction Company makes it a practice to keep a car in readiness at its car houses, both at Elgin and Aurora, so that in case a car is delayed on a long run between these two points a car can be sent out from either end on the regular schedule time to meet the delayed car and exchange passengers at some point on the road. This enables the belated car to get back on its regular time, and avoids delay to passengers. Of course, the telephone despatching system is in use, so that terminals can be notified when a car is behind time far enough to justify sending out the reserve car. Men having other duties around the car houses serve as conductors and motormen on the reserve cars.

GENERAL ELECTRIC-STANLEY DEAL

The latest reports indicate that the much discussed deal between the General Electric and Stanley interests has at last been closed, but that it does not include the Electric Storage Battery Company, as was expected by some people, and even announced in the daily papers. The price for the Stanley property is understood to be somewhere in the vicinity of \$120-\$125 per share.

PROPOSED RAILROAD BOARD FOR NEW YORK

The West Side Citizens' Transit Reform Committee of One Hundred has submitted a bill at Albany providing for transferring to a local board the supervision of railways in New York City and all powers now vested in the State Board of Railroad Commissioners over local traction companies. The committee has also issued an address to the public, advocating the passage of this bill, and asking for the support of patrons of the transportation companies who are dissatisfied with present conditions. The address says:

The present intolerable conditions of overcrowding on the surface and elevated railroads of this city have made it painfully evident that the State Railroad Commission is incompetent to deal with the conditions of municipal transportation. The State board cannot, and does not, devote the necessary time and attention to transportation operations and facilities in New York City. The transportation problem of Greater New York is so vast and so complicated that no commission can deal with it as a part only of its duties.

The commission ought to have foreseen and devised plans to prevent the occurrence of present conditions. It is only too clear that it did nothing of the kind, and that it is not qualified to deal with the problem as now presented. We do not mean to arraign the commission as such, but only in its relation to the problem of railroad transportation in the city of New York. The facts are the strongest arraignment of the present system. We have been crushed and herded like cattle in pens; our wives and daughters have been insulted; our friends and neighbors have been physically injured.

It is an absolute necessity that the power of controlling interurban railroad facilities be placed in the hands of local officers, cognizant of the conditions and free to give the necessary time and study to the questions of present remedy and future betterment.

The same body has also filed with the Attorney-General a complaint against the Manhattan Company, and has petitioned that officer to proceed against the corporation for alleged violation of the charter provisions. The committee which formulated the report quotes sections of the elevated road's charter hitherto undiscovered, which, if they are correctly stated, point the way for the Attorney-General to act. The first of the two sections particularly specified requires that the road make ample provision for sheltering its passengers while they wait for trains, the other section says that each passenger is entitled to a seat, except in four specified hours. The charter, according to the committee, says that where a passenger can't get a seat after demanding it "such passenger shall be entitled to ride free."

Regarding station and platform accommodations the committee cites the conditions at Rector Street, which it is acknowledged, however, cannot be taken as a fair example:

The condition of affairs at Rector Street is well known. There is no cover over the station platform, except for a few feet. There is no adequate accommodation for passengers, and the crowd upon the platform is such that it is almost impossible to board a train during the rush hours without being crushed. At certain hours of the day no lady can board trains at this and other stations without being exposed to disagreeable physical contact with other persons.

There are four tracks at that point, and the road has condemned no property for a station, although they are authorized by law so to do, and the rush of passengers for express trains often so blocks the intending passenger of an accommodation train that he is compelled to look over the heads of a crowd of several hundred people while his train comes into the station and leaves it without giving him an opportunity to board it, although there may be room and even empty seats on his train.

The report also charges that the elevated road has erected stations in the side streets, instead of acquiring the station space needed by condemning property, and declares that this is illegal. The committee petitions the Attorney-General to begin an action to annul the road's charter, or by instituting proceedings by mandamus to compel the road to perform its duties as required by law. The committee declares it will seek legal redress itself if the Attorney-General does not act.

WOODEN BEAMS AND COLUMNS IN STREET RAILWAY BRIDGE CONSTRUCTION

BY H. B. ANDREWS

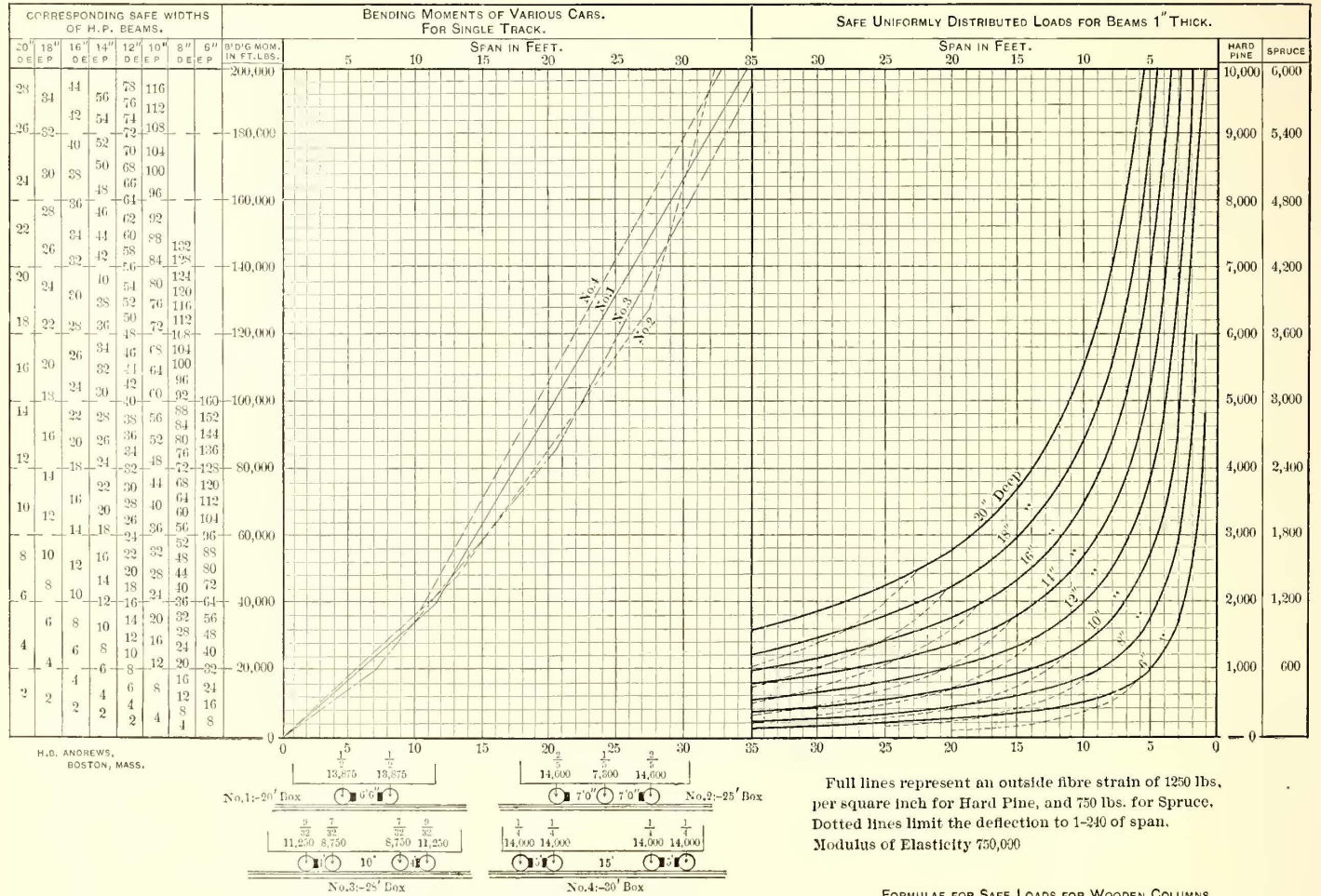
In street railway construction, or in connection with its maintenance, it is very often necessary to span temporary excavations, to build new, and strengthen existing bridges and to meet other conditions which may arise requiring temporary or permanent floor timbering.

each column will show the proper width for the corresponding depth at the top of the column.

If in any case on short spans it is necessary to use spruce multiply the figures representing the widths by 5/3.

On the diagram at the right are shown, by full lines, curves representing safe uniformly-distributed loads for different depths of sticks, 1 in. wide, the columns to the right giving safe loads for both spruce and Southern pine.

The dotted lines limit the deflection to 1-240 of the span; no greater deflection should be allowed in permanent work, al-



Full lines represent an outside fibre strain of 1250 lbs. per square inch for Hard Pine, and 750 lbs. for Spruce. Dotted lines limit the deflection to 1-240 of span. Modulus of Elasticity 750,000

FORMULAE FOR SAFE LOADS FOR WOODEN COLUMNS.

KIND OF WOOD	Where length is less than twelve times least thickness	Where length is not less than twelve times least thickness
	SAFE LOAD =	SAFE LOAD PER SQ. IN. =
YELLOW PINE	Area of Cross-Section x 1000	1000 — 10 x length least diameter
OAK	Area of Cross-Section x 750	750 — 7.5 x length least diameter
WHITE PINE OR SPRUCE	Area of Cross-Section x 625	625 — 6 x length least diameter

NOTE: All dimensions to be considered as inches. Street Ry. Journal

As in most cases a light T-rail or stringer rail is used over bridges, the stiffness of the rail will not warrant the assumption of a uniformly distributed load over the span. Therefore, it is obvious that quite a little labor is involved in calculating the bending moment, due to the concentrated loads on the trucks, assuming, of course, the heaviest car, including maximum load, which will pass over the structure.

The accompanying diagram and information will be found very convenient for readily determining the requisite size of timbers for various spans and loads.

On the diagram at the left are shown curves representing the bending moments for single track of various types of cars, including their estimated maximum loads. The horizontal spacing represents the span in feet, and the vertical spacing the bending moment in foot-pounds. At the left, in the several vertical columns, are shown the widths of Southern pine timber for various depths to support the load causing the bending moment opposite.

For example, to determine the proper size of timber to carry car No. 1 over a 25-ft. span. From the 25-ft. mark at the top of the diagram follow the vertical line to the point where it intersects the line of bending moment of car No. 1, thence follow the horizontal line to the left, where the figures in

though for temporary work values obtained from the full line may be used.

This diagram does not apply on building construction, where plastering, masonry, etc., is to be supported, requiring the deflection to be limited to 1-480 of the span.

These diagrams have been based on the usual formula:

$$\frac{Wl}{8} = \frac{bd^2S}{6}$$

- l = span in inches.
- b = breadth of beam in inches.
- d = depth of beam in inches.
- S = extreme fibre stress.

For the value of S, 1250 lbs. has been used for Southern pine and 750 lbs. for spruce. This gives a factor of safety of about four. In calculating the deflection curves a modulus of elasticity of 750,000 was used.

Although values are given for any span up to 35 ft., it is not advisable or economical to use plain beams for a span of more than 20 ft.

In addition to the information given in connection with the diagrams, formulae are given showing the safe supporting power of wooden columns.

THE ORGANIZATION OF THE AMERICAN RAILWAY MECHANICAL AND ELECTRICAL ASSOCIATION

The master mechanics, superintendents of motive power and electrical engineers from a dozen or more electric railway companies met at the Hollenden Hotel, Cleveland, Feb. 12, in response to the call of the committee which was formed at Detroit during the last American Street Railway Association convention. The purpose of the meeting was to complete an organization of the men of the mechanical and electrical departments of the electric railway companies of America, and arrange for a regular convention along lines suggested by the circular sent out by the committee and published in these columns last week.

Thomas Farmer, superintendent of motive power of the Detroit United Railway, acted as chairman of the meeting, and Walter Mower, of the same company, as secretary.

E. W. Olds, superintendent of rolling stock of the Milwaukee Electric Railway & Light Company, in a few introductory remarks, said that it was well known that at present electric railway master mechanics do not get together as they should. They had never taken much part in the proceedings of the American Street Railway Association. That organization was essentially for presidents and general managers and transportation men, and its proceedings were of value chiefly on matters of general policy or transportation. An organization of mechanical and electrical men was needed to discuss questions pertaining to those departments, to raise the standard of practice and to work toward uniformity.

After further brief discussion on the same lines the chairman said it was undoubtedly the sense of the meeting that an organization should be perfected, and the convention took the necessary steps to accomplish this purpose.

The question of a proper name to fit the new organization drew out a long list of suggestions. It was evidently the desire of all to have a name adopted which would properly cover an organization of men drawn from all the mechanical and electrical departments of a city or interurban road, but a name not cumbersome was hard to find. The choice of a name from the list suggested was finally left to a committee consisting of D. F. Carver, of Cleveland; Alfred Green, of Rochester; E. W. Olds, of Milwaukee, and H. H. Adams, of Baltimore.

NAME SELECTED

The committee reported in favor of the name "American Railway Mechanical and Electrical Association," which was adopted.

Further details of organization, especially the question of whether the membership should be vested in companies or individuals, was discussed at length, some favoring having it an organization of men and others an organization of companies. It was developed that while it was in many ways desirable to make the membership individual, and not of companies, the association would have greater weight if it were representative of companies, and if questions of standards to facilitate interchange came up it would be essential to have the active voting membership in the companies involved.

The constitutions and by-laws of the American Street Railway Association and of the American Street Railway Accountants' Association were read, and changes suggested to adapt them to the needs of the new organization. The final decision on rules was left to a committee, which reported at the afternoon session.

When this committee presented its findings there was more discussion, and the constitution and by-laws, as they appear herewith, were adopted. In the all-important matters of membership the active membership with voting powers is vested in companies, with \$20 dues, and individual membership is provided for in non-voting associate membership, with \$5 dues and junior membership for \$3 dues. Individual members are thus provided for without detracting from the weight given an or-

ganization whose membership is vested in companies. Although there was at first some difference of opinion as to holding the meetings at the same time as the American Street Railway Association, it was finally agreed that it would be detrimental to both bodies to separate the time and place of convention.

Following is the constitution and by-laws as finally adopted:

CONSTITUTION.

I.—NAME.

1. The name of this association shall be "The American Railway Mechanical and Electrical Association," and its offices shall be at the place where the secretary resides.

II.—OBJECT.

2. The object of this association will be the acquisition of experimental, statistical, scientific and practical knowledge relating to the construction, equipment and operation of street and interurban railways.

III.—MEMBERS.

1. The active members of this association shall consist of American railway companies or lessees, or individual owners of railways, and each member shall be entitled to one vote by delegates presenting proper credentials.

2. The head of any mechanical or electrical department of a railway company may be elected an associate member of this association, and will be entitled to all privileges, except that of voting.

3. Other employees of railway companies not eligible as associate members may become eligible to junior membership upon the recommendation of at least one official of the company by whom he is employed and one associate member, and will be entitled to all privileges except that of voting.

The technical periodicals shall be eligible to honorary membership upon recommendation of the executive committee.

IV.—AMENDMENT.

This constitution may be amended by two-thirds vote of the members present at a regular meeting after thirty days' notice thereof has been given to each member in writing by the secretary.

BY-LAWS.

I.—APPLICATIONS.

1. Every applicant for membership shall signify the same in writing to the secretary, enclosing the requisite fee, and shall sign the constitution and by-laws.

II.—OFFICERS AND EXECUTIVE COMMITTEE.

The officers shall consist of a president, three vice-presidents, a secretary and treasurer and four others, who shall constitute the executive committee. The executive committee shall have the entire charge and management of the affairs of the association. The officers and executive committee shall be elected by ballot at each regular meeting of the association and shall hold office until their successors shall be elected. The duties of secretary and treasurer shall be performed by the same person.

III.—DUTIES OF OFFICERS.

The officers of the association shall assume their duties immediately after the close of the meeting at which they are elected. They shall hold meetings at the call of the president, or, in his absence, at the call of the vice-presidents in their order, and make arrangements for carrying out the objects of the association.

IV.—PRESIDENT.

The president, if present, or, in his absence, one of the vice-presidents in their order, if present, shall preside at all meetings of the association and of the executive committee.

V.—TREASURER.

The duties of the treasurer shall be to receive and safely keep all moneys of the association; keep correct account of the same and pay all bills approved by the president; and he shall make an annual report to be submitted to the association. He shall give a bond to the president in such sum and with such surety as shall be approved by the executive committee.

VI.—SECRETARY.

The duties of the secretary shall be to take minutes of all proceedings of the association and of the executive committee and enter them in proper books for the purpose. He shall conduct the correspondence of the association, read minutes and notices of all meetings and also papers and communications, if the authors wish it, and perform whatever duties may be required in the constitution and by-laws appertaining to his department. He shall be paid a salary to be fixed by the executive committee.

VII.—MEETINGS.

The regular meeting of this association shall convene at the same place as The American Street Railway Association and one day in advance of the meeting of that association. Notice of

every meeting shall be given by the secretary in a circular addressed to each member at least thirty days before the time of meeting. Ten members shall constitute a quorum of any meeting.

VIII.—ORDER OF BUSINESS.

At the regular meeting of the association the order of business shall be:

1. The reading of the minutes of the last meeting.
2. The address of the president.
3. The report of the executive committee on the management of the association during the previous year.
4. The report of the treasurer.
5. Report to special committees.
6. The election of officers.
7. The reading and discussion of papers of which notice has been given to the secretary at least thirty days prior to meeting.
8. General business.

IX.—ORDER OF BUSINESS (*Special.*)

At other general meetings of the association the order of business shall be the same, except as to the third, fourth and sixth clauses.

X.—NOTICES.

The secretary shall send notices to all members of the association at least sixty days before each meeting, mentioning the papers to be read and any special business to be brought before the meeting.

XI.—EXECUTIVE COMMITTEE.

The executive committee shall meet one day in advance of each annual meeting of the association, and on other occasions when the president shall deem it necessary, upon such reasonable notice specifying the business to be attended to as the committee shall by vote determine. A vote of the executive committee may be taken by mail when deemed advisable.

XII.—VOTING.

All votes except as herein otherwise provided shall be by the uplifted hand unless a ballot is called for, and in case of a tie a presiding officer may vote.

XIII.—READING OF PAPERS.

All papers read at the meetings of the association must relate to matters connected with the objects of the association and must have the approval of the executive committee before being read. Persons to whom subjects are assigned must signify in writing their intention to prepare the paper, and forward it to the secretary at least sixty days previous to the date of the meeting so that advance copies of the paper may be printed and forwarded to the members.

XIV.—PAPERS, DRAWINGS AND MODELS.

All papers, drawings and models submitted to the meeting of the association shall remain the property of the association at the option of the executive committee.

XV.—FEES.

1. Active members shall pay annual dues of \$20, payable in advance. The executive committee shall have no power to expend for any purpose whatever an amount exceeding that received as hereinbefore provided for. It shall be the duty of the members to pay such returns to the secretary as shall be required by the executive committee.

2. Associate members will pay annual dues of \$5.

3. Junior members will pay annual dues of \$3.

XVI.—ARREARS.

No member whose annual dues shall be in arrears shall be entitled to vote.

XVII.—WITHDRAWAL.

Any member may retire from membership by giving written notice to that effect to the secretary and the payment of all annual dues, but shall remain a member and liable to the payment of annual dues until such payments are made, except as hereinafter provided.

XVIII.—EXPULSION.

A member may be expelled from the association by ballot of two-thirds of the members voting at any regular meeting of the association upon the written recommendation of the executive committee.

XIX.—RULES OF ORDER.

All rules not provided for in these by-laws shall be those found in Roberts' Rules of Order.

XX.—AMENDMENT.

Notice of all propositions for adding to or altering any of these by-laws shall be given to the members of the association at least thirty days before the meeting at which they are to be acted upon.

XXI.—COPY OF CONSTITUTION AND BY-LAWS.

Each member of the association shall be furnished by the secretary with a copy of the constitution and by-laws of the association and also a list of the members.

After the adoption of the constitution and by-laws officers were elected as follows:

OFFICERS

President—Thomas Farmer, superintendent of motive power, Detroit United Railway Company, Detroit, Mich.

First Vice-President—E. W. Olds, superintendent rolling stock, The Milwaukee Electric Railway & Light Company, Milwaukee.

Second Vice-President—Alfred Green, master mechanic, Rochester Railway Company, Rochester, N. Y.

Third Vice-President—C. F. Baker, superintendent motive power and machinery, Boston Elevated Railway Company, Boston, Mass.

Executive Committee—W. O. Mundy, master mechanic, St. Louis Transit Company, St. Louis, Mo.; T. J. Mullen, master mechanic, Scranton Railway Company, Scranton, Pa.; H. H. Adams, master mechanic, United Railways & Electric Company, Baltimore, Md.; D. F. Carver, chief engineer, Cleveland Electric Railway Company, Cleveland, O.

Secretary and Treasurer—Walter Mower, Detroit United Railway Company, Detroit, Mich.

ATTENDANCE AND MEMBERSHIP

The following gentlemen, representing electric railway companies, were present at the meeting. The companies represented are charter members of the new organization, and the majority of the gentlemen present also took personal associate membership in the American Railway Electrical and Mechanical Association:

H. H. Adams, superintendent shops, United Railways & Electric Company, Baltimore.

W. W. Annable, master mechanic, Grand Rapids Railway Company.

C. F. Baker, superintendent motive power and machinery, Boston Elevated Railway Company.

C. A. Brown, master mechanic, Toledo Railway & Light Company.

D. F. Carver, chief engineer, Cleveland Electric Railway Company.

R. E. Danforth, general superintendent, Rochester Railway Company.

Thomas Farmer, superintendent motive power, Detroit United Railway Company.

Alfred Green, master mechanic, Rochester Railway Company.

Fred Heckler, master mechanic, Lake Shore Electric Railway, Toledo, O.

W. O. Mundy, master mechanic, St. Louis Transit Company.

T. J. Mullen, master mechanic, Scranton Railway Company.

J. Millar, superintendent rolling stock, International Traction Company, Buffalo.

E. W. Olds, superintendent rolling stock, the Milwaukee Electric Railway & Light Company.

W. Roberts, master mechanic, Northern Ohio Traction & Light Company, Akron, O.

Other applications for membership were received from:

Worcester Consolidated Street Railway Company, William Pestell, superintendent motive power.

Chicago City Railway Company, M. O'Brien, master mechanic.

Santa Barbara (Cal.) Consolidated Railway Company, W. H. Harding, master mechanic.

Mobile Light & Railroad Company, S. M. Coffin, master mechanic.

At the meeting of the executive committee the STREET RAILWAY JOURNAL and Street Railway Review were made honorary members.

Now that the organization has been formed it is expected that a large number of companies will at once join, and a largely-attended convention next fall is assured.

LUNCH AT CENTURY CLUB

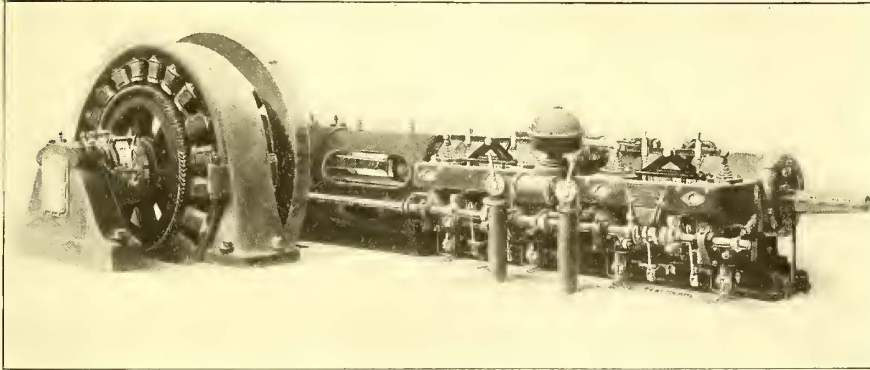
The railway men were entertained by the supply men with a lunch at the Century Club and at the Empire Theater in the evening.

The supply men attending were:

W. D. Ray, F. V. Green and C. N. Townsend, of the Westinghouse Traction Brake Company; Messrs. J. E. Eldred, Jr., H. N. Ransom, F. C. Randall, C. P. Tolman and Charles W. Leet, of the Christensen Engineering Company; D. B. Dean, of J. G. Brill Company; H. F. Tate, of the National Conduit & Cable Company; W. R. Kerschner, of the Columbia Machine Company; M. DeF. Gates, of the New Haven Car Register Company; H. E. Ackerly, of the American Car Seat Company; C. F. Wickwire, of the Sterling-Meaker Company; F. A. Elinquist, Sherwin-Williams Company, and A. L. Wilkinson, of the Ohio Brass Company.

LARGE HORIZONTAL GAS ENGINE

Power users who are investigating the merits of gas engines will be interested in the latest type of internal combustion engine of American manufacture, especially as it marks a radical departure from the established practice of its builders, the Westinghouse Machine Company. Heretofore, few American makers have ventured above 250 hp, and until recently none above 500 hp, with the exception of the Westinghouse Com-



(Copyright by the Westinghouse Machine Company.)

FIG. 1.—SINGLE-CRANK HORIZONTAL GAS ENGINE, 750 HP

pany, whose three-cylinder, vertical, single-action engine is well known. This company has now developed the double-acting engine, shown in the accompanying cuts, in sizes ranging as high as 3000 hp. Fig. 1 shows a perspective view of a single-crank engine of the new type, and Fig. 2 a double-crank engine.

Figs. 3 and 4 show the general design of a 1500-hp double-crank engine, directly connected to a generator.

In general design the engine resembles a modern high-speed tandem compound steam engine in the arrangement of cylinders, frames, bed plates, bearings and fly-wheel, and this resemblance is extended to the matter of crank effort. Each revolution is accompanied by two impulses, namely, at each successive in-stroke and out-stroke. The engine operates, therefore, upon the four-stroke cycle, involving distinct periods of admission, compression, explosion, expansion and exhaust, and at the same time making provision for positive scavenging, the importance of which in securing a pure working mixture is conclusively shown by comparing the thermal values of natural and blast furnace gases. The former yields approximately 1000 B. T. U. per cubic foot, the latter only 100. While the comparative weakness of blast furnace gas is partly due to the absence of the highly calorific CH_4 or marsh gas, it is mainly attributable to the presence of CO and N, both inert gases resulting from previous combustion.

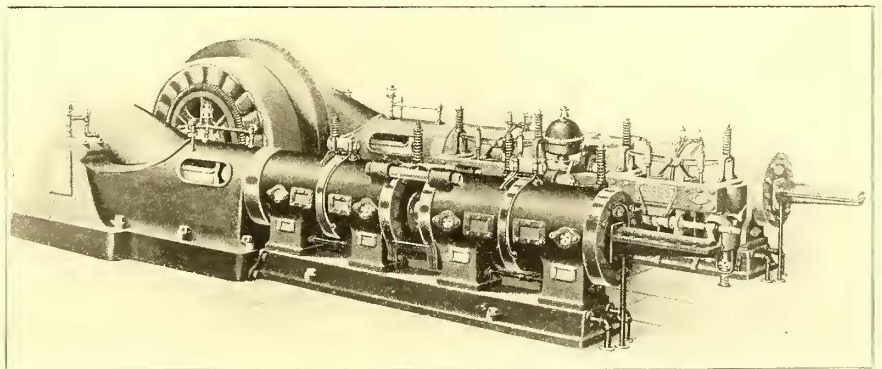
Engines employing the two-stroke cycle rely upon a special piston movement or a blast air from an auxiliary pump, directed in such a manner as to force out the remaining burned gases, thus clearing the way for the incoming pure mixture. This latter method, it is now claimed, results in a dilution of the incoming mixture, and variations in the calorific value of the explosive mixture, which, for a gas of given constituency, should be maintained constant. In this new engine the return stroke of the pistons effectually performs this function, and the charge of explosive mixture is then drawn in, undiluted either by products of combustion or by scavenging air.

In direct distinction from the use of an explosive mixture varying in richness according to the load, the Westinghouse

design employs a mixture of unvarying quality, which is initially proportioned according to the nature of gas used, but once determined remains constant under all conditions-of load. As the load upon the engine increases or decreases a correspondingly greater or lesser quantity of mixture is admitted to the cylinders, thus utilizing at all times an explosive mixture of maximum strength, resulting in higher thermal efficiency and economy of fuel. In support of this method it is pointed out that European builders of the highest standing are abandoning the variable for the constant mixture method of governing.

However, the construction of the engine departs materially from the accepted European design and embodies many established features of modern steam engine practice, being similar to a horizontal steam engine suitably strengthened in proportion to the increased maximum pressure resulting from the rapid combustion of the highly compressed gases. The design of cylinders, pistons and valves, of course, departs materially from steam engine practice. The cylinders are double walled, with the outer walls split peripherally to permit independent expansion and contraction without placing the cylinder casting under stress. The two cylinders are united at the top by heavy tie-rods, engaging peripheral bosses, and at the bottom by a stout cast-iron distance piece. The rear section of the bed-plate which supports the two cylinders is cored hollow with a central dividing wall, and serves as a reservoir for incoming and outgoing circulating water. All connections are piped directly to these reservoirs, thus reducing the piping about the engine. Through the bed-plate extend the four vertical exhaust pipes, which connect immediately below with an exhaust main. The exhaust passages leading from the valve chambers are cast integral with the cylinders, upon their under sides, and are water cooled.

At the ends of each cylinder are horizontal side ports, resembling straight steam ports, which communicate with removable combustion chambers. The cylinders are closed by water jacketed heads, those located between the two cylinders



(Copyright by the Westinghouse Machine Company.)

FIG. 2.—DOUBLE-CRANK HORIZONTAL GAS ENGINE, 1500 HP

being split diametrically for facility in inspection of the interior, and the two halves united with a ground fit, no packing being necessary. This feature obviates the necessity for completely dismantling the engine for inspection.

The combustion chambers are independent castings, with plain machined faces, circular valve-liner seats and cored out passages for circulating water. Both admission and exhaust valves, which are of the standard poppet type, operate vertically and with opposite throw. They open by cam movement, and are held to their seats by spring pressure. The central space, closed by the admission valve above and the exhaust valve

below, communicate directly with the cylinder port before mentioned; the exhaust space with the exhaust passages on the under sides of the cylinders; the admission space with the supply pipe. This supply pipe is a rectangular cast-iron main, extending along the entire front and provided with openings opposite each admission valve. It receives its supply from the

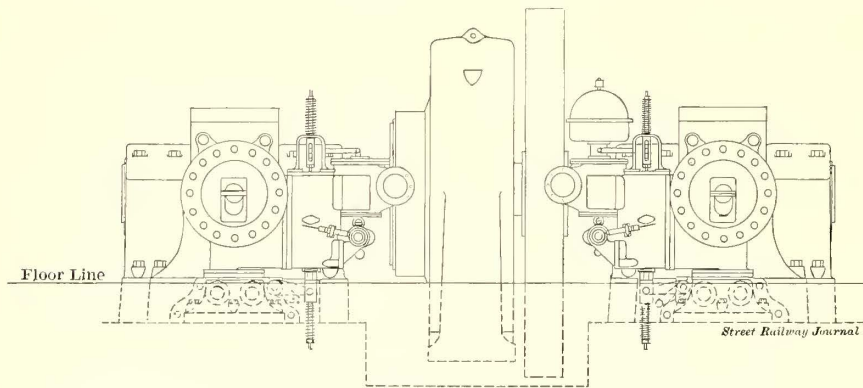


FIG. 4.—END SECTION OF 1500-HP HORIZONTAL GAS ENGINE

governor chamber, located midway between the two ends, which in turn communicating with a mixing chamber supplied on the one hand with gas and on the other with air, through suitable valves. These two valves are shown in Fig. 1, and are provided with graduated indices, so that the exact proportions of gas and air may at all times be visible and under the control of the attendant. Another feature is the provision for interchangeable parts. Each valve, together with its spindle and seating spring, is independently mounted, and by simply removing the bolts from the bonnet the entire valve, seat and liner may be drawn out for inspection or replacement. Similarly, the igniters, which are of the "make and break" electrical contact type, are mounted in a removable plug extending into the combustion chamber through the side walls.

The valve gear is of the standard cam and roller pattern, employed in the Westinghouse vertical engines, and is driven by a helical gear, engaging a similar split gear bolted around the main shaft.

Cooling water for circulating through the pistons enters a cavity on the cross-head by means of a flexible pipe connection provided with special swinging joints. It then flows through the hollow piston rod to the front and rear piston, through

piston fits to be employed without danger of excessive friction or rupture. This point may be more readily appreciated from the fact that a cold piston clearance of approximately 1-16 in. is necessary in moderate-sized engines not fitted with water-cooled pistons. The pistons are constructed in two parts, with packing rings and babbitted bearing surfaces. They are secured in position on the rods by internal nuts, and present plain convex surface to the burning gases. Piston rods are of forged steel, with bored water ducts. The packing for both piston rod and tail-rod is of metallic ring type.

The engine is started by compressed air pumped into a steel reservoir during a previous run before shutting down. For this purpose a special disengaging gear is provided which isolates the rear cylinder, and on admitting the compressed air allows this cylinder to operate as an air motor until the regular combustion cycle is taken up in the forward cylinder. The rear cylinder may then be thrown into normal action.

Oiling is accomplished by steam engine appliances, such as sight-feed cups, cylinder pumps and oil rings for crank pins.

The engine is governed by a sensitive fly-ball governor of the standard design, protected by a circular housing. It operates a vertical piston valve supplying a fuel mixture of constant quality, but in quantities proportionate to the load.

The single crank engine is at present manufactured in sizes ranging from 250 hp to 750 hp, and the double crank from 750 hp to 1500 hp. In the latter cranks are placed at 90 degs. angularity, giving four impulses per revolution, and securing a crank effort corresponding to that of a cross-compound double-acting steam engine.

It is of interest to note that several installations of this type of engine are in progress. The company has completed its investigations and tests, and there are now several units in commercial service.

FIRST ELECTRIC RAILWAY IN NORTH DAKOTA

The Fargo & Moorehead Street Railway Company will build 9½ miles of line the coming season, extending from Fargo, N. D., across the Red River to Moorehead, Minn., and there

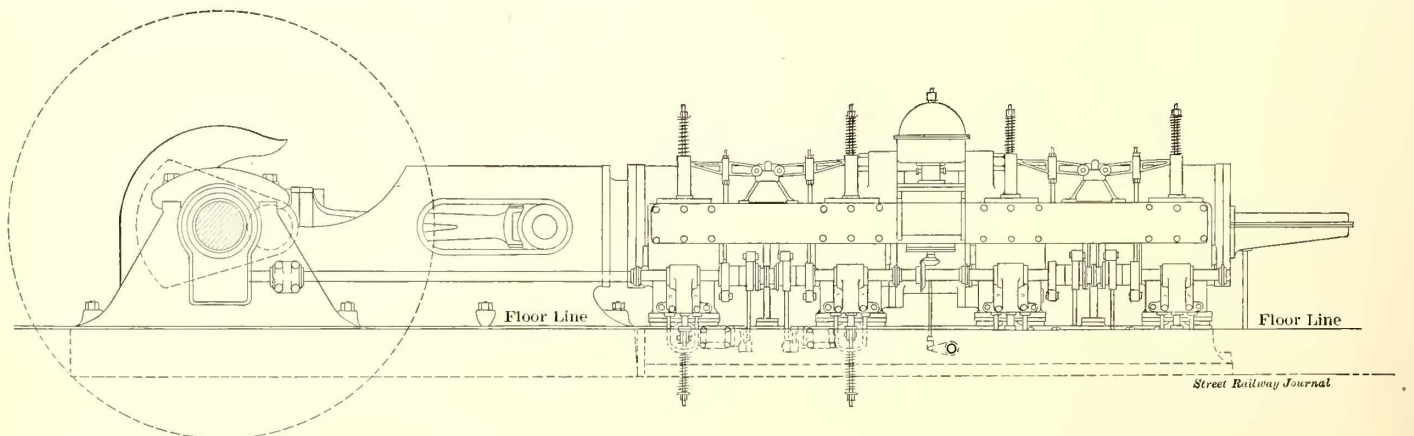


FIG. 3.—LONGITUDINAL SECTION OF 1500-HP DOUBLE-CRANK HORIZONTAL GAS ENGINE

which it circulates, finally emerging through a bronze tail-rod extending through the rear head, there emptying into a cast-iron jacket communicating with the hot-water return pipe. Similarly, cold water is conducted through suitable pipes to the cylinder jackets, thence to the jackets surrounding the exhaust valves and ports, and finally to the return pipe, emerging at a sufficiently high temperature for use in heating and drying coils and radiators. Proper temperature relations between pistons and cylinders is thus secured at all times, while allowing close

will also be some additional track in these two cities. A contract has been given to the Electrical Installation Company, of Chicago, for a road, including rolling stock and power house. There will be six cars and a power house of 200-kw capacity.

The officers are Scranton and Wilkesbarre (Pa.) capitalists. F. V. Von Storch, Scranton, is president; M. E. McDonald, Scranton, vice-president; Frank Larned, Wilkesbarre, treasurer; George H. Rice, Scranton, secretary; George H. Moffatt, Fargo, N. D., manager and chief engineer.

RAPID TRANSIT COMMISSION

A bill has been prepared for submission to the Legislature, at Albany, providing for a complete reorganization of the Rapid Transit Commission along radically different lines from those on which the present body is formed.

It provides for the appointment of members of the Rapid Transit Commission by the Mayor, thus changing it from a State to a municipal commission. It permits the Commission to separate the functions of construction, maintenance and operation in the work on future rapid transit extensions. "If, in its discretion, the public interest shall justify the provision, the construction of such railway or railways shall be separate and apart from its or their equipment, maintenance and operation, or the construction and equipment shall be separate and apart from its maintenance and operation, or the equipment shall be separate and apart from the construction, and from the operation and maintenance of such railway or railways." It further provides for the repeal of the tax exemption clause, making this clause inapplicable to all future extensions of the rapid transit roads.

The bill in detail provides that the Commission shall comprise six members and the Mayor and Comptroller. The appointee shall serve for a term of six years, the present Commissioners to serve until Jan. 1 next. Of the six appointive members, two shall serve for two, four and six years respectively, to be determined by lot.

The bill further provides that in the month of November prior to the expiration of the terms of members of the Commission, the Mayor shall appoint their successors for a term of six years, which provision would permit Mayor Low to name the new Rapid Transit Commission whether or not he is re-elected next fall.

Municipal ownership is provided for thus:

"The Board of Rapid Transit Railroad Commissioners may, in its discretion, if the public interest shall justify the provision, provide for the operation and maintenance of such railway or railways by the city as shall be constructed for and at the expense of the city."

This measure is being urged by Comptroller Grout, and it is intimated that it does not meet the approval of the Mayor and the Republican organization, and will, therefore, be defeated, but the Mayor is pledged to some form of reorganization, and it is possible that the present scheme may be modified to meet his views. The principal objection to the bill in its present form is the method of appointment, and this is based purely upon political grounds.

MUNICIPAL MEASURES

In a well-considered review of the present traffic facilities in New York and the recommendations accompanying the report of the State Board of Railroad Commissioners, the "Sun" criticises the attitude of the municipality toward the transportation corporations, saying:

Theoretically, to bite off one's nose is an impossibility; yet practically New York has accomplished it in respect to its own facilities for transportation. Grudging the dollar that would have flowed into the coffers of the street car companies, the city has deliberately sacrificed millions of dollars' worth of convenience and benefit to the general public. An era of common sense of the kind displayed by the State Railroad Commission may work wonders.

To-day, probably no city in the world is in sorer straits in proportion to its needs and possibilities for money and improvements. Our inadequacies press on every hand and in every department of the city government. The constitutional limitation of our debt renders us almost helpless. Yet the present barriers to growth could be swept away and everything now in sight of our ambitions made attainable if we should abandon the narrow-minded and socialistic scheme of municipal ownership of the underground roads

and arrange for their transfer to private enterprise in the old-fashioned way.

If that should be done, New York would be able again to proceed to the building of works that are legitimately part of the city's province to build with the free hand that comes from the fat purse.

PROPOSED ELECTRIC RAILWAY ALONG THE HUDSON

A great deal of local interest has been displayed in the movement to build electric railroads along the east bank of the Hudson River to connect New York city with Albany. The first step in this direction was the building of the Albany & Hudson third-rail road, extending from Albany to Hudson, a distance of 30 miles, but below that point the law prohibits the construction of railroads on the New York and Albany post road, declaring that road to be a public highway forever. This law has greatly hindered the construction of connecting railroads, but since 1896 bills have been passed permitting the construction of railroads on it in that part of New York City within Westchester County, in the town of Cortland and in the village of Ossining. A bill introduced recently by Senator McClelland removes this prohibition to a further extent, and is another step in the direction of a trunk line of electric railroads. This measure authorizes the building of electric railroads on the Albany post road in the villages of Hastings-on-the-Hudson, Dobbs Ferry and Irvington. The Senate committee to which this measure was referred has amended the bill by excluding Irvington from its provisions, in deference to the wishes of the wealthy estate owners along that part of the Hudson.

CHICAGO FRANCHISE MATTERS

The local transportation committee of the Chicago City Council and representatives of the street railways have been in continued conference during the last week. It has been decided by both parties that in order to make more rapid progress the Council committee should formulate some definite ordinance, as the preliminary discussions have now been carried out to such a length that little more can be gained by them.

On Monday, however, negotiations between the city and the traction companies were abruptly terminated because of inability to agree upon a method of determining the value of claims under the ninety-nine-year act, passed over a veto in 1865. In the discussion of this law the companies offered to waive their rights if the city would enter into an agreement whereby an arbitrating body could be selected to settle, once and for all time, their validity, and, if valid, the amount to be paid for surrender.

The companies also declared they would bind themselves to a contract which would definitely indicate that "the ninety-nine-year act is dead" should the time taken by the arbitrators or judges of these claims extend over the entire period of the franchise grant.

The companies wished it to be understood they sought to dispose of all debatable claims at one fell swoop, but asked the committee not to deem such claims invalid until the arbitrating body should so declare. The municipal authorities did not feel at liberty to accept this arrangement, although it was generally conceded by those engaged on the problem that the present is the best time to settle this and all other disputed points.

The committee went into executive session and decided to stand upon its counter proposal of last week, which declared the committee would take these claims into consideration, but only in connection with the question of compensation.

The traction attorneys, after consultation, suggested an adjournment, and this was taken without fixing a date for renewing consideration of the question.

FINANCIAL INTELLIGENCE

The Money Market

WALL STREET, FEB. 18, 1903.

The leading question in the money market this week has been whether or not gold exports were about to be resumed. A further advance in sterling exchange carried the rate to the highest of the season and to a level approximating closely to what has been considered a profitable one for specie shipments. Still, no signs of any such movement have yet appeared, and, in the opinion of many authorities, no attempt will be made yet awhile to send out gold to Europe. In previous articles we have already adverted to the change in our credit relations during the last six months which has come about through the sweeping reduction of debts owed by our bankers abroad. We have also asserted, what is the judgment of prominent banking officials, that the volume of our foreign obligations is very much smaller than it has been at any time during the past year and a half, and that it is not far, indeed, from the point of total extinction. The practical result of this change is, of course, to greatly enhance our credit in the eyes of foreign capitalists and to give local bankers increasing power to prevent gold exports by negotiating fresh loans whenever they choose. Apparently the view that no gold will go out at the present time is based upon knowledge that such loans will be applied for in case they are needed to keep sterling exchange below the export point. Moreover, money continues relatively easy abroad, and additional evidences are being constantly furnished of foreign buying of our railroad securities, the latest being the announcement that two-thirds of the \$10,000,000 new Erie bond issue has been subscribed for in London and Amsterdam. All this, of course, goes to assure the continuance of the easy conditions in the local money market. The domestic movements of bank funds, however, are taking the direction customary at this season, which is toward a rather rapid depletion of surplus reserves. Last Saturday another loss of \$3,000,000 was reported by the New York banks, resulting chiefly from a further increase of \$11,000,000 in loans. This might be somewhat disquieting were it not that expanding loan accounts and either stationary or declining cash reserves are normal features at this time of year. Following precedent, surplus resources may be expected to fall off until the middle of March, when they will turn upward again and keep on gaining until July. Higher money rates may prevail in the latter half of next month and the first part of April, but the rise will be only temporary. For the present, sixty-day money is lending at 4 to 4 $\frac{1}{4}$ and six-months' money at 4 $\frac{1}{2}$ per cent. Call money is supplied in abundance at 2 $\frac{3}{4}$ and 3 per cent.

The Stock Market

The general share list rests upon about the same level as it did a week ago. On several occasions attempts have been made to depress prices, the principal one occurring last Friday, when the unexpected news of the new Erie bond flotation caused some unfavorable comment in speculative circles. But in all instances where declines have occurred it has been found that no stocks have pressed for sale, and quick recoveries have followed. In consequence, speculative opinion has rather been strengthened in its former conviction that circumstances favor a rise more than they do a decline in prices. It is the continued absence of the outside public from the market which keeps this underlying cheerfulness from expressing itself more openly. There evidently is not sufficient buying power to produce an active forward movement at this time. The latent bullishness seems more likely to reflect itself, as it has done during the past week, in advances in selected stocks, more particularly those where the market supply is comparatively narrow. In this category come many of the industrial specialties, such as Sugar, Copper, Smelters, and Rubber Goods, and among the railroad shares such issues as Wabash and other of the so-called Gould securities. Outside factors remain for the most part highly favorable. The Street is particularly interested in the railway net earnings statements for January, which are expected to show a considerable improvement as compared with the preceding months.

The local traction stocks are favored by the general speculative conditions described, inasmuch as their floating supply is relatively small. Metropolitan has picked up considerably during the week, and while much of the buying has probably been in the na-

ture of covering of short contracts, some of the purchases undoubtedly have come from investors who believe that the security is cheap at going prices. Expectations that Manhattan would become more active on the cessation of trading in the "rights" have so far not been borne out. The buying of Brooklyn Rapid Transit every time the stock is offered at concessions attracts considerable attention. The inside party handling the stock in the market seems to be very confident in its position.

Philadelphia

The only feature of note during the week in Philadelphia was an advance in Union Traction from 46 $\frac{7}{8}$ to 47 $\frac{3}{4}$, the highest reached in some time. A story that a large block of the stock had been purchased by some Pittsburg capitalists who have lately become interested in the property was generally believed in speculative circles. That the transactions, from whatever source they originated, which caused the rise, were of an investment rather than a speculative character seemed to be borne out by the fact that no accompanying advance occurred in Philadelphia Rapid Transit, the lessor company. These shares did not go above 15 $\frac{1}{2}$. On the other hand, Philadelphia Traction shared in the strength of Union Traction, rising a half point, to 99. Other sales for the week were 100 Railways General at 4 $\frac{1}{2}$ and scattering lots of Consolidated Traction of New Jersey at 65, Union Traction of Indiana at 51 $\frac{3}{4}$ and Norristown at 75 $\frac{1}{2}$ and 75 $\frac{1}{4}$.

Chicago

The latest reports from Chicago are to the effect that the negotiations for the readjustment of the surface line interests are progressing slowly but satisfactorily, and that the two companies, the City Railway and the Union Traction, are acting in concert on all points. Meanwhile dealings in the shares affected have come to a standstill. City Railway sold down 5 points, to 225, Union Traction fell off from 11 $\frac{1}{4}$ to 10 $\frac{1}{2}$, while West Chicago recovered to 86. Deposits of Lake Street Elevated securities under the reorganization undertaking are proceeding satisfactorily. It is said, however, that no definite plans for the future have yet been determined upon and that no public announcement will be made until everything is complete. Lake Street stock sold down from 7 $\frac{1}{2}$ to 7 during the week. Metropolitan common is also off a point, to 35, and the preferred, "ex" the semi-annual dividend of 1 $\frac{1}{2}$ per cent, is selling at 86. Traffic of this company thus far in February is reported to be gaining at the rate of 12 to 14 per cent over last year. South Side shares have been particularly strong at an advance from 109 to 111.

Other Traction Securities

In Boston, there was little change until Monday, when Massachusetts Electric common developed more life than it has shown in some time past and advanced from 35 $\frac{1}{2}$ to 36 $\frac{3}{4}$. The purchases were evidently of a speculative character. The preferred stock did not take part in the advance, simply holding at 92. Nothing to speak of was done in Boston Elevated, which changed hands between 150 $\frac{1}{2}$ and 151. West End issues held their gain of the previous week, the common rising at one time to 97 and the preferred to 116. The feature of the week in Baltimore was the continued demand for United Railway 4 per cent bonds, which advanced to the unusually high figure of 97. The incomes were also strong, touching 69, but the common stock, after selling at 13 $\frac{7}{8}$, dropped back to 13 $\frac{1}{4}$. The preferred, which is very seldom dealt in, sold for a small lot at 33. Other Baltimore sales comprised Nashville 5 per cent trust certificates at 107, Charleston Street Railway 5's at 106, Charleston Consolidated Street Railway 5's from 96 $\frac{1}{2}$ to 97, City Passenger (Baltimore) 5's at 107 $\frac{1}{2}$, Anacostia & Potomac 5's at 100, City and Suburban (Baltimore) 5's at 113 $\frac{1}{2}$ and City and Suburban (Washington) 5's at 100. The sales of traction securities on the New York curb for the week included about 500 shares of St. Louis Transit at an advance from 28 $\frac{1}{8}$ to 30, Interborough Rapid Transit (60 per cent paid) at 112 $\frac{1}{4}$ and 112, Washington Traction 4's at 80 $\frac{3}{8}$, New Orleans 4 $\frac{1}{2}$'s at 79 $\frac{1}{2}$, Brooklyn Rapid Transit 4's at 86, Nassau Electric 4's at 82 $\frac{7}{8}$, San Francisco 4's (with interest) at 81 $\frac{1}{2}$ and 81 $\frac{7}{8}$ and United Railways of St. Louis 4's from 84 $\frac{1}{2}$ to 85.

Iron and Steel

The Iron Age, in its usual monthly compilation of blast furnace statistics, notes a considerable falling off in production of pig iron during January. The weekly output, it seems, was on an

average 10,000 tons less than for December. This will, of course, increase the tendency toward hardening of prices all along the line. Activity is observed in basic pig irons, and more business is also doing in foundry irons, with a special inclination toward the imported material, because of the comparative promptness in its delivery. Large contracts have been taken during the week in the foundry trade and in the pipe trade. Imports of foreign steel billets are on the increase. Finished products continue firm, with a good volume of business. Prices are on the basis of \$22 for Bessemer pig, \$30 for Bessemer steel and \$28 for rails.

Security Quotations

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

	Closing Bid	
	Feb. 10	Feb. 17
American Railways Company	51½	51½
Aurora, Elgin & Chicago	a38	a36
Boston Elevated	150½	150½
Brooklyn R. T.	69¾	70¾
Chicago City	225	220
Chicago Union Tr. (common)	10¾	10
Chicago Union Tr. (preferred)	45	44
Cleveland Electric	85	86
Columbus (common)	70	—
Columbus (preferred)	104	104
Consolidated Traction of N. J.	65	64¾
Consolidated Traction of N. J. 5s.	107½	108
Detroit United	89¼	88¾
Electric People's Traction (Philadelphia) 4s.	98	98
Elgin, Aurora & Southern	a52¼	50¾
Lake Shore Electric	14	14
Lake Street Elevated	7½	7½
Manhattan Railway	144¾	143¾
Massachusetts Electric Cos. (common)	35¾	36½
Massachusetts Electric Cos. (preferred)	92½	92¾
Metropolitan Elevated, Chicago (common)	35	35
Metropolitan Elevated, Chicago (preferred)	87½	*85½
Metropolitan Street	137¾	139½
New Orleans Railways (common)	14½	14½
New Orleans Railways (preferred)	43	40
North American	116	115
Northern Ohio Traction & Light	19¾	20¼
Northwestern Elevated, Chicago (common)	31½	—
Philadelphia Rapid Transit	16	15½
Philadelphia Traction	98¾	98¾
St. Louis Transit (common)	28½	29¾
South Side Elevated (Chicago)	109	110
Syracuse Rapid Transit	—	a32
Syracuse Rapid Transit (preferred)	—	a80
Third Ave.	125	125
Toledo Railway & Light	35¾	a36¾
Twin City, Minneapolis (common)	120¾	121¾
United Railways, St. Louis (preferred)	80	—
United Railways, St. Louis, 4s.	84¾	84¾
United Traction (Philadelphia)	46¾	47¾

a Asked.

Metals

Quotations for the leading metals are as follows: Copper, lake, 123¼ cents, tin 29 cents, lead 4½ cents and spelter 5 cents.

ANNUAL MEETING OF THE CHICAGO CITY RAILWAY

The annual meeting of the stockholders of the Chicago City Railway Company was held Tuesday, Feb. 17. It transpired at the meeting that W. B. Walker had retired from the board some time ago and that A. W. Goodrich had taken his place. With this change the retiring board of directors was re-elected by a vote of upward of 158,000 shares, as follows: S. W. Allerton, L. A. Young, D. G. Hamilton, Joseph Leiter, Arthur Orr, George T. Smith and A. W. Goodrich. Later the directors elected the following officers, George T. Smith taking W. D. Walker's place: D. G. Hamilton, president; Joseph Leiter, vice-president; George T. Smith, second vice-president; C. N. Duffy, secretary and auditor; T. C. Pennington, treasurer; Robert McCulloch, general manager.

The year was the best ever experienced by the company, the earnings exceeding those of 1901, which was the best up to that time. Gross earnings in 1902 were \$6,413,182, as compared with \$5,900,271 in 1901, an increase of \$512,910. The net earnings applicable to stock were \$1,896,677, or 10.54 per cent on the capital of \$18,000,000, as compared with \$1,747,159, or 11.09 per cent, on

the average capital of \$15,750,000. Following are the income figures, with comparisons:

	1902	1901
Passenger receipts	\$6,367,358	\$5,856,386
Receipts from other sources	45,823	43,884
Total earnings	\$6,413,181	\$5,900,271
Operating expenses, taxes and reserves	\$4,336,504	\$3,869,173
Depreciation	180,000	180,000
Total deductions	\$4,516,504	\$4,049,173
Net income	\$1,896,677	\$1,851,098
Dividends	1,620,000	1,620,000
Surplus for the year	\$276,677	\$127,159

OPERATING STATISTICS

Following are some operating statistics:

Percentage of operating expenses, taxes and reserves to gross earnings (increase 2.04 per cent)	67.62%
Percentage of operating expenses, taxes and reserves to passenger receipts (increase 2.04 per cent)	68.11%
Passenger receipts per day (increase \$1,399)	\$17,444
Mileage—	Increase
Electric (increase in 1902, 5.81 miles)	183.96
Cable	34.75
All	218.71
Car Miles Run—	Increase
Electric	18,333,862
Cable	434,570
Horse	*12,208
All	2,028,684
Passengers Carried—	
Fare passengers	10,233,809
Transfer passengers	6,377,829
Fare and transfer passengers	16,611,638
Percentage of transfer passengers to fare passengers	43.56
Percentage of transfer passengers to fare and transfer passengers	30.34
* Decrease.	

President Hamilton, in presenting the report, said in part:

"Still further pursuing the policy of the management, to best subserve the wants of the public, large sums have been expended in thoroughly maintaining the road and equipment, which are in good condition, as well as increasing the temporary power capacity in order to meet the traffic demands. The great increase in car mileage (2,028,684 miles), to facilitate the frequency of service, while it has furnished more accommodations to the public, has been the prolific source of increased expense.

"The operating expenses have been further increased by the replacement and renewal of worn-out pavement; by the rebuilding of over 1 mile of discarded double track, one track with grooved rails and one with T-rail, and by the repaving of that part of the street reserved to the company with new granite blocks, according to city specifications, and by the reconstruction of 8 miles of track on several streets.

"In addition to these items of maintenance, a large expenditure has been made for betterments and additions, as well as to prepare for the installation of the proposed new railway, the construction of which a franchise may warrant.

"The new car house has been completed. Large repair and machine shops have been erected; the construction of an additional 77 miles of underground electric duct conduits for feed wire has been finished; additional land bought for the site of the new proposed power station; all of which additions and betterments are needed in anticipation of an ideal railway system.

"Since the last report the 125 large electric cars have been placed in service, and within a few days eighty will be added to the present equipment on the Halsted Street line, and 5.81 miles of track on new extensions have been built.

"A complete power plant, boilers, engines and electric apparatus of 2000-hp capacity has been installed at the corner of Twenty-First and Dearborn Streets, and during this month has been put into operation, to assist in handling the increased traffic of the electric lines; and yet, if the traffic increase still continues, there must be still further additions along that line.

"The management has used every endeavor to settle the franchise question during the year. It did not feel warranted, pending its settlement, to contract for apparatus and construction costing millions of dollars, but has exerted itself to render the best and most efficient service possible under present conditions."

PRINCETON LINE NOW OPERATING IN TRENTON

The New Jersey & Pennsylvania Traction Company ran a car of the Trenton, Lawrenceville & Princeton Railroad into Trenton, N. J., over its new North Willow Street extension on Saturday afternoon, Feb. 14, marking an epoch in the history of the city. It was the first electric car ever run upon the streets of Trenton, aside from those of the Trenton Street Railway Company. The ordinance for the extension of the Princeton line was passed by the City Council after considerable delay and has been detailed in the *STREET RAILWAY JOURNAL*. The company gives more for the franchise to the city and the property owners than any other electric railway company in the State. The track on North Willow Street is laid with 96-lb. grooved rail, standard gage, on heavy chestnut ties and ballasted with concrete to a depth of 10 ins. Over the concrete will be laid vitrified brick. Between Willow Street and Ingham Street, a distance of about 1-3 mile, 80-lb. T-rail is used, and the road is laid upon a private right of way. A double track will extend down Willow Street to the Philadelphia & Reading Railroad tracks, from which point a single track will extend to Willow and West Hanover Streets and a double track (5 ft. 2 ins. and 4 ft. 8½ ins.) to the corner of Warren and Hanover Streets, one block from the City Hall, in the center of the city. Six tracks are crossed where the Reading Railroad is intersected. This crossing will be protected by the most approved safety devices, including derailing switches and signals. At the Pennsylvania Railroad crossing there is but a single track to pass over. The company's new office on North Willow Street and the car house at North Willow and Humboldt Streets will be ready for occupancy within the next month. The former is one and one-half stories high and will contain four rooms, while the latter will house about a dozen of the large 45-ft. cars now in use. The company is carrying from 3000 to 4000 passengers per day, operating two cars over the 12.5 miles of road every forty minutes from 6 a. m. to 1:10 a. m. the next morning. One-half hour is allowed for the 12.5 miles to Princeton, including the running over and through the streets in Trenton and Princeton.

LESSON TO LAWBREAKERS

A striking example of the good that results from the organization of the conservative forces of a community in support of law and order is furnished at Shreveport, La., where the street railway and lighting systems were recently tied up through a strike. The men resorted to violence immediately after the strike was declared, and the Mayor, as a precautionary measure, was compelled to order the suspension of street railway traffic and the shutting down of the lighting plant. Then the Mayor and the president of the Board of Trade, after a conference, decided on a vigorous policy. The grand jury was called upon to indict all lawbreakers, and the city judge, who is said to have dealt leniently with those arraigned before him for lawlessness, was requested to resign. Notice was also served upon those known to have been identified with acts disturbing the public peace to leave town at once. After these things had been done, a second mass meeting was called and a law and order league was organized. A large force of volunteer policemen was then sworn in, and under the protection of this body operations were resumed. These measures had the desired effect, as the force arrayed on the side of law and order was so overwhelming as to dispel at once all hope of successful resistance through violent measures on the part of the strikers. This is the second instance recently where citizens have been compelled to organize to protect life and property, and in each case the measures adopted have proved successful.

FORD FRANCHISE LAW

Former Senator Ford is conducting a vigorous campaign in behalf of the franchise tax measure which bears his name and which was declared invalid recently. In a recent public address on this subject in Brooklyn he went into the details of his original bill for the taxation of all franchises. "The franchise taxation law is to put all corporations holding public privileges on the same footing as any other realty holder," he said. "The same assessor who puts a tax on residence property was to tax that of the Brooklyn Rapid Transit Company or the Metropolitan Railway. This was amended, however, and in the amendment the question of the unconstitutionality of the law lies, if it lies at all. Governor Roosevelt and his advisers put up the amendment creating a State board of assessors, which was to assess the franchises. It was believed then, and it is still believed, that only that portion of the law is unconstitutional and that it will not affect the whole law. Although I pointed out all these things at the time, I was well aware

that I could do nothing if I attempted an amendment. I tell you this, however, that the law will not be repealed; nor will it be superseded except by a better one. This law will, when in full operation and properly administered, pay 10 per cent of the taxes of this city and of the State, and it is, therefore, advisable that it be settled by the Court of Appeals as soon as possible. The street franchises of this city are worth at least \$500,000,000 and ought to pay their share of the taxes."

COLONEL PROUT

A brief announcement was published in the last issue of the appointment of Colonel Henry Goslee Prout, formerly editor-in-chief of *The Railroad Gazette*, to his new position as first vice-president and general manager of the Union Switch & Signal Company. But in view of Colonel Prout's prominent position in the fields of railway engineering and editorial work further reference to both in these columns is both a duty and a pleasure.



COLONEL PROUT

Colonel Prout was born in New England. In the fall of 1863 he enlisted in a Massachusetts regiment, and with the Army of the Potomac he served through the Wilderness campaign. In 1865 he was mustered out and two years later entered the University of Michigan, where he was graduated with the degree of civil engineer. He had a few years' work on railroad surveys and construction and two summers were spent in making surveys in the Rocky Mountains. After this experience he entered the service of the Khedive of Egypt as a major of engineers, where he remained about four and a half years and reached the grade of colonel in the general staff. After the first year he went to the Soudan in command of an expedition to Kordofan and Darfour, and thence he was sent to the head of the Nile as Governor-General of the provinces of the Equator. Colonel Prout's work here was largely administrative. He had 3000 soldiers under him and was supreme over finance, civil and military affairs. After his return to America he was for more than a year signal engineer to the company out of which the Union Switch & Signal Company grew.

Colonel Prout was in business in the city of New York for a few years, and in March, 1887, became the editor of *The Railroad Gazette*. In this position he has gained an enviable reputation among the newspaper fraternity as well as among engineers for his professional skill as well as for his painstaking accuracy and high standard of journalism. During this period, also, his services were often sought in an advisory capacity in important engineering problems. In recognition of Colonel Prout's splendid work as an editor and journalist Yale University last year conferred on him the honorary degree of Master of Arts. Colonel Prout is not only a distinguished writer, but is much sought after as an after-dinner speaker and lecturer.

An accurate, clear-minded critic, quick to grasp the gist of things and to follow up a point with a sound reason and a convincing statement, he can accept criticism as gracefully as he offers it. His use of English is clear, accurate and simple, and as free from flourish and ostentation as is his personality. His technical ability is also of a high order, as he has the very happy faculty of quickly and fully grasping the details of engineering problems.

FRANCHISES IN NYACK

On Feb. 7 the Rockland Railroad Company was granted a "certificate of convenience and necessity" by the State Board of Railroad Commissioners of New York for the route applied for by this railroad, running from Upper Nyack, N. Y., southwardly through Nyack, South Nyack, Grandview and Piermont to Sparkill, N. Y., all in Rockland County, a total distance of about 7 miles. The Rockland Railroad Company is controlled by the same persons who own the New Jersey & Hudson River Railroad & Ferry Company, and it has the same officers as that company. It is understood that the consents of the abutting property owners for this route have also been secured and that the consent of the city authorities will be given.

At the same meeting of the New York Railroad Commissioners the application of the Rockland County Traction Company for practically the same route was refused.

REGULATION OF OIL CONSUMPTION IN CALIFORNIA

Both the producer and the consumer of petroleum in Southern California are up in arms against the passage by the State Legislature of the Ralston bill, which fixes a "flash test" for fuel oil and crude petroleum at 150 degs. Fahrenheit: While all oil men are in favor of and advocate the adoption of regulations to govern the storing and handling of crude oil, they are vigorously against the adoption of "fire" or "flash tests," on the ground that they do not consider such tests effective as a protection to property and life. Moreover, the passage of the proposed law would be prohibitive against the light or high-gravity fuel oils, it is claimed, thereby giving a free market to the heavy or low-gravity product. The Ralston bill provides:

No kerosene or coal oil shall be manufactured, sold, offered or exposed for sale, which will not stand a fire test of 120 degs. F., at barometric pressure of 29.92. The test by which the degree of fire test shall be made is the open Tagliabue electric cup, or one similar in construction and result. * * * It shall be a violation of the provision of this section if any statement hereby required is false in regard to the articles manufactured, sold or offered for sale in the case of kerosene or coal oil, if the marked fire test on the package or label is higher in degrees than the said article will actually stand under the test hereinbefore specified, and the person, firm or corporation violating any of these provisions, or any other provision of this act, is guilty of a misdemeanor.

Section —. All oil used in boilers as fuel for the purpose of making steam shall be crude petroleum, and shall stand a flash test of at least 150 degs. F. This section applies only to cities, and does not apply to boilers used at the wells for operating purposes or to railroad locomotives.

The present agitation over tests had its origin in the investigation that followed the recent explosion of the oil-burning steamer *Progreso*. Those who oppose the Ralston bill point out that the Treasury Department in this instance adopted no such radical measure as that proposed, but rather a reasonable requirement to the effect that supervising inspectors of hulls and boilers should make a personal examination of all oil-burning plants hereafter introduced on steam vessels before granting certificates. Furthermore, it is asserted, for more than twenty years crude oil has been used as fuel in California with perfect safety to life and property. The facts bear out this assertion, inasmuch as, prior to 1894, only the light-gravity oils were available for fuel purposes, for the discovery was not made until later that crude oil could be so employed.

Fifteen years ago an oil-burning ferryboat on San Francisco Bay blew up, whereupon the government inspectors promptly ordered the abandonment of oil for fuel. The insurance companies then refused to take risks where oil was used, but investigation soon exonerated crude oil. The cause of the explosion was found to have been due to a defective boiler. But the official investigations conducted by the Federal authorities and insurance companies proved more, viz., crude oil was found to be without danger as a fuel when handled with ordinary intelligence and caution. Thereupon the government once more countenanced the use of oil as fuel, and insurance companies have since accepted risks where oil is used on the same basis as coal. These are expert judgments.

In Los Angeles, all of the street railway companies are large consumers of oil for fuel, and they are lined up against the Ralston bill. They say the light oils are absolutely safe.

J. R. Atchison, superintendent of motive power of the Los Angeles Railway Company, who has had seventeen years' experience in handling the fuel oils of Southern California, regards high-grade oil not only more satisfactory, but less dangerous where a large quantity is used. "We are using about 500 barrels of oil daily at the plant now," says Mr. Atchison, "and we are handling oil all the way from 12 to 32 gravity. In the past six years we have not had an accident for which crude oil could be made responsible. I do not consider high-gravity oil dangerous, and believe that oil up to 26 or 28 gravity is safer than the heavy product below 12 or 14. While it is true that the lighter oils contain more hydrogen gas and less asphaltum than the heavier crude, the light oil flows freely, while it is necessary to heat the heavy crude to make it move lively. The heating process causes the gases to arise, and at that time there is far more danger from explosion than in handling the lighter oil in its normal condition. In all my experience there has never been an accident that could not be traced to carelessness."

E. P. Clark, president of the Los Angeles-Pacific Railway Company, who has been the consumer of some of the highest-gravity oil ever used for fuel, says there is no danger in using light oil. "Why," he states, "when we first began to burn oil for fuel we insisted in our contract that the gravity be at least 23 degs. and on up to 26 degs.; if any less were delivered we promptly refused to pay the price."

That the question of "flash test" may be thoroughly understood the following analytical statement made by Paul W. Prutzmen is

given: "The flash point of an oil is rather loosely defined as the temperature at which it will give off an inflammable vapor. It may be of interest to point out how and why an oil gives off inflammable vapor, how this vapor may become a source of danger and how such danger may be obviated. In the first place, oils do not burn, though their vapor does. That is to say, a portion at least of the oil must be changed to vapor or gas before ignition can take place, but combustion once started will furnish (generally) enough heat to convert more of the liquid to a gaseous condition, so that burning may go on without the aid of any outside heat. For instance, if a lighted match be plunged into a cup of gasoline the oil will at once burst into flame, because gasoline is so volatile that evaporation (that is, from liquid to gas) is continually going on. But if instead of gasoline we take a good grade of kerosene the match would be extinguished, for the reason that the kerosene requires a higher heat to convert it into vapor. If instead of a match we used a gas jet and kept the flame in one place on the surface of the kerosene, this spot would soon be heated sufficiently to vaporize the oil, which would then take fire and would probably continue burning. If in the place of kerosene we used a heavy lubricating oil we should probably have some difficulty in lighting it, even with a gas flame, and if we succeeded in lighting it the flame would go out almost as soon as the source of heat were removed."

SALES OF STEAM TURBINES

A recent list of the users of Westinghouse steam turbines, published by Westinghouse, Church, Kerr & Co., shows that 4000 kw of turbine machinery are now in successful operation and 75,000 kw have been contracted for. Prominent among railway plants who have secured or ordered turbines are those of the Metropolitan Railway Company and the Metropolitan District Railway, of London, aggregating 50,500 kw. The former plant will employ three 3500-kw units and the latter eight 5000-kw units, the largest turbine machinery on record. Two American railway installations are those of the Cleveland, Elyria & Western Railway Company and the Consolidated Railways & Lighting Company, of Wilmington, N. C., each of which will generate alternating-current power at a central station, employing transmission lines and rotary converter sub-stations along the right of way.

Several prominent lighting installations comprise: The Hartford Electric Light Company, two 750-kw units, replacing the engine-driven units (1500 kw already in service); Western Pennsylvania Railways & Lighting Company, Pittsburg, Pa., three 1000-kw units for supplying the entire district between McKeesport and Connellsville; Columbus (O.) municipal plant, three 400-kw units; Roslyn (L. I.) Light & Power Company, 800 kw; Citizens' Light, Heat & Power Company, Johnstown, Pa., three 400-kw units; the Rapid Transit Subway, New York, three 1250-kw units, supplying power for lighting the entire subway, the forty-seven underground stations and the immense power plant at Fifty-Ninth Street, Manhattan; Portsmouth (O.) Railway & Lighting Company, three 400-kw units, and the Rockland Light & Power Company, Nyack, N. Y., 400 kw. A number of these plants furnish considerable amounts of electric power to manufacturing establishments employing motor-driven machinery. Other installations, employed exclusively for industrial power establishments, include: The DeBeers Consolidated Mines, Kimberly, South Africa, two 1000-kw units for lighting and operating mine machinery; Westinghouse Electric & Manufacturing Company, Pittsburg, Pa., two 750-kw units for shop power; the B. F. Goodrich Company, Akron, O., one 750-kw unit for shop power (400 kw already in operation); Saco & Pettee Machine Shops, Biddeford, Me., two 400-kw units for operating shops; S. D. Warren & Co., Cumberland Mills, Me., 400 kw for shop power, relaying steam and water plant, and the Yale & Towne Manufacturing Company, Stamford, Conn., 400-kw unit, duplicating the turbine equipment already in operation. A recent installation for the Goshen & Indiana Traction Company comprises five 400-kw units. The entire station will be operated from turbine machinery, and current will be used for light and power work.

DISAPPEARANCE OF RAILWAY MAN

The disappearance of James M. Johnson, a former employee of the La Crosse City Railway Company, has been reported by the superintendent of the system. His family is anxious to learn of his whereabouts. Neither his former employers nor his friends know of any reason why he should have cut himself off from all communication with his former associates.

LARGE CAR WORKS AT MANCHESTER, ENGLAND

The British Electric Car Company, whose works are situated at Trafford Park, Manchester, and whose offices are at Oxford Court, London, has just issued two large catalogues descriptive of some of the cars recently built at its new works and also some views of the shops themselves. The shops are laid out on the most modern lines, and a number of novel features have been introduced to facilitate the manufacture of cars. Thus, the views show that the car bodies are set up crossways in the shops. This enables any one car body to be moved without disturbing the others, the finished body being moved out on a dummy truck to the electric crane in the bay by which it is conveyed to the loading track. One catalogue shows a large number of different types of cars, including cars for Huddersfield, the London United Tramways, Aberdeen, Isle of Thanet, City & South London and other well-known roads, as well as a car known as the "B. E. Standard." This car has a 17-ft. body and measures 27 ft. 6 ins. over all and has a double deck. The company also builds several standard types of trucks, sprinklers and an illuminated destination sign of several types. The catalogues are very handsomely printed.

A trip through the company's shops recently showed about 150 cars on hand. Among the cities for which the company is filling orders are Aberdeen, Huddersfield, Trafford Park, Motherwell, Ilford, Alexandria (in Egypt) and Blackpool.

ELECTRICITY IN THE PARK AVENUE TUNNEL

There were introduced in the Assembly, Feb. 10, the bills agreed upon by the Board of Estimate and Apportionment of New York City and by the New York Central & Hudson River Railroad Company for the substitution of electricity for steam as motive power and for the other general improvements to the system.

One of the bills confers on the Board of Estimate and Apportionment the exclusive power to grant to the New York Central Railroad permission to put into effect its \$25,000,000 terminal improvement plans. One of the more important provisions requires the substitution for steam below the Harlem River of either electricity or "any motive power other than steam, and which does not involve combustion in the motors themselves."

The two other bills sent by Mayor Low relate to the abolition of grade crossings in The Bronx and the digging of a tunnel under St. Mary's Park on the Port Morris branch of the Harlem Railroad. Mayor Low says in his letter:

"It is the intention of the company to use electricity, and the present plans contemplate the use of this motive power for a considerable distance beyond the city limits, both on the Hudson River and on the Harlem Railroad. A time limit of five years has been fixed, for the reason that the very great changes contemplated must be carried on without interrupting the ordinary business of the road. On the other hand, the company hopes to complete the work in much less time."

EACH GRADE CROSSING ON ITS OWN MERITS IN MICHIGAN

The Commissioner of Railroads of Michigan has granted permission to the Grand Rapids, Grand Haven & Muskegon Railway Company to make a grade crossing of its line with the tracks of the Pere Marquette Railroad Company on Fulton Street in the city of Grand Haven, such crossing to be protected by an interlocking system. Much interest attaches to this decision from the fact that an application for the approval of this same crossing was made to the former commissioner and was denied, that official taking the position that no grade crossing of an electric with a steam road should be allowed under any circumstances. In this case it was clearly shown that unless a grade crossing should be allowed the road could not be built into the city, the Common Council refusing to grant a franchise for other than a grade crossing, and the expense of an underground crossing, on account of the nearness of the river bridge, being prohibitive. The position taken by the present commissioner appears to be that, while recognizing the fact that all grade crossings are of necessity dangerous, and that the construction of additional crossings is to be avoided whenever possible, still each case must be considered upon its own merits, and where it appears that a separation of the grades is not reasonably practicable, grade crossings may be allowed. Since the building of this line passengers for Grand Haven have been compelled to transfer at the city limits and be carried into the city by a bus line.

AN IMPORTANT DECISION IN MASSACHUSETTS

In the STREET RAILWAY JOURNAL for Feb. 14 brief mention was made of a decision handed down by the Railroad Commissioners in which was denied the petition of the Lowell & Pelham Street Railway Company for a right to enter the city of Lowell over the tracks of the Boston & Northern Street Railway, with which it entered into an operating agreement about Oct. 1, 1902. The point raised in the suit is new, apparently leaving application to the Legislature as the only recourse, if the Lowell & Pelham Company persists in demanding entrance to Lowell over the lines of the Boston & Northern Company.

The reason of the decision, as stated in the rescript handed down by the Railroad Commissioners, is to the effect that they lack jurisdiction in the matter and cannot act until there is some expression from the legislative body of the government. The Commissioners say the two companies have entered into an agreement for the joint use of the tracks, but the Aldermen of the city of Lowell have taken no action and appear here as remonstrants, and from the context of the report of the Railroad Commissioners it would appear that they considered it necessary for the company to first go before the Aldermen of Lowell for the approval of this authority to run over the tracks of the Boston & Northern before the company should come before the commissioners. The Railroad Commissioners dismissed the petition for the lack of jurisdiction.

Months ago the Lowell & Pelham Company applied for a franchise in Lowell, but the franchise was never granted, for the reason that the company withdrew the petition and soon after entered into a private agreement with the Boston & Northern to run over its tracks.

The agreement was signed and the Lowell & Pelham Company proceeded to run its cars over the Boston & Northern Company's tracks from their terminus to Dracut. A few months ago the question of the right of this foreign road to enter into such an agreement and to occupy the streets was raised by a petition to the Aldermen. At this hearing the question was raised of the right of the Lowell & Pelham Company to operate in the city, with the result that the City Solicitor and the then acting Mayor were instructed to appear before the State board and oppose the approval of this agreement.

ANNUAL MEETING OF THE WASHINGTON, ALEXANDRIA & MT. VERNON RAILWAY COMPANY

At the last annual meeting of the Washington, Alexandria & Mt. Vernon Railway Company the following were elected directors: Samuel Rea, James S. Swartz, Frank K. Hipple, David C. Leech, Joseph Crawford, Clarence P. King, John Cassels, Frederick Mertens and G. E. Abbot. The officers elected were: Clarence P. King, president; Frank K. Hipple, secretary; J. K. Swartz, treasurer.

The business for 1902 was the largest in the history of the company, the report making the following showing:

Gross receipts.....	\$217,659.75
Operating expenses, including insurance and taxes...	140,239.63

Receipts over operating expenses.....	\$77,420.12
---------------------------------------	-------------

After paying interest on bonds and rentals, the surplus earnings for the year were \$44,920.16. A dividend of 2 per cent on the \$500,000 of capital stock was paid and the balance placed to profit and loss account.

The gross receipts for January, 1903, were \$16,146.72, as compared with \$15,267.75 for January, 1902, showing an increase of \$878.97.

IMPROVEMENTS AT CLEVELAND

Extensive improvements will be made to the Cleveland street railway systems during the coming season. It is stated that the Cleveland City Railway Company and the Cleveland Electric Railway Company, which control all the lines in the city, will expend \$1,500,000 in betterments. About seventy new cars will be installed by the two companies. The majority of these have been ordered. The Cleveland City Railway Company will extend its Clifton Boulevard line to Rocky River and will also extend its West Madison Avenue line. It will also extend its Collinwood line to connect with those of the Cleveland Electric Railway Company. The latter is installing a new battery station at the Widemere car houses and another will be built at Newburg. Its line from East Cleveland to Euclid will be double-tracked and the Erie Street crosstown line will be extended.

STREET RAILWAY PATENTS

UNITED STATES PATENTS ISSUED FEB. 10, 1903.

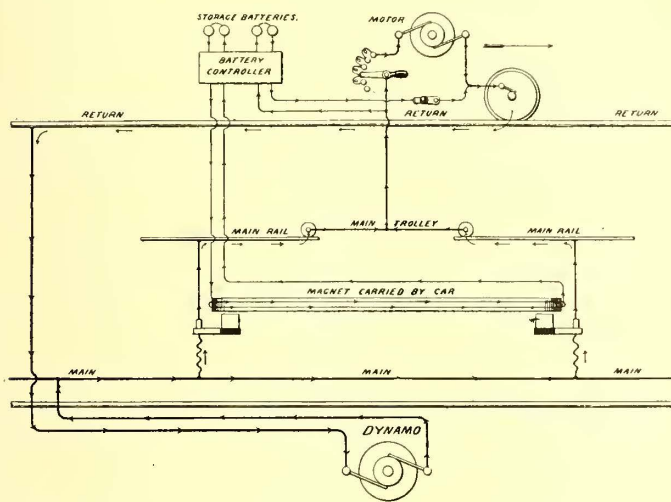
[This department is conducted by W. A. Rosenbaum, patent attorney, Room No. 1203-7 Nassau-Beeckman Building, New York.]

719,983. Electric Railway; F. M. Ashley, Brooklyn, N. Y. App. filed Feb. 26, 1898. Each car has a storage battery which is charged by the main current, the current from the battery being used to operate the electro-magnetic switching devices.

719,984. Electric Railway; F. M. Ashley, Brooklyn, N. Y. App. filed Feb. 26, 1898. A battery on the car energizes a magnet, the magnet being of sufficient length to bridge two of the switching devices in the branch circuits to the working conductor to operate the same.

720,006. Automatic Street Car Switch; L. Devers, Dayton, O. App. filed Sept. 10, 1902. A plunger on the car platform is adapted to engage a lever in the roadbed to actuate the switch.

720,167. Brake-Shoe for Railway Brakes; J. Meehan, Covington, Ky. App. filed July 2, 1902. The shoe is constructed to wear upon that portion of the wheel least subject to the wear of the rail.



PATENT NO. 719,984

720,208. Mechanism for Removing Ice and Snow from the Conductors or Third Rail of Electric Railways; F. V. Winters, New York, N. Y. App. filed Aug. 5, 1902. Details of a spring-mounted ice-crushing wheel and plow.

720,256. Clamp; H. E. A. Kleinschmidt, Johnstown, Pa. App. filed April 22, 1902. Comprises two pivoted jaw members, one of which has its upper portion curved inwardly, a link or yoke pivoted to the other of said members and embracing the member having the inwardly curved portion and a set-screw carried by said link or yoke.

720,273. Electric Railway; T. E. Murray and J. Van Vleck, New York, N. Y. App. filed Nov. 22, 1901. The cars switch themselves onto their proper sidings at stations automatically, the current being cut off and the brakes applied at the proper time.

720,291. Railway Car; G. E. Smith, Pasadena, Cal. App. filed Nov. 25, 1901. A friction rail in the center of the track is engaged by traction wheels mounted on vertical axles, whereby the car may climb heavy grades and turn sharp curves at a high rate of speed.

720,333. Trolley and Brake for Aerial Railways; M. J. Doner, St. Louis, Mo. App. filed Aug. 18, 1902. The trolley and brake lever are connected by a rod so that the brakes are applied when the arm is lowered.

720,376. Safety Brake Apparatus for Motor Cars; C. F. Peel, Jr., New York, N. Y. App. filed Sept. 11, 1902. Means whereby the brake is automatically applied in case the motorman is incapacitated; also means for locking the controller and brake apparatus by the removal of the brake handle.

720,377. Emergency Car Brake; A. Perry, St. Louis, Mo. App. filed May 17, 1902. Consists of a spring strap adapted to move into contact with the car wheel by virtue of its tension when freed from resistance.

720,458. Cable Grip; S. S. McCain, California, Pa. App. filed Oct. 28, 1902. A cable grip designed to easily pass carrier sheaves at curves, crossings and similar places.

720,502. Car Fender; J. P. Thom, New Orleans, La. App. filed July 2, 1902. Details.

720,523. Switch Device; L. Horinko, New York, N. Y. App. filed Oct. 4, 1902. Relates to means for automatically throwing the switch from the car.

720,528. Bolster; H. T. Krakau, Cleveland, O. App. filed Oct. 14, 1901. A bolster made of end sections, an intermediate section, a tie-plate, and keys passing through lugs on tie-plate and end sections and connecting the same.

PERSONAL MENTION

MR. T. J. CARLING has resigned as president of the Macon Railway & Lighting Company, of Macon, Ga., and Mr. E. L. Bemiss, of Richmond, Va., has been elected as his successor.

MR. CHARLES T. YERKES, at a recent meeting of the London United Tramways Company, held Feb. 11, was elected president of that company. This is the result of the recent change in ownership of that company.

MR. W. A. HARDING, formerly master mechanic of the Calumet Electric Street Railway, of Chicago, is now on the Pacific coast, having recently become master mechanic of the Santa Barbara Consolidated Street Railway. Mr. Harding, as might be expected, was among the first to forward an application for membership to the American Railway Mechanical and Electrical Association, formed at Cleveland, Feb. 16.

MR. WILLIAM D. RAY, who has been with Westinghouse, Church, Kerr & Co. in engineering work connected with the electrical equipment of the Pennsylvania Railroad terminal tunnel in New York City, has returned to his former home, Detroit, to take charge of that office of the Westinghouse Traction Brake Company, 716 Union Trust building, a position for which he is admirably fitted by his previous extensive experience both in engineering and selling.

MR. GEORGE O. NAGLE, who has been manager for several years of the Savannah Electric Company, has recently resigned from that position to fill an important place in the office of Stone & Webster, who control the Savannah property, as well as many other railway and lighting plants throughout the country. Mr. Nagle's headquarters will be at the main office of the company in Boston. Mr. Nagle, who was formerly superintendent of the Chicago City Railways, has been very successful in his management of the Savannah property, where he has had charge of both the lighting and railway work. Before leaving Savannah, in recognition of Mr. Nagle's services, he was extended a farewell dinner by a number of his Savannah friends. During the dinner he was presented with a handsome Masonic emblem containing nine diamonds, as well as a dress suit case and equipment from a number of his newspaper friends. Mr. Nagle will be succeeded by Mr. Clinton B. Kidder, who has been assistant manager of the company. Mr. Kidder will be assisted in the operation of the street railway system by Mr. J. H. Oakley.

MR. WALTER H. ABBOTT, heretofore consulting engineer for the Cleveland, Elyria & Western Railway, of Cleveland, has been appointed consulting engineer for all the properties of the Pomeroy-Mandelbaum syndicate. The new office was created for Mr. Abbott, and in view of the remarkable development of the properties of this syndicate it is a very responsible one. Mr. Abbott is a graduate of the Chicago University and also completed the post-graduate course of the Ecole Internationale des Electriciens of Paris. Previous to his connection with the Pomeroy-Mandelbaum syndicate he held responsible positions with the Ocean City Electric Railway & Power Company, of New Jersey; the Siemens-Halske Company, of Chicago, and the Stanley Electric Company, of Pittsfield, Mass. Mr. Abbott's headquarters will be in the Garfield building, Cleveland, and the position means the organization of an engineering corps, which in turn will cause the creation of a purchasing department here. At the present time the executive head of the syndicate is located in Cleveland, but the intermediate departments have not been definitely located and much of the purchasing has been done at the operating headquarters of the various companies.

NEWS OF THE WEEK

CONSTRUCTION NOTES

ANNISTON, ALA.—The Anniston Electric & Gas Company is to erect a new amusement building at Oxford Lake Park this spring. In this building will be housed an electric merry-go-round, bowling alleys and a refreshment stand.

LOS ANGELES, CAL.—The Los Angeles Traction Company has begun grading for its line from Los Angeles to Santa Monica.

SAN BERNARDINO, CAL.—The franchise applied for by Harry H. Duryea in the interest of the San Bernardino Valley Traction Company is to be sold at public auction on March 3.

LOS ANGELES, CAL.—The Pacific Electric Railway Company is making more extensions to its already large yards, and many new switch tracks are being installed. A 250-hp engine and a generator have just been added to the power-house equipment.

REDWOOD CITY, CAL.—The Board of Supervisors has granted W. J. Martin, of the San Francisco Land Company, a franchise to construct an electric railway from Holy Cross Cemetery to South San Francisco.

LOS ANGELES, CAL.—Contracts are being prepared for the work on the proposed line of the Los Angeles Traction Company to Hollywood. The right of way has been secured and most of the estimates have been made. The new line will be the shortest to Hollywood, and the time from the center of the city will be about twenty minutes. It is the avowed intention of the company to put on high-speed cars of the latest pattern, and some additions will have to be made to the power facilities of the company.

BAKERSFIELD, CAL.—John Burson, the promoter of the proposed electric railway from Ventura County to Bakersfield, is said to have completed arrangements for beginning the construction of the line at once. The plan is to begin work at Oxnard.

MONTEREY, CAL.—R. C. P. Smith has been granted a franchise for the construction of an electric railway here. Work must be begun within sixty days, and the line must be placed in operation within twelve months from the time construction work is begun.

HARTFORD, CONN.—The application of the Meriden & Middletown Traction Company for a charter has been presented in the Legislature. The preliminary capital of the company is to be \$25,000, with the privilege to increase to \$500,000. The plan of the company is to build a line to connect Middletown, Meriden, Berlin, Cromwell, Durham, Middlefield and Guilford. Among the incorporators of the company are: I. E. Palmer, W. W. Wilcox, of Middletown, and Francis Atwater, of Meriden.

NEW LONDON, CONN.—The East Lyme Street Railway Company, which has secured a special charter for an electric railway from New London to East Lyme, has organized with Richard C. Morris as president and treasurer and Calvin S. Davis as secretary. The capital stock of the company is \$100,000, all of which has been subscribed. It is said that the plan of the company is to begin construction work immediately.

HARTFORD, CONN.—The Willimantic & Southbridge Street Railway Company has applied to the Legislature for permission to increase its capital stock to \$200,000. The plan of the company is to build an electric railway to connect Willimantic, Conn., and Southbridge, Mass., passing through North Windham, Chaplin, Woodstock and Putnam.

HARTFORD, CONN.—The West Side Street Railway Company, of Stonington, is seeking a charter.

ROCKVILLE, CONN.—Surveys are being made by the Stafford Springs Street Railway Company for its proposed line through Rockville. The petition of the company for a franchise is before the Council.

MONTVILLE, CONN.—A survey has been made for the extension of the lines of the Montville Street Railway Company from the New London and Norwich turnpike to Oakdale.

ROCKVILLE, CONN.—The Rockville & Broad Brook Street Railway Company is to perfect its organization at once and complete plans for building the road. It is proposed to build from the lines of the Hartford, Manchester & Rockville Street Railway in Rockville to Ellington and Broad Brook. At the latter place connections will be made with the lines of the Springfield & Hartford Street Railway. The road will be 12 miles long. C. E. Harwood, of Rockville, is interested.

WOODBURY, CONN.—The application of the Woodbury & Waterbury Street Railway Company for incorporation has been presented to the Legislature. The plan of the company is to construct a line in Woodbury, Middlebury and Waterbury to connect with the Connecticut Railway & Lighting Company's lines. The incorporators of the company are: Floyd F. Hitchcock, Levi A. Curtiss, of Woodbury; Christian Stroebel, of Waterbury, and Frederick L. Averill, of Bradford. The capital stock will be \$200,000.

DELAWARE CITY, DEL.—Right of way has been secured between Delaware City and Odessa for the proposed electric railway between Milford and Delaware City. H. L. Evans, president of the Wilmington & New Castle Railway Company, is said to be interested in the scheme.

WASHINGTON, D. C.—There has been introduced in the House a bill to permit the Anacostia, Surrsville & Brandywine Electric Railway Company to extend its lines into the District.

ST. AUGUSTINE, FLA.—The St. Augustine & South Beach Railway, operating about 5 miles of line connecting St. Augustine with the seaside resorts, has been sold under foreclosure to Judge J. W. Henderson and Dr. Horace Lindsley. It is said that the new owners plan to reconstruct the property and equip the line with electricity.

AUGUSTA, GA.—James U. Jackson, president of the Augusta & Aiken Railway & Electric Company, and his associates, are said to be planning to incorporate a company to build an electric railway between Augusta and Columbia.

ATHENS, GA.—Charles H. Lemon, representing an Ohio syndicate, has been in consultation with the local authorities in the interest of a scheme to build an electric railway to connect Atlanta, Decatur, Monroe, Walkinsville, Athens, Lexington, Washington, Appling and Augusta.

ROME, GA.—There has been outlined to the citizens by the City Electric Railway Company a plan whereby the local properties of the company will be improved and an extension of the company's lines built to Lindale. This plan contemplates an issue of \$125,000 of stock and \$100,000 of first mortgage bonds, to which local interests have been asked to subscribe a stated amount. The railway company owns the local lighting plant.

POCATELLO, IDAHO.—I. B. Perrine has applied for a street railway franchise.

BOISE, IDAHO.—Howard Sebree, of Caldwell, has applied for the right of way for the construction of an electric railway from Caldwell to Boise, a distance of 30 miles.

SYCAMORE, ILL.—The De Kalb-Sycamore Electric Railway Company plans to extend its lines to Belvidere, where connections will be made with the Belvidere-Rockford system.

SPRINGFIELD, ILL.—Former Attorney-General Akin, of Springfield, is reported to be interested in a plan to build an electric railway from Springfield to Riverton. By building from Springfield to Girard and Carlinville, as is reported to be the intention, connections could be made for St. Louis.

DECATUR, ILL.—H. W. Knight, in the interest of the proposed electric railway between Bloomington and Decatur, has applied for a franchise in Decatur. Mr. Knight says the entire right of way has been secured for the line.

OTTAWA, ILL.—The Ottawa, Marseilles & Morris Electric Railway Company is securing right of way for its proposed line. J. F. Moloney and J. J. Graham, of Ottawa, are reported interested.

QUINCY, ILL.—Citizens of Quincy are reported to have completed subscriptions for \$207,000 of stock in the Quincy & Western Electric Railway. The plan of the company is to build two lines, one running north and tapping Hancock County points, the other running east to the Illinois River.

CHICAGO, ILL.—The Chicago, Riverside & La Grange Railroad Company has been chartered to build a railroad from Fortieth Avenue and West Twenty-Second Street to Forty-Sixth Avenue and West Twenty-Second Street. John T. Richards, George T. Pitkin, J. Scott Mathews, Robert S. Cook and Eugene Dupee, attorney, 140 Dearborn Street, Chicago, are named as the first board of directors.

MARION, IND.—C. H. Bundy, John E. Clark and Everett W. Trook have been granted a fifty-year franchise for the construction of an electric railway through Howard County. Messrs. Bundy, Clark and Trook are said to be interested in a plan to build between Kokomo and Marion.

LA PORTE, IND.—The syndicate engaged in dredging the Kankakee River is said to have decided to build an electric railway from Bloomington to Joliet. The company's plans have not yet been made public.

NEW HARMONY, IND.—The Mt. Vernon, New Harmony & Northeastern Traction Company is to be incorporated to build an electric railway from New Harmony through Princeton to Petersburg. Harry Kurtz is interested.

INDIANAPOLIS, IND.—The Indianapolis & Martinsville Rapid Transit Company is said to be considering the advisability of extending its lines from Plainfield to Greencastle.

RICHMOND, IND.—The Richmond Street & Interurban Railway Company has in contemplation the extension of its lines from Milton to Connersville. The company has secured a franchise from the County Commissioners and has asked the City Council of Connersville for a franchise.

INDIANAPOLIS, IND.—President McGowan, of the Indianapolis Traction & Terminal Company, is quoted as stating that all arrangements have been perfected for securing the property on which to erect the proposed terminal station for the lines of his company and the interurban companies operating into the city. The contract for erecting the new building is yet to be awarded, according to report. It is said that this contract will include razing the buildings now on the ground.

FRENCH LICK, IND.—A survey has been completed for the New Albany & French Lick Springs Valley Traction Company's line. The road will run through four countries, and will form an important line for a trunk line from Indianapolis to Louisville via Columbus.

LOGANSPOUR, IND.—The Knox, Chicago & Northern Traction Company has been organized to build electric railway lines aggregating in length 140 miles. One line is to be built from Logansport through Winamac, Bass Lake, Knox and Laporte, and another line is to be built from Rochester through Culver, Bass Lake, Knox, Wanatah, Valparaiso and Hammond. Connections are to be made with one of the interurban lines to Chicago. J. C. Fletcher, of Knox, is president of the company.

MARSHALLTOWN, IA.—The Marshalltown Electric Street & Interurban Railway Company has been organized with a capital stock of \$25,000 to build an electric railway in Marshalltown and from Marshalltown to Eldora, the county seat of Hardin County, and Grundy Center, the county seat of Grundy County. The directors of the company are: H. E. Sloan, H. P. Densel, Charles Glick, E. L. Will, George R. Estabrook, F. E. Glick and A. G. Glick, of Marshalltown.