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The Referendum in Railway Operation

Bridge Commissioner Lindenthal, of New York, has adopted a new and, according to our idea, a rather absurd method of settling the "Bridge problem" with which he and his predecessors have been wrestling for a number of years. This plan is simply that of making a canvass of the patrons of the Bridge to learn the hours at which they usually cross the Bridge, their residence in Brooklyn and business address in New York, whether they would use the ferries if adequate railway service was given to the ferry slips, etc. If such an investigation was carried out properly, it might, theoretically, throw some light upon a somewhat obscure problem, but where a referendum is taken with no safeguards against repeating, it is apt to give an entirely erroneous idea of the true situation. Thus, there is nothing to prevent any clique of persons who desire some particular line of action from stuffing the ballot boxes, which are always open, and thus producing an impression of a preponderating sentiment in a certain direction for which there was no foundation in fact. Such a course would require no more trouble than that of filling in blanks with fictitious names and addresses, which can easily be done, as the Commissioner requested all of the daily newspapers to print copies of the ballot, to be used for the purpose of the canvass. Some half a dozen metal boxes, carefully padlocked, were distributed about the Bridge entrance on Monday last, but although two slots were provided in their covers to accommodate the crush of coupons expected from the passing throng, little attention was paid to this opportunity of educating the Bridge Commissioner, and the only excitement attending the experiment was the occasional depositing of a Bridge ticket in the coupon boxes, a mistake accompanied by lamentation and indignation. We hope soon to see published in tabulated form the results of this interesting investigation, with possibly the addition of graphical methods for determining the proper residence section of the borough for the friends of the ferry, but we do not think that this data will be of any use, whatever. Mr. Lindenthal's many years of experience with the engineering work of the Pennsylvania Railroad and other consulting practice has undoubtedly made him familiar with the tensile and compressive strength of all kinds of bridge-building materials, but his formulæ seem to be incapable of solving problems involving the moment of inertia of a Brooklyn crowd, or the elastic limit of the public patience. Judging from the lack of feasible plans emanating from his office he appears to be more of an "ommissioner" than a commissioner.

Weeds or Wheels

The question is up in Iowa whether subsidies in aid of railways are good investments or not. A bill has been presented in the State Legislature permitting townships to vote aid to trolley lines. In other words, the help that steam railroads have had in days gone by shall be granted to their successors, the new electric lines now ramifying in every direction. It would appear that no longer needing such help, or not requiring it on the terms that exact \$100 in stock for each \$100 of tax assistance, the larger steam roads are behind the opposition to the bill, which would, of course, enable many districts to get trolley service promptly. If the various communities are ready and willing to secure electric roads on such terms, we do not see that any real interest in the community is injured thereby; and a local option plan may be the solution. The Burlington Journal suggests the following as an alternative:

If the State of Iowa wants to do the fair thing by the electric interurban railway she will enact laws that will enable the electric line to use the public highways. There is no good reason why the interurban railway should not take one side of the highway. The country roads are altogether too wide, anyhow, and a good electric line enabling the farmer to get to the city with his produce in all kinds of weather would be a much greater boon for the farmer than is found in the present wide, useless country highways occupied principally by weeds.

This is excellent, and it is certainly better that the wide margins of weed should make way for the humming trolley tracks; but if the farmers and villagers in any section are willing to help a new trolley road along by taking its stock while granting a tax subsidy, it is hard to see why they should not be allowed to do so.

Where the Car Comes in

In Europe one is struck with the multiplicity and cheapness of the cabs. In Paris, fiacres are obtainable everywhere, and not costly, even when the driver cheats you. In London, the hansoms, "Gondolas of the Street," are ubiquitous, and whisk you everywhere in no time at all. All of which is very lovely, but it has simply been the evolution of conditions which did not include the modern trolley car, and which otherwise left people largely dependent upon the slow-going horse omnibus for travel within urban areas. Hence, the frequency of the fares, and the shortness of the average "haul," created these methods of semi-cheap transportation. It was much the same way in many of our Western cities, where not so long ago, you could go along the business streets and see any number of buggies awaiting their owners who were doing business inside stores and offices. A Kansas City man familiar with these conditions and commenting on them, remarked to us once that the trolley car was bound to abolish the "hitching block;" and it would, indeed, seem that he was not far out. In Europe, one hears now frequent complaints from cabbies as to the harm that tramways do them, and in this country, in spite of the vast increase of wealth, proprietors of livery stables are strong in the belief that their business has not made its due and proportionate advance.

It is very hard to submit these ideas to the test of figures, but once in a while data becomes available that throws some light. We note, for instance, that the United States Census Bureau has issued a preliminary report regarding the manufactures of carriages and wagons in the United States in 1900, with percentages of increase or decrease since 1890, as follows: Number of establishments, 7632, decrease 11 per cent; capital, \$118,187,838, increase 13 per cent; wage-earners, average number 62,540, decrease 3 per cent; total wages, \$29,814,911, decrease 9 per cent; miscellaneous expenses, \$6,261,469, increase 4 per cent; cost of materials used, \$56,676,073, increase 14 per cent; total value of products, \$121,537,276, increase 6 per cent. Family and pleasure carriages—Number, 907,483, increase 8 per cent; value, \$51,514,756, decrease 2 per cent. Public conveyances—Number, 2,316, decrease 28 per cent; value, \$1,147,630, decrease 12 per cent. Business, farm, governmental, municipal, &c., wagons—Number, 575,382, increase 33 per cent; value, \$31,508,179, increase 18 per cent. Sleighs and sleds—Number, 118,221, increase 36 per cent; value, \$2,324,550, increase 20 per cent. All other products—Total value, \$35,042,161, increase 9 per cent.

These figures are certainly very interesting. They bear out the idea that while the number of vehicles for farm, country and extra urban use have increased, the trolley car has kept down the growth in regard to private carriages, omnibuses, etc. In other words, the trolley car has become a platform on which all grades of society have met, for, while it has given cheaper transportation to the poor, it has proved so convenient to the well-to-do and rich that they have dropped their private carriages and have used either the trolley or the ply-for-hire cab. It would appear that the same conditions are developing in Europe, but more slowly, as in many cities of the Old World there are sacred regions into which the tramway must not penetrate, and where only the cabhorse is allowed to pollute the pavement. But that, too, will change.

Bottled Franchises

The relations between State and municipal authorities on the one hand and street railways on the other are often somewhat strained, but there are many more times when the interests of people and company coincide.

Just now some of the most troublesome questions on hand are those relating to the acquisition and utilization of franchises for interurban lines. Now, the public as a whole has learned that the building of such lines is greatly to its advantage, and save in rare instances does its best to help the good work along. Opposition usually takes the form of internecine strife between opposing street railway interests, each anxious to get the long end of the

bargain, or a determined attempt on the part of promoters who want to build the road when they can find the funds, or on the part of steam railroad interests that desire no road at all. We would really like to analyze a list of the unutilized electric railway franchises granted during the last two or three years—it would make mighty interesting reading. Some of them are being kited about by entirely irresponsible persons in the hope of picking up crumbs of stock when anyone can be found to back the scheme; others are held pending protracted negotiations for control, and still others are in the hands of those who have not the slightest intention of allowing a road to be built at all. The present economic tendency is to weld urban and connected interurban roads into a coherent system, with all the advantages that accrue from combined effort. As we have many times pointed out, it is a sound policy and helps both the street railway business and the public. Hence it would be an exceedingly good thing for the business as a whole if the whole weight of the street railway interests could be brought to bear in favor of legitimate enterprises and against obstructive measures of every kind. It is a time to put aside petty differences and to pull together for the common good. Every franchise that is tied up in unfriendly hands or kicked about among impecunious promoters is an injury to the electric railway business and to those who are struggling daily to earn dividends for their stockholders. The public ought to realize this fully and work in harmony with legitimate enterprises for the common good. When a franchise is granted it should be in such terms that the grantees will have, in Down-East parlance, "to fish, cut bait or go ashore"—to build and operate the road or get out of the way to make room for those who will. If this policy were rigorously followed out there would be more and better roads than we now have and better relations between the roads themselves. Here, as elsewhere, united action pays and ought to be encouraged. There are few situations more exasperating for two neighboring street railways than to have their way blocked by a franchise notoriously acquired for the purpose of preventing the construction of a badly needed connecting link between the systems. It is a case properly requiring drastic remedies, and we would like to see them applied. The good things in the business ought to come to those who get up and hustle, who follow broad methods instead of narrow ones, who show the public that prosperity and good service go hand in hand.

The Detroit Three-Cent Fare Decision

The decision of the United States Supreme Court in the Detroit Street Railway or "three-cent fare" case, and which was published in full in the *STREET RAILWAY JOURNAL* last week, has a most important bearing on street railway properties. The lateness of the date of receipt of a full copy of the decision prevented us from commenting editorially upon it last week, but there are a number of points in it which deserve most careful consideration.

In the first place, the decision would seem to apply to all cases where roads have been built under direct agreements with city governments, but not to those constructed under general laws or even under direct charter from the Legislature itself. Without saying so in so many words, the court seems to hold that the Legislature may, under certain conditions, rescind its acts, but that when a municipality, acting under a general law, makes an agreement with a company for the building of a road, it thereby enters into a contract which it alone cannot alter. Rights conveyed by such a contract become vested in the company and cannot be taken away without its consent—and this despite a specified power to control, set forth in the agreement.

Nor need these rights be expressed; they are equally binding on the city if sufficiently implied in the agreement to have, as a matter of fact, induced the public to invest its money in the building of the road.

A clear distinction is made by the court between the act of a Legislature, which deals with the constructing companies in a general way only, and that of a municipality, which makes a

specific agreement for the purpose of inducing the company to build. "Language," says the court, "used by a Legislature in merely conferring authority upon a company to fix certain charges for fare might not be regarded as amounting to a contract, when the same language used by parties in fixing rates under a legislative authority and direction to agree upon them would be regarded as forming a contract."

The question at issue in the case was the rate of fare to be charged on the Detroit city railways. These railways were built at different times and under somewhat different acts, but all were either organized under a certain ordinance adopted by the Common Council or had the benefits of that ordinance extended to them. This ordinance contained two provisions which were under special consideration in the present case. One of these reads as follows: "The rate of fare for any distance shall not exceed five cents in any one car, or on any one route named in this ordinance, except where cars or carriages shall be chartered for specific purposes."

The other, while expressed with slight variations in different acts, suffered no material change. It reads: "It is hereby reserved to the Common Council of the city of Detroit the right to make such further rules, orders or regulations as may from time to time be deemed by the Common Council necessary to protect the interest, safety, welfare or accommodation of the city and public in relation to said railway."

In 1899, the Council claimed the right, under these two provisions, to reduce fares from 5 cents to 3 cents and to compel the granting of transfers at all intersections. It adopted an ordinance for enforcing this. The company held that this act violated the Federal Constitution in that it impaired the contracts under which the roads had been built. The more usual way would have been to refuse to obey and let the law be tested by some passenger whose tender of the reduced fare had been refused. The company, however, wishing to avoid the annoyance, litigation and loss that would surely arise from conflicts with passengers who would try to take advantage of the new ordinance, applied to the United States Circuit Court for Eastern Michigan for an injunction, forbidding the city to put its act into effect. This injunction was granted, whereupon the city appealed to the Supreme Court, which has just sustained the action of the lower body.

The important questions presented were two in number: whether the power to make "rules, orders and regulations" extended to the control of the rates of fare; and whether, if it did, the limitation on fares, viz.: that they "shall not exceed five cents," did or did not abrogate that control.

On the first point the court says:

Sec. 20. The rates of toll or fare which any street railway may charge for the transportation of persons or passengers over their road shall be established by agreement between said company and the corporate authorities of the city or village where the road is located, and shall not be increased without the consent of such authorities.

The court remarks, however, that it is unnecessary to determine this question exactly, because, under the other provision cited, the city entered into a binding agreement which cannot be altered without the consent of both sides.

The Michigan Street Railway act of 1867 says:

The rate of fare is among the most material and important of the terms and conditions which might be imposed by the city in exchange for its consent to the laying of railroad tracks and the running of cars thereon through its streets. It would be a subject for grave consideration and conference between the parties, and when determined by mutual agreement the rate would naturally be regarded as fixed until another rate was adopted by a like agreement. Can it be possible that under this language permitting consent upon such terms and conditions as the city might from time to time prescribe the power was reserved to make a rate of fare which might ruin the whole enterprise? That a rate once deliberately and mutually agreed upon might be thereafter and from time to time altered at the pleasure of the city alone? Will it be believed the parties thus understood the meaning of that provision? It would hardly be creditable that capitalists about to invest money in what was then a somewhat uncertain venture, while procuring the consent of the city to lay its rails and operate its road through the streets in language which as to the rate of fare amounted to a contract, and gave the company a right to charge a rate then deemed essential for the financial success of the enterprise, would at the same time consent that such rate then agreed upon should be subject to change from time to time by the sole de-

cision of the Common Council. It would rather seem that the language above used did not and was not intended to give the right to the Common Council to change at its pleasure from time to time those important and fundamental rights affecting the very existence and financial success of the company in the operation of its road, but that by the use of such language there was simply reserved to the City Council the right from time to time to add to or alter those general regulations or rules for the proper, safe and efficient running of the cars, the character of service, the speed and number of cars and their hours of operation and matters of a like nature, such as are described in the opinion of the court below in this case. Such would seem to be a reasonable construction of the language.

Discussing this the court says: "It is plain that the Legislature regarded the fixing of the rate of fare over these street railways as a subject for agreement between the parties and not as an exercise of a governmental function of a legislative character by the city authorities under a delegated power from the Legislature. It was made matter of agreement by the expressed command of the Legislature. * * * The rate of fare having been fixed by positive agreement under the expressed legislative authority, the subject is not open to alteration thereafter by the Common Council alone, under the right to prescribe from time to time the rules and regulations for the running and operation of the road."

The language of the ordinance, then, which provides that the rate of fare for a passenger shall not be more than 5 cents, does not "give any right to the city to reduce it below the rate of 5 cents established by the company. It is a contract which gives the company the right to charge a rate of fare up to the sum of 5 cents for a single passenger, and leaves no power with the city to reduce it without the consent of the company."

This settles the question of the right of the Common Council to make invalid the contracts entered into by its predecessor by destroying their prime consideration. The court does nothing more than simple justice to the companies by its decision. For, as a matter of course, no one who invested in the stock of the roads either before or after they were built did so with the idea that the Common Council might wipe out the value of their property at a moment's notice. If the Council has the right, under the provisions of the ordinance, to reduce fares at all, it has the right to reduce them without limit. If 3-cent fares are a good thing—for the community—why should not 2-cent or even 1-cent fares be better? Nay, why pay any fares at all? It is hard to see how any other conclusion could be reached by the court than that which was announced. At the same time it is gratifying to have a direct statement on this point from the highest tribunal in this country.

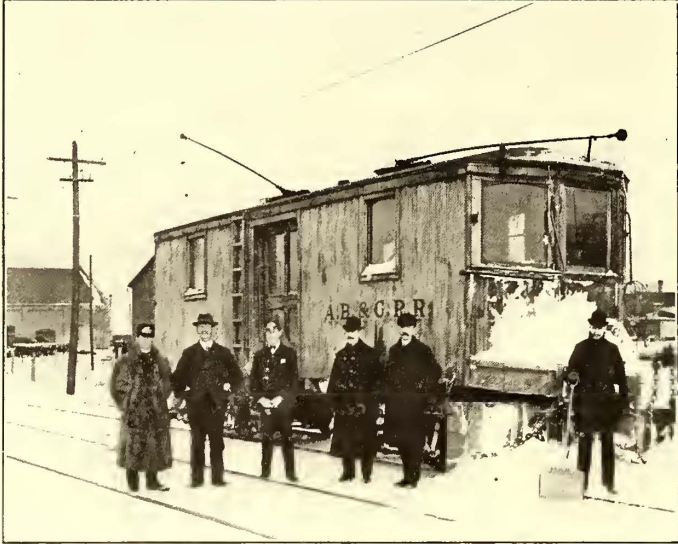
The Baltimore Example

Instances of the freedom with which irresponsible authorities think they can lower fares and thus donate other people's money to the public has been shown during the last season in many States, but perhaps in no more conspicuous an example than in Baltimore.

A bill is now before the Maryland Legislature, and has been reported favorably, compelling the company to give six tickets for a quarter; yet the company had originally the right to charge 7 cents, in consideration of paying no less than 20 per cent park tax. This amount was later lowered to 12 per cent, when the fare went down to 6 cents; while a further reduction to 5 cents followed, when the park incubus was reduced to 9 per cent. These very facts recognize the validity of the contracts and franchises, while they also exhibit the willingness of the company to share with the public any benefit it may receive enabling it to give better service. We do not go too far when we say that if street railway companies were relieved of all these extraneous burdens of "park taxes," etc., were allowed to collect the 5 cents agreed upon in their franchises, and felt safe from insidious assault, the development of transfer systems, and the improvement of facilities and conveniences would be far beyond anything yet dreamed of by street railway managers and the public. This is but rephrasing the truisms of social and political life, which recognize that growth and prosperity are greatest where contracts are upheld, and where property is safe from the attack of despot and anarchy.

Fighting Snow in Ohio

The snowfall in Northern Ohio last month is said to have been the heaviest in the "recollection of the oldest citizen." At any rate it was the worst in the history of suburban railways in that section, and nearly all of the roads experienced difficulty in maintaining any kind of schedules, several of the lines leading out of Cleveland being tied up for hours at a time. The Northern Ohio



SNOW PLOW

Traction's line, which follows the valley of the Cuyahoga River, was the worst sufferer. From Feb. 2 to Feb. 6 the snow plows were kept constantly in operation, and in addition to the plows, which were almost useless in the heavy drifts, the company had over 200 men shoveling. These men were kept on day and night



DEEP DRIFT ON LINE

from Feb. 3 to Feb. 7. Despite these efforts the Akron, Bedford & Cleveland line was tied up between Bedford and Newburgh for about six hours on Feb. 3. All the rest of the lines on the Northern Ohio Traction lines were kept open. From Akron to Bedford there were fifteen different drifts, ranging from 3 ft. to 8 ft deep. The drift on the Akron, Bedford & Cleveland division shown in the photograph was about 9 ft. deep on the track. Two theater parties were stalled and the passengers were obliged to spend the night in the cars. The drifts on the Kent-Ravenna division were nearly as bad.

Convention of the National Association of Railway Commissioners

The National Association of Railway Commissioners held its fourteenth annual convention in Charleston, S. C., Feb. 11, 12 and 13, 1902. This convention was of interest to street railway companies this year because of the participation in it of a committee of the Street Railway Accountants' Association of America. In accordance with the constitution and by-laws adopted at the San Francisco convention of Railway Commissioners, held in June, 1901, the Street Railway Accountants' Association of America was represented by a committee of three, consisting of H. C. Mackay, of Milwaukee, president of the Street Railway Accountants' Association; W. F. Ham, of Washington, D. C., and C. N. Duffy, of Chicago. A resolution was adopted at this San Francisco convention which provided for the appointment of a committee of three from the National Association of Railway Commissioners to meet with a committee of three representing the Street Railway Accountants' Association for the purpose of preparing a form of report for electric roads. The Railway Commissioners' committee consisted of L. M. Read, of Vermont; Ashley W. Cole, of New York, and



SNOW SCENE

George W. Bishop, of Massachusetts. The committee appointed by President Mackay to represent the Accountants' Association consisted of H. L. Wilson, of Boston; W. F. Ham, of Washington; and E. M. White, of Hartford. The committees met in New York Jan. 10, 1902, but as Mr. Read, chairman of the committee, was unable to attend on account of sickness, the representatives of the Association of Railway Commissioners thought it best the committee of the Accountants' Association should prepare a form of report for the two committees afterward to take up together before submitting to the Charleston convention.

The committee representing the Accountants' Association agreed to this and did draft a form of report covering the main features; but in view of the limited time before the convention it was decided that it would not be possible to draft a complete statistical report such as was expected by the association, and such as would meet with both association's approval, and it was therefore decided to do nothing further until after the next annual convention of the Street Railway Accountants' Association, to be held in October, 1902. The committee will be continued and will draft a form of report to be presented at the 1903 convention of the Railway Commissioners. The representatives of the Street Railway Accountants' Association at the Charleston convention report that they had every possible courtesy and privilege extended to them, and they wish through these columns to express their most sincere appreciation. The last day of the convention, C. N. Duffy, of Chicago, upon request, addressed the convention as a representative of the street railways.

After the close of the convention, the delegates and their ladies were taken South on a special train by the courtesy of the Southern Railway Company, and visited Columbia, S. C., Jacksonville, Palm Beach and Miami, Florida. The trip was most enjoyable. The gentlemen who participated in it report that everything possible was done to contribute to the pleasure of the travelers. These conventions unquestionably cement the cordial and friendly relations existing between the Railway Commissioners of the United States and the street railways, especially in the States in which the Railway Commissioners exercise the same supervision over street and suburban railways as they do over steam railways. Benjamin F. Chadbourne, of Maine, was elected president of the Association of Railway Commissioners, and the next convention will be held in July, 1903, in Maine, the exact place to be selected later.

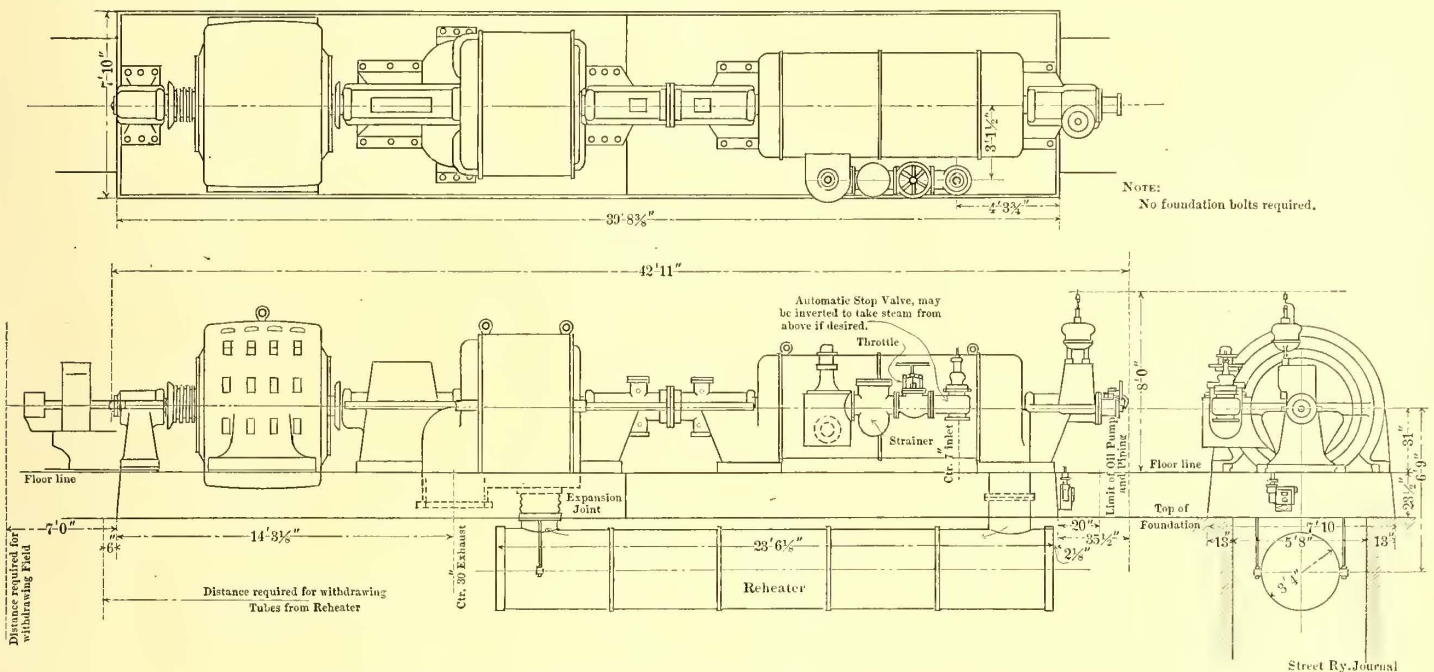
Steam Turbines in New Station Near Cleveland

In providing additional equipment to take care of extensions under construction, the Cleveland, Elyria & Western Railway, of Cleveland, has decided, after mature consideration, to install steam turbines for driving the new generators. While abroad a year or so ago W. H. Abbott, consulting engineer for this company, be-

running governor and the other a safety governor, which may be set to entirely cut off steam from the machine should the first governor become damaged. The speed may be varied while running 10 per cent above or below normal by varying the frequency of the admission of steam. A duplicate gravity oil system is installed with each turbine, reducing to zero the possibility of trouble with the bearings. The turbine is designed so that full load may be carried without superheat or vacuum. The turbine generators will operate in parallel at all loads, and may also be operated in parallel with the present inverted rotaries now in station.

The generators are of the two-pole type, the revolving element being a round cylinder of polished iron, into which the exciting winding is buried and held in place by metal wedges driven in above it, the whole then being turned off to a perfect cylinder so that there are no projections to catch the air. Suitable openings are provided for ventilation. The guaranteed efficiency of the generator is 95 per cent full load, 94 per cent at three-quarters load, 92 per cent at one-half load, and 86 per cent at one-quarter load.

The present station had been built barely large enough to install two additional 500-kw alternating-current units, but with the turbine sets of twice the above capacity enough space will still remain



STEAM TURBINE AND GENERATOR FOR CLEVELAND, ELYRIA & WESTERN RAILWAY

came favorably impressed with the high efficiency shown by several steam turbine plants in France, and he decided as soon as opportunity presented itself to test the efficiency of the new practice for interurban railway station use. After a careful investigation, covering more than six months, during which time tests were made with steam turbine plants in the Westinghouse Air Brake Company's plant at Wilmerding, Pa.; the electric light plant at Hartford, Conn., and the Yale & Towne Manufacturing Company's plant at Stamford, Conn., the company decided favorably on the proposition. Accordingly contracts have recently been closed for two 1000-kw Parsons turbines running at 1500 r. p. m., to be direct-connected to two 1000-kw two-pole Westinghouse turbine generators, 400 volts 25 cycles; also for two 30-kw direct current exciters, to be direct-connected to the shafts of the generators.

The turbines are designed to run at 150 lbs. steam pressure at 100 degs. F. superheat at throttle of turbine, and 28 ins. vacuum at exhaust port. At the above rate the Westinghouse Machine Company, which is building the turbines, guarantees that the steam consumption will not exceed 10.08 lbs. per indicated horsepower-hour, or 17 lbs. per kilowatt-hour. At one-half load the steam consumption is guaranteed to be not more than 15.07 per cent greater per kilowatt-hour than the consumption at full load.

A very high economy is guaranteed on light loads and varying loads. The turbines are to be of the latest type, differing from those previously sold by the same company in having two separate sets of cylinders with bearings between, the steam first passing through the high-pressure cylinder, then through the reheater, and finally through the low-pressure cylinder. They are provided with two entirely independent sets of governors, one the regular

for a 2000-kw unit, thus transforming a possible 2000-kw station into a 5000-kw station. The economy in the construction of the building is also very great. Plans had already been made for building massive foundations sufficient to support engines and generators firmly in line. With the use of turbines light walls will be substituted for solid brickwork. The turbines require no holding down bolts, as there are no unbalanced strains. The generators will be used to supply the 20,000-volt alternating-current system supplying the sub-stations of the Cleveland, Elyria & Western Railway, the Cleveland & Southern Railway and the Cleveland, Ashland & Mansfield Railway. Previous mention of the plans for this system was made in a recent description of the Pomeroy-Mandelbaum lines radiating from Cleveland.

Delivery is being made on two 300-kw Westinghouse rotaries, to be installed in the station as a connecting link between the alternating-current and direct-current machinery. It is the intention to close contracts in the near future on 2000 hp of boilers, 2000 hp of economizers, mechanical draft for 2500 hp, 2000 hp mechanical stokers for boilers, a central condenser plant of the overhead type of 2000-kw capacity, 28-in. vacuum with water and feed pumps, and all necessary boiler and feed pumps.

The new equipment will be installed as soon as possible, and it is believed this will be the first steam turbine interurban railway plant in the country.

The charter of Winnipeg, Man., has been amended so that the citizens of that place may vote on the proposition to permit the operation of street cars on Sundays. The vote is to be taken at the regular municipal election.

The Chances for a Business Career in Railway Work

General William A. Bancroft, president of the Boston Elevated Railway Company, is the author of a interesting article in a recent issue of the "Saturday Evening Post" on the inducements offered in the street railway business to young men for an honorable career of achievement. These, he believes, are good for bright, enterprising, and strong bodied young men, and are attracting to the service men of this character. As regards advancement General Bancroft says: "The motorman or conductor who is fit stands a much better chance of getting ahead and finally attaining a responsible and well-paid position than does the average clerk, let us say, in the average department store. Many, of course, enter the street railway service for temporary employment only. Lumbermen, for example, after passing the winters in Maine, come down to Boston in considerable numbers for the summer months. College students—a class in which Boston and the neighboring towns abound—desiring to earn money during vacation, are often attracted to the service, and a fair number enter it for a longer period—some of whom remain permanently. Men who work as farmhands during the summer often seek employment on the cars for the winter months. The great bulk of the employees, however, come with the intention of casting their lot permanently with the company, and of rising in its service.

"The attractions of the service, aside from the opportunities for promotion, are that the work is healthy, the hours reasonable, the pay good, and the permanency of the work dependent entirely upon the ability of the employee to perform his duties satisfactorily. For those who possess the ability and ambition to get ahead, the possibility of attaining higher and more responsible positions is greater and the rewards of success larger than in most mercantile enterprises.

"All well-managed companies select their operating officials from their own employees, if suitable men can be found—as they usually can—whenever a vacancy occurs or an office is created. In Boston, for example, the superintendent of transportation and all of the division superintendents who are the higher officials immediately concerned in running the cars, began their railroad work upon the platforms of the cars or in positions even nearer the foot of the ladder. One was a hostler in the stables at the time when the motive power was horses and not electricity. Immediately subordinate to these men are many others who began in the same way—in all several hundred men receiving up to \$5,000 a year salary who began on the front platform or the rear platform of the cars. The president of the most extensive interurban company in New England began his street railway experience on the platform. Besides this, it must be borne in mind that the surface, elevated and subway systems of local transportation in this country are expanding enormously, with a consequent constant draft on the services of the already existing personnel to train and develop fresh forces of employees. And the man who has started as a motorman or conductor and has worked his way to the front—who knows the actual problems of a situation, in other words—is in increasing demand everywhere, from Oregon to Georgia.

"It is not every man, however, who can get a position on the cars. Companies are becoming more strict in their requirements, and the railway employees in nearly all cities are now really bodies of picked men, selected for their sound bodies, steady nerves, perfect eyesight and hearing. In respect to character the four cardinal virtues of honesty, temperance, industry and perseverance, to which should be added as a quality particularly essential to the conductor, tact.

"In some respects," Gen. Bancroft says, "the position of motorman, particularly on elevated roads, is becoming more important than that of the conductor. His preliminary training is stricter and more technical. The difference in the two duties may perhaps be explained by saying that the training of a conductor contributes to his development in the handling of human emergencies, so to speak—a training which he must have largely acquired from his own experience in dealing with men—and that the training of a motorman fits him to meet physical emergencies, and must consequently, in a large degree, be special."

General Bancroft recommends to the street railway employee who is rightfully ambitious of the future a course of study of electrical problems, so that he may be better prepared for advancement, as "the man on the platform who knows something of natural science, other things being equal, is the one most likely to be in demand when the question of promotion to a higher position comes up." Following will be found his reference to the books and periodicals which are of value in this connection.

"A good book on the general problems of electricity will be the natural beginning of a course of reading; though unfortunately not many such, adapted to the comprehension of young men with no previous technical education, have been published. "Electricity

Made Easy," by Edwin J. Houston and A. E. Kennelly, may be recommended, however, as being on the whole satisfactory. The same authors have written a series of "leaflets"—as they are entitled, in spite of their containing some 300 pages each—on electrical engineering, which in the opinion of many electrical students are among the best books of the kind on the market. They come in three grades—elementary, intermediate and advanced—only the first of which, of course, can be recommended to the novice. The object throughout is to present the fundamental principles of electrical science; and the first volume is especially intended to give just such instruction as the motorman, or the electrical workman generally, with slight scientific knowledge of electricity, needs for a more intelligent performance of his daily routine work. Two other books that may be suggested have to do specifically with electric railway service—"Electric Railway Motors: Their Construction, Operation and Maintenance," by N. W. Perry; and "Electric Railway Motors," by George T. Hanchett. Both are sound, and not too difficult.

"There are two periodicals covering the street railway field, one or both of which might well be read by every one in the business, from conductor to president—the STREET RAILWAY JOURNAL and the *Street Railway Review*. No scientific or technical periodical, of course, should be regarded from the same point of view as a book, where the intention is to be definite and final in statement and conclusion; a magazine of this sort is to a considerable extent a record of current theory, opinion and experiment, leaving to the reader much of the burden of responsibility for sifting the wheat from the chaff of contemporary practice. With this caution—which applies to very publication of the kind aiming to present impartially the news of its special field—both journals may be unhesitatingly recommended, giving as they do, from issue to issue, a full account of the latest developments in every branch and department of the street railway business all over this country and abroad. Among electrical magazines the *Electrical World* and the *American Electrician* are excellent, but rather hard reading for beginners; however, if they are conveniently accessible to a young man they might often prove suggestive. Though it is true that all companies undertake to give their men such instruction as may be necessary for the performance of their duties, it is equally true that one who, by additional study and reading, has gained a fuller knowledge of the theory and nature of electricity as well as of its practical application, stands in a more favorable position than one who has not.

Important Interurban Railway Decision in Indiana

Judge John H. Baker, of the United States Circuit Court, has recently rendered a decision in the case of the Logansport Railway Company against the city of Logansport and others. The opinion is an important one as affecting the franchise to streets and is of special interest in Indiana just at the present time because of the efforts of the interurban companies to obtain a terminal in Indianapolis.

The city of Logansport in 1882 granted a franchise to the Logansport Railway Company covering all streets in perpetuity, the company to use such streets as it saw fit. In October, 1901, the Logansport City Council passed an ordinance repealing the original franchise ordinance except as to streets in which the company has already laid tracks and was operating cars. Then the street railway company brought action in the federal court to enjoin the city of Logansport and officers from enforcing the repealing ordinance. Judge Baker sustained the demurrer to the complaint, holding that the latter ordinance was valid and the city had the right to repeal the franchise except on streets where lines were already constructed.

Judge Baker said in part:

"The fee of the streets in cities in this State resides in the abutting lot owners, and the city possesses only an easement of way in the streets. It does not hold title to the easement as a private property right which it may alienate at pleasure as it might alienate property belonging to the city by a title unimpressed with a trust. The city holds the easement in the streets in trust not simply for the city alone, but for the benefit and use of all the people of the State. In interpreting the statutes the court ought never to lose sight of the fact that in dealing with the use of the streets the Common Council of a city is acting as a trustee for the benefit and advantage of the public.

"It is manifest that the Legislature has not conferred in explicit and express words on the city of Logansport the power to grant to a street-railway company either an exclusive or a perpetual use of its streets for railway purposes. The act of 1861 simply provides that the street-railway company shall first obtain the consent of such Common Council to the location, survey and construction of

its railway before the construction of the same shall be commenced. No words of perpetuity are expressly employed. The same is true of the act of 1891. There being no express words of perpetuity in the legislative grant, is such power necessarily to be implied from the language employed?

"It must be held here that similar and no broader language employed in the acts of 1861 and 1891 above mentioned does not explicitly and directly confer the power on the Common Council of the city of Logansport to grant either an exclusive or a perpetual privilege to occupy its streets for railway purposes. In a similar case in Detroit the court says: 'There are many reasons which urged to this—reasons which flow from the nature of municipal trust, even from the nature of the legislative trust, and those which, without the clearest intention explicitly declared, insistently forbid that the future should be committed and bound by the conditions of the present time and functions delegated for public purposes be paralyzed in their exercise by the existence of exclusive privileges.' And how much stronger are the reasons which insistently forbid that the future should be committed and bound in perpetuity by the conditions of the present time, and that functions delegated for public purposes should be forever paralyzed in their exercise? The right to determine for itself from time to time what streets could be used and occupied for street railway purposes consistently with the public safety and welfare is a power incapable of absolute alienation by the Common Council. By these ordinances the Common Council has undertaken to surrender this power and to remit it to the uncontrolled election of the complainant. The only power reserved is the power, if the Common Council wishes the railways to be extended along a particular street, to notify the complainant of such desire, and if it fails within one year to construct and operate its road on such street then the use of such street may be granted to another railway company. But no right or power is reserved to prevent the railway company, at its election, from using, with a double or single track, any and all of the streets of the city, however injurious it may be to the public convenience, safety or welfare. The public convenience, safety and welfare in this regard are surrendered to the complainant. By these ordinances, if valid, to the complainant's election is relegated the question whether or not a street can, with due regard to the comfort and safety of the people, be occupied by a single or a double track railway. Such a surrender of corporate power in perpetuity to a street railway company cannot and ought not to be upheld. It cannot be supported as a reasonable exercise of the power of a trustee over a trust estate committed to its charge, to be administered in the interest of the public and not for the private advantage and gain of railway or other corporations.

"But if the granting ordinances are not invalid and unenforceable so far as the repealing ordinance affects them, still the bill cannot be maintained for another reason. It was ruled in the opinions of Judge Woods and myself, both concurring in this particular, in *Citizens' Street Railroad Company vs. City Railway Company*, 64 Fed., 647, that under ordinances similar to those granted to the complainant the *Citizens' Street Railroad Company* acquired no vested right to commence the construction of a particular line of street railway on an unoccupied street without first obtaining the consent of the Common Council to the location, survey and construction of such proposed lines. * * *

"In 1889 the Common Council and Board of Aldermen of the city of Indianapolis adopted an ordinance prohibiting the railway company from entering upon or constructing its railway on any unoccupied street until it had first obtained the consent of the city street commissioner. In 1893 the city granted to the *City Railway Company* the right to enter upon and construct a street railway system on and along twenty-nine specified routes, embracing a great proportion of the most important streets of the city and including many of the streets on which the *Citizens' Street Railroad Company* had constructed its railroad and had it in operation. It was claimed by the *Citizens' Street Railroad Company* that the two later ordinances infringed the contract rights secured to it by the earlier ordinances of 1864 and 1865. * * *

"The consent conferred upon the *Logansport Company* by the ordinances of 1882 and 1891, so far as the ordinance of Oct. 31, 1901, affects them, is not so clear and explicit in giving consent and granting authority to enter upon the streets of the city of Logansport as were the ordinances of 1864 and 1865 adopted by the Common Council of the city of Indianapolis. Judges Wood and Baker in the above-cited cases held that the general consent conferred by the original ordinances to occupy and use all of the streets of the city for railway purposes did not satisfy the statute, nor take away from the Common Council the right, before the railway company should construct a street railway upon an unoccupied street, to require it to obtain the consent of the Common Council to its location, survey or construction."

Electric Railway Construction in Maine

According to returns made in June, 1901, there were in operation at that time in Maine 278 miles of electric railway, and the population of the State was 694,466, approximately. There have recently been evolved, however, many schemes for the construction of new lines. It is very improbable that more than a majority of these projects will be successfully launched this year, but from the recent impetus that has been given the industry it would probably not be anticipating the future with too much confidence to say that the present mileage of the State will be increased materially before 1903. It is impossible to enumerate in detail the various plans that are being made, but in the following summary is given an outline of the more important projects.

The *Rockland, Thomaston & Camden Street Railway Company* is to extend its lines from Camden to Warren, a distance of 4 miles. The plan of the company is to have this line in operation at the earliest possible time.

The *Portland Railroad Company* plans to build a line from Rigby to Saco, a distance of 12 miles. The company also has in contemplation the construction of a line to Old Orchard.

Governor Hill and his associates have obtained a charter for a line from South Berwick to York, with a branch line to Dover, N. H. This project calls for the building of about 15 miles of line, and its construction depends somewhat on the securing of the necessary permits and concessions in New Hampshire.

The construction of the proposed line between Winthrop and Augusta is assured, for the *Augusta, Winthrop & Lewiston Electric Railway*, which is to build the line, has contracted for its construction. Rails and ties have been distributed along the route, and the work of construction will be begun as soon as the weather conditions will permit. This road will be 14 miles long. Even before the work of constructing the main line has begun, it is reported that the company is considering the advisability of building an extension from Winthrop to Sabatters, so as to make a through line from Winthrop to Lewiston.

Messrs. Hill and Macomber, of Augusta, have under consideration the construction of a 3-mile line from Kittery and Green Acre, making connection at Kittery with the *Portsmouth, Kittery & York Railroad*.

A. F. Gerald, who is interested in the *Lewiston, Brunswick & Bath Street Railway* and the *Skowehegan & Norridgewock Railway & Power Company*, with his associates, is interested in the construction of a new road from Brunswick to Yarmouth. This line will be about 16 miles long, and the material to be used in its construction has been distributed along the route. The line will make connections at Portland with the *Portland Railroad*.

The *Penobscot Central Railway*, which, it will be remembered, was operated by Patton motors, and which extends from Bangor to Corinth, has perfected arrangements for building extensions to Charleston and Pushaw Lake. Both extensions, so it is reported, are expected to be completed by July 1.

The *Rockland, South Thomaston & Owl's Head Railway Company* has recently applied for a charter. The plan of this company is to build a line from the termini of the *Rockland, Thomaston & Camden Railway* at Rockland to *South Thomaston* and *Owl's Head*, a distance of 8 miles. James W. Sewall and H. Franklin Bailey, of Oldtown, and Charles E. Merosey and Frank M. Smith, of South Thomaston, are among those interested in this proposition.

The *Biddeford Pool Electric Railway Company* has applied to the *Railroad Commissioners* for a charter. The plan of this company is to build from Biddeford to the Pool, a distance of 9 miles. The company is capitalized at \$80,000, and has purchased a site for its power house. The plan is to layout a park, for which the necessary land has been secured. The officers of the company are: Charles M. Moscs, president; William J. Maybury, vice-president; Charles E. Atwood, treasurer; Edgar A. Hubbard, clerk.

W. D. Smith, of Bangor, has been awarded the contract for the construction of the *Augusta & Winthrop Electric Railway*, which, according to reports, Mr. Smith has agreed to have completed by July 10.

A survey has been made for a line to be built from Presque Isle to Perham, but nothing definite in regard to this project has been announced. The line will be 16 miles long. Charles J. Haynes, of Augusta, made the survey, but Arthur R. Gould, of Presque Isle, is the principal promoter of the road.

The *Calais Street Railway*, which operates between Calais and St. Stephen, is reported to be considering the advisability of extending its lines to Robbinston.

The *Hancock County Railway Company* was granted a charter last year, and the company is now completing the preliminary details necessary for the construction of a line to connect Cherryfield and Ellsworth. The company has just perfected its organization, electing the following officers: I. L. Hallman, of Boston,

president; E. K. Wilson, of Cherryfield, vice-president; M. Gallery, of Ellsworth, secretary and treasurer.

The Lincoln County Railway Company plans to construct an electric railway through Wiscasset, Edgecomb, Boothbay and Boothbay Harbor, 12 miles, and has filed articles of association with the R. R. Commissioners. Loother Maddocks, of Boothbay Harbor; Amos F. Gerald, S. A. Nye, E. J. Lawrence and A. B. Page, of Fairfield, are among those interested in the company.

Frank H. Taylor

The recent appointment of Frank H. Taylor as second vice-president of the Westinghouse Electric & Manufacturing Company, makes him an even more important factor in the electrical business of the country than he has hitherto been, although his previous position with the Westinghouse Company as fourth vice-president, in charge of sales, has made him well known throughout the electrical business.

Mr. Taylor is a native of Cincinnati, where he was born Nov. 20, 1855. He graduated from Haverford College, near Philadelphia, with the degree of A. B., going thence to Harvard University, where he also took the degree of A. B., graduating in 1877. While at Harvard he was captain of the cricket team, and it may be remarked in passing that he is still an enthusiastic and active cricketer, being the moving spirit in the sport in the Pittsburgh district. It is interesting in this connection to note that his eldest son is at the present time captain of the cricket team at Harvard.

After leaving college he learned the trade of starchmaker, and was for a short time a professional starchmaker, and from 1880 to 1882 was superintendent of the George Fox Starch Manufacturing Company, Lockland, Ohio. In 1882 he removed to Philadelphia, where he assisted in the organization of the Manly-Cooper Manufacturing Company, afterwards known as the Belmont Iron Company, whose product was ornamental and structural iron and steel. He was treasurer of this company until 1887, and was then elected president. The works were destroyed by fire in 1888 and not rebuilt.

From January, 1890, until October, 1897, Mr. Taylor was the manager of the Philadelphia house of the Yale & Towne Manufacturing Company, handling their business in cranes as well as in hardware. His fine record as manager of this office attracted the attention of the officials of the Westinghouse Electric & Manufacturing Company, who in 1897 induced him to enter the service of the company as sales manager, which gave him a larger opportunity for the display of his ability. The record he made was so good that in October, 1900, he was elected fourth vice-president of the company, charged with the sale of the company's product. In January, 1902, upon the resignation of his old friend, B. H. Warren, with whom he had previously been associated in the Yale & Towne Company, as well as in the Westinghouse Company, he was made second vice-president of the latter, thereby becoming, next to Mr. Westinghouse himself, the executive head of this great company's affairs.

Mr. Taylor is a man of attractive personality, great energy and remarkable quickness in grasping the salient features of a proposition. He is happily married, and has four sons, who give every indication of being as keen in their pursuit of athletics as he is.

A Controversy of Long Standing Settled

Judge Yerkes, of the Bucks County courts, has permitted the Neshaminy Elevated Railway Company to file a bond of \$20,000 to cover any damages that may arise by the construction of the road over the property of Henry M. Gaw, near Croydon, a couple of miles from Bristol, Pa. There has been a fight of six years' standing at this point, and the probability of the court permitting the construction of the road has been told in the STREET RAILWAY JOURNAL recently. The Philadelphia, Frankford & Bristol Passenger Railway Company failed in its attempt to get over the property of Mr. Gaw, who was said to be backed in his fight by the Pennsylvania Railroad Company, and its track extending from Croydon station to this place was valueless comparatively. At the beginning of the trouble a car was operated on this end of the line, power being secured from the Newtown Railway Company. At the break a stage coach connected the other line, a mile away. An injunction was secured against the Newtown company to prevent it from supplying the power to the other company, and from that time to the past fall, over five years, a horse car was operated on this end of the line. A charter was afterward secured for the Bristol & Bridgewater Railroad Company, and it was expected that the line would be carried over the Gaw property by a steam road charter,

but the act of the Legislature preventing the use of steam roads by trolley lines, or vice versa, made such a move inexpedient. The Neshaminy Elevated Railroad was chartered last winter, when the act first passed the Legislature, and just before it was amended, so as to apply only to cities. The road passed into the control of Wilbur F. Sadler, Jr., of Trenton, after having passed through many hands, and he pushed the matter to a successful outcome. It is understood that the road will be elevated enough to pass over the highways above grade, and that construction will be commenced at an early day. The line will also be extended from Bristol to Trenton, N. J.

The Hudson River Tunnel

It is stated that the engineers who are to direct the extension of the old Hudson River Tunnel, abandoned while but partially completed, will resume the operations on that subway within sixty days, and expect to finish the further excavation and construction within eighteen months. This north tunnel now extends about 4000 ft., and it requires but 1600 ft. more to effect the connection.

Of the bonds of the company \$2,000,000 are to be issued to build the south tunnel after the north tunnel is equipped. Until both are finished the north tunnel will have double tracks of standard gage, which, owing to the cramped space, will necessitate cars of special construction. It is not generally known that 600 ft. of the south track is already built on the New Jersey side.

The officers of the New York & New Jersey Railroad Company, which is to complete and operate the tunnel, are: Wm. G. McAdoo, president; Walter G. Oakman, president of the Guaranty Trust Company, and Edmund C. Converse, formerly president of the National Tube Company, vice-presidents; Henry A. Murray, treasurer; Charles W. King, secretary, and Chas. M. Jacobs, chief engineer. The directors of the company are Messrs. McAdoo, Oakman and Converse, above mentioned, and Elbert H. Gary, chairman of the executive committee of the United States Steel Corporation; John Skelton Williams, president of the Seaboard Air Line Railway; Anthony N. Brady, chairman of the board of trustees of the Brooklyn Rapid Transit Company; E. F. C. Young, president of the North Jersey Street Railway Company; David Young, president of the Jersey City, Hoboken & Paterson Street Railway Company; John G. McCullough, of Vermont, a director of the Erie Railroad Company; Frederick B. Jennings, of Stetson, Jennings & Russell, and G. Tracy Rogers, president of the Binghamton Street Railway Company, and president of the New York State Street Railway Association.

The stock of the company consists of \$3,500,000 6 per cent non-cumulative preferred (already issued) and \$5,000,000 common (also issued). The company is authorized to issue \$7,000,000 5 per cent bonds, of which \$4,500,000 5 per cent first-mortgage thirty-year gold bonds have been issued, redeemable at 110 at any period. Of the rest of the authorized bonds \$2,000,000 are reserved for the purchase of additional property and \$500,000 for other corporate purposes.

More Terminal Facilities for the Metropolitan Elevated of Chicago

The Metropolitan West Side Elevated Company, of Chicago, has recently made an important purchase of property in the downtown district of Chicago for the purpose of adding to its downtown terminal facilities. This company now uses the Union Elevated loop in common with the three South Elevated railroads of Chicago, but it has been apparent to students of the situation for some time past that the terminal afforded by the Union loop, although considered adequate for years to come at the time the loop was completed, will be insufficient within a short time.

The Metropolitan Elevated having, as it does, four different branches, requires much greater track room for its downtown terminal than the other elevated roads. After crossing the river, for the first mile and one-half west, this company has four tracks. At present, on entering the downtown district over the Union loop, the trains from these four tracks have to occupy one track on the loop together with trains from the South Side Elevated Railroad. Already the congestion of trains on that track of the loop used by the Metropolitan and South Side companies is such that but few more trains could be operated during the rush hours. Indeed, the Metropolitan has already had in operation for some time a plan for relieving the Union loop of some trains by running a part of its train only as far down town as Canal Street, west of the river. These trains pick up the heavy traffic of the manufacturing district of the west side without the necessity of running such trains around the downtown loop. The new purchase of downtown property by the Metropolitan gives it a downtown terminal independent of the

Union loop. The property purchased extends from Market Street to Fifth Avenue, between Jackson Boulevard and Van Buren Street, about 87 ft. south of Jackson Boulevard. This will give a terminal station at Fifth Avenue, which can be patronized by those persons in the southern portion of the business district, and will relieve the loop to that extent. The terminus will be only 87 ft. south of Jackson Boulevard, and consequently not far from the present center of the business district. This terminus will have an important bearing on the future value of the Metropolitan and West Side Elevated property, and its ability to handle the enormous traffic its territory is certain to yield in the course of a few years.

The amount paid by the Metropolitan Elevated for the downtown property acquired for its terminal was \$771,000.

Another significant move has also just been made by the South Side Elevated Railroad which shows how congested the loop is becoming even at the present time. This move is the inauguration of a train service which terminates at the old Congress Street station, which was used before the loop was opened.

London Letter

(From Our Regular Correspondent.)

The Board of Trade committee, appointed to inquire into the vibration produced on the Central London Railway, have reported that from personal observation they are satisfied that vibration sufficient to cause serious annoyance is actually felt in many houses along the course of the line. To remove this the committee recommend the adoption of a type of locomotive or motor in which the load not carried on springs is reduced as far as possible. They are confident that the using of motor cars instead of the ordinary locomotives would effect a radically complete cure of the disturbance complained of.

The House of Lords has dismissed with costs the appeal of the London County Council from the judgment of the Court of Appeal, which had confirmed the decision of Mr. Justice Cozens-Hardy that the council had no power to run omnibuses. This means that all the halfpenny 'busses which have been running as feeders to the tramway system will have to be withdrawn, though the council have a month in which to do so.

The decision is undoubtedly according to law, as it has been made quite apparent that the charter of the London County Council gives them no right to enter the omnibus business. The 'busses, with their halfpenny fares, will be missed by the poorer classes, but it is stated that the various companies with powers are already prepared to put on 'busses to take the place of the London County Council 'busses with halfpenny fares. The London County Council, who took over this business from the old tramway company, will now promote a bill in Parliament for power to carry on the business of running omnibuses for feeder purposes.

At the recent half-yearly general meeting of the London & South-Western Railway Company the chairman, Lieut-Colonel the Hon. Henry Walter Campbell, commenting upon the decrease of receipts in local traffic, made the following suggestive statements: Nearly all the railway companies were more or less feeling the effects of electric tramways competition in the suburban districts, not only of London, but of other large towns. Such competition ought to be limited to crowded districts, and it would not be reasonable to allow it to extend beyond the immediate suburbs, or it would become a most improper and unfair competition. Either the railway companies ought, if tramway competition was to be extended, to be relieved of the burden of the passenger duty, and, to some extent, of the rates, the incidence of which would be in proportion to the services rendered, or the tramway companies should pay such a rental for the use of the roads as would cause a reduction in rates, and thus, to an extent, reduce the burden of the railway companies.

At a recent meeting of the Tramway Committee of Edinburgh Town Council a letter was received from the lessees of the Corporation Tramways intimating their intention of paying the arrears of rent at present under litigation in court, and later in the day the town clerk received a check for £30,000, the balance of nearly £9,000 being consigned to the clerk of the court to await final adjustments. The case will doubtless now be enrolled on an early date for trial in the Outer House of the Court of Session, and that means that nothing will be done till about Whitsunday. Long before that it is expected that the two parties—the corporation and the company—will have arranged the permanent sum on which 7 per cent is to be paid.

The Board of Trade have granted a license for twelve months for the working of the surface contact system, which has recently been laid down by the Lorain Steel Company, under Mr. Wetmore's management, for the corporation of Wolverhampton, so

that by this time the tramways on this system are in full operation. The experiment of installing the surface contact system in England will be watched with the keenest interest.

The City of Manchester proposes to borrow £477,000 for the purpose of defraying the expense of their huge electricity undertaking for lighting and tramways. In explaining the figure at a local Government board inquiry Mr. Hudson, deputy town clerk, said that £350,000 was necessary for the new installation of plant at the Stuart Street generating station, which had been designed by Mr. Metzger to provide an additional 12,000 hp, in addition to £82,000 which was necessary to complete Dr. Kennedy's original plant of 15,000 hp at the same station. A balance of £30,000 was also necessary to substitute two new turbo-generators for the Dickenson Street station, while £15,000 was necessary for additional mains. The existing plant at Dickenson Street provided 12,000 hp; the plant at Bloom Street, when completed, would provide 14,000 hp; Dr. Kennedy's installation at Stuart Street would provide 15,000 hp, and Mr. Metzger's installation at Stuart Street would provide an additional 12,000 hp, making a gross total of 53,000 hp actually in operation, sanctioned or about to be sanctioned.

As has been stated previously in this column the District Railway Company has been anxious to come to some working agreement with the Metropolitan Railway, and recently offered to sell them current for the operation of their half of the Underground at .85 penny per unit, from the large generating station which they are preparing to erect on the banks of the Thames at Chelsea, or to lease the whole system of the Metropolitan Company and guarantee it 3½ per cent. Circulars pro and con have been sent to the stockholders of the Metropolitan Company, which have produced a good deal of feeling and comment; but at the ordinary half-yearly meeting recently held by the company it was decided that it should proceed with its own station and refuse either to lease its lines to the District Company or to buy current from it.

The Pontypridd District Council, sitting in committee, have accepted the following tenders for the supply of plant to generate electricity for the lighting of the town and district and power for tramway. The council has already obtained authorization to construct tram lines to Treforest and Cilfynydd, and will shortly apply for a provisional order to run trams through the town to the junction of the British Traction Company's tramways, between the town and Perth. There were 341 tenders, the accepted ones being: Boilers, Messrs. Babcock & Wilcox, £5,611 2s; large engine, Messrs. Coombe, Barbour & Co., Belfast, £5,210; dynamos, Messrs. Greenwood & Batley, £3,401; balances, the British Westinghouse Co., £760; switchboard, etc., divided between Messrs. Ferranti and Messrs. Kelvin & White, £2,473; fitters' shop, Messrs. Newbolds, £594; traveling crane, Messrs. Chatris, £455 10s.; arc lamps, Messrs. Johnson & Phillips, £788 5s.; the total amounting to £17,292 17s.

The Bradford Corporation have taken over the whole of the tramway system in the city, as well as the line which runs outside its boundary to Saltaire. Up to the present the various lines have been under the control of three separate managements—viz., The Bradford Tramways & Omnibus Company, the Bradford & Shelf Tramway Company, and the corporation itself. From the first the whole of the lines have been laid by the municipal authority, but when tramways were first introduced into the city the members of the corporation were of the opinion that it was an infringement of the rights of the private individual for a public body to assume the actual management, and so they were let to companies. The corporation have been operating part of the system electrically, but now that they have taken over the whole system the steam cars as operated by the two companies will be discontinued and electrically substituted.

The general manager of the Leeds tramways (Mr. W. Wharam) has written a letter to the Tramways Committee resigning his position on account of advancing years. The committee, after considering the question, have accepted the resignation, which, however, will not go into effect until Dec. 31, 1903.

Mr. A. B. Holmes, corporation electrical engineer of Liverpool, in submitting estimates for 1902 to the Electric Power and Lighting Committee of the corporation, reports that the output of electrical energy during the past year has been more than 20,000,000 units, and has, he believed, exceeded that of any other electrical undertaking in the United Kingdom. He is of opinion that the time may be approaching when fuel will cease to be brought into such cities as Liverpool in the present form. It seems possible that before very long the energy contained in the fuel will be brought from the colliery to the city either in the form of a cheap gas or in the form of electricity at high pressure. It is noted that the existing power stations will meet the requirements of the city for the next two years, during which time much experience will be gained in this country as to the transmission of

power over long distances, and it is not necessary to decide at the present moment whether the future power stations for Liverpool should be constructed in the city or at the colliery. The estimates provide for £183,711 on capital account, £134,045 on revenue account, and £69,300 as interest and sinking fund, making a total of £387,056.

It was stated recently at a meeting of the London, Tilbury & Southend Railway that in view of the forthcoming electrification of the District Railway the Whitechapel & Bow Railway would have to be electrified also, so as to work the traffic to the best advantage. The directors had, therefore, thought it desirable for the Tilbury Company to possess powers enabling them to electrify their line as well. This was only a tentative proposal, but it might be seen to be advantageous to adopt electric traction on their railway as far as Barking.

At the annual general meeting of the syndicate responsible for the promotion of the Mono-railway between Manchester and Liverpool, Mr. J. H. Macmillan, of Manchester, who took the chair, informed the meeting that the requirements of Parliament with reference to the submission of full plans for the approval of the Board of Trade had been complied with, and that he hoped this approval would be obtained now very shortly. When this was done no time would be lost in proceeding with the preliminary work necessary before the commencement of the construction of the line.

The estimate of the cost of constructing the proposed electric railway between Brighton and London, for which powers are to be sought in the forthcoming session of Parliament, is in round figures £7,338,403, apportioned as follows over the three lines: Railway No. 1, £607,580; Railway No. 2, £2,240,176; Railway No. 3, £4,490,647. It is proposed to spend £330,000 on stations alone; accommodation bridges and viaducts, £1,128,361, while no less a sum than £2,408,720 is to be spent on tunnels. The cost of the line is estimated at about £7,310 per mile.

The report of the directors of the Central London Railway Company for the half year ended Dec. 31, 1901, states that the amount expended on capital account during the half year has been £146,724. The receipts from all sources on revenue account have amounted to £168,359, and the working expenses to £90,544 (being 53.78 per cent of the receipts), leaving a balance of £77,814. The number of passengers carried since the opening of the railway is as follows: Five months ended Dec. 31, 1900, 14,916,922; half year ended June 30, 1901, 20,385,739; and half year ended Dec. 31, 20,802,650, a total of 56,105,311. The traffic continues to progress steadily and satisfactorily. During the last half year the average number carried per month was 3,467,108, as compared with 2,983,384 per month for the five months ended December, 1900. After providing for interest on debenture stock the net revenue account shows a balance of £82,774, including £18,432 brought forward (£9,900 of which was a reserve for dividend on the deferred ordinary stock, which is payable yearly). The directors propose a dividend on the undivided ordinary stock at the rate of 4 per cent per annum for the half year; a dividend on the preferred ordinary stock at the rate of 4 per cent; a dividend on the deferred ordinary stock at the rate of 4 per cent for the whole year; to transfer £10,000 to a reserve fund, leaving £5,874 to be carried forward.

The half-yearly report of the City & South London Railway shows that the total receipts for the six months amounted to £62,601, or £15,000 more than in the corresponding period of 1900. The directors recommended the payment of the full dividend on the preference stocks 1891, 1896 and 1901, and a dividend at the rate of 2¼ per cent per annum on the consolidated ordinary stock, as compared with 1¼ per cent a year ago. The working expenses were reduced to 46.74 per cent, showing that as the traffic increased the value of working by electricity becomes clearer. In the half year the company had carried 7,008,842 passengers, against 5,018,842 in the corresponding period of the previous year.

The report of the directors of the Dublin United Tramways Company, Ltd., for the half year ended Dec. 31 last, states that the directors have declared a dividend for the half year at the rate of 6 per cent per annum on the preference shares and at the rate of 6 per cent per annum on the ordinary shares. These dividends will absorb £34,949, leaving a balance of £4,668 to be carried forward, after writing off £1,000 from preliminary expenses. In addition to a full half year's interest on the debentures a further £1,891 has been charged against the revenue for the half year, providing for all the interest under this head to Dec. 31, 1901. A sum of £1,475 in excess of the full half year's franchise payments has been similarly charged in advance. The rates and taxes charged against the last half year's revenue are £2,028 in excess of the corresponding period in 1900, and are fully charged up to Dec. 31, 1901. A policy has been effected with the English and Scottish Law Life Insurance Company to insure the payment to the com-

pany at the end of 38 years of the discount on the "B" debenture issue, and the premium for the half year has been charged against revenue. The directors state that they have always considered that no charge should be made against revenue in respect of the large amount of obsolete property, such as cars, horses, etc., which were necessarily sold at a loss in connection with the conversion of the tramway system from horse to electric traction. In consequence £8,049, part of the difference between the sum at which the horses stood in the books of the old company and what they realized when sold, was charged against revenue and reserve, and the balance—namely, £7,076—was placed to a special suspense account with a view of writing it off out of revenue in future half years. The directors have, however, the authority of the auditors for saying that, in the event of the shareholders approving of this item of suspense being charged to capital account, the same as the losses incurred on all other items involved in the conversion of the tramway system, the auditors will offer no objection.

The Thomson-Houston Athletic Club held a Bohemian Concert at the town hall, Rugby, on Friday, Jan. 31, this being the first since the removal of the company from London to Rugby. The chair on this occasion was occupied by the managing director of the company, W. J. Clark, Esq. The concert was an unqualified success and the limits of the hall were severely taxed to accommodate the large and appreciative audience present, many of the numbers being so well received as to demand an encore.

Mr. E. Rotter, A.M.I.C.E., has resigned his appointment as general manager of the Portsmouth Corporation Tramways, resuming his former position as engineer in order that he may engage in private practice. Mr. Rotter has been retained by the Provincial Tramways Company as consulting electrical engineer for the Portsdown & Horndean Light Railway, and will be appointed consulting engineer to the Portsmouth Corporation Tramways on the completion of their conversion to electric traction.

A. C. S.

Notes from Germany

(From Our Regular Correspondent.)

Now that the trial trips on the Berlin elevated and underground railway have taken place, it may be of interest to publish some data as to the cost of construction of this road. It has been calculated that the Berlin road cost to build only M.3,000,000 per kilometer, against M.3,500,000 in Paris and M.7,000,000 for the London underground. The actual building cost per running meter on a level section of the Berlin electric elevated road varies between M.1,000 and M.1,200 per running meter and of the underground section about M.2,000. The Siemens & Halske Company will operate the road during the first year. After that time the Gesellschaft für elektrische Hoch-und-Untergrundbahnen.

The following payments are to be made by the operating company: To the city of Berlin on city lines, when the gross receipts amount to M.6,000,000 a year, 2 per cent; for every additional million ¼ per cent more, the minimum to be M.20,000; to the town of Schöneberg a sum reckoned as above proportional to the length of the road passing through the township, and, finally, to the city of Charlottenburg 20-30 per cent of the gross receipts of the entire road up to M.7,000,000, and 1-30 per cent more for every additional million, the minimum to be M.7,500 yearly.

With the beginning of a new year it is always interesting to consider the results of the business during the year which has just come to a close. The results obtained at Hamburg were set forth in detail in the January number, and those accomplished by the Berlin street railway and other important German roads are given below. About 306,256,644 passengers were carried during 1901 by the Grosse Berliner Strassenbahn, exclusive of the smaller roads operated by the same company, which still have a length of 56 km. During 1900 only 236.3 million persons were transported, or 70 millions less than in 1901. The increase during 1900 over 1899 was only 48 millions. It is an erroneous idea on the part of the press to ascribe this increase to the uniform fare (10 pfennigs) which has been instituted; it is due rather to the operating expansion of the system. The receipts were increased about M.2,000,000, while it is roughly figured that the extra cost of operation amounted to about M.2.5 million. On New Year's eve and New Year's Day about 1,860,000 passengers were carried. The daily receipts increased from M.68,160 to M.72,715. Ten years ago the receipts were less than one-half of that during 1901, being M.14.4 million in 1901, and in 1881, or twenty years ago, about one-fourth, or M.6.6 million.

Contrary to the regulations in other German cities, that side of the platforms of the Berlin street cars which is furthest away from the second truck is not closed, so that the public can enter and leave the cars with perfect freedom. This regulation is a relic of old horse-car days, and was not changed when electric cars

were introduced. The Berlin inhabitants, including women, have therefore become quite expert in boarding and leaving a car while it is in motion. A closing of the platforms would certainly be very objectionable considering the enormous traffic, which in such a case could hardly be handled. In order, however, to avoid accidents resulting from this practice the management has recently placed regulations and illustrations in every car, which instruct passengers how to board and leave a car properly. This illustrates the right and the wrong way of leaving a car. It is hoped that this innovation will have its desired effect.

During 1901 thirty-three persons were killed and 176 severely wounded, a rather large number of accidents, but not surprisingly so when one considers the very dense traffic and the extent of the company's operations. During 1901 65,662,251 car km were traveled as compared with 56,636,558 car km. in 1900.

At this point it may be of interest to present a table giving the length of track and road and the extent of the systems of the best-known German street railways. Such a table is frequently of value, especially because the lengths of track and road are generally confounded in published accounts. This is the fault of the companies themselves, as some companies, correctly, will publish the length of the track laid in streets which serve for public traffic, together with the receipts and number of kilometers traveled, while others again will give the length of all tracks laid, and still others the length of all tracks in streets as well as depots and approaches. Another set of roads calls the length of track over which the company operates the sum of the trackage of all the separate lines, so that such sections over which several lines pass are counted sometimes as often as twenty times.

It must be admitted that in presenting comparative figures of any value only the lengths of the streets along which tracks are laid should be given, excluding all depot, approach and switching tracks. It is immaterial to a passenger who has a commutation ticket on the system whether he travels over a single or a double track section as long as he reaches his destination. The follow-

ing table may be instructive and valuable in making comparisons:

At the beginning of a new year it may also be of interest to tabulate the financial results of the operations of well-known electrical industrial establishments who in some way or other have some connection with street railway interests. It has often been stated in these columns that most electric roads had their origin in the purchase of the control of the horse car company by electric firms, who then equipped the road with their own apparatus. After this was done the next step was to unload the shares on the public during the boom which followed electric completion, but often this was not of long enough duration to permit the sale of all the shares, and a large part of them was retained by the treasuries of the manufacturing companies. This procedure was frequently disastrous because in their hurry to equip the road and then sell out the companies often had to or did accept all sorts of arduous conditions imposed by the municipalities in return for overhead rights.

Siemens & Halske and the Union Elektrizitäts-Gesellschaft (i. e., Thomson-Houston) were very cautious and did not participate in these early errors. The Allgemeine Elektrizitäts-Gesellschaft was slightly affected by this policy, but it made little difference to this company because its profits on the sale of other apparatus were so large as to greatly overbalance any losses of this kind. Kummer & Co., however, failed, together with their supporting banks; the Helios Company, together with its Finanz und Betriebsgesellschaft, almost met the same fate; the Continentale Gesellschaft für elektrische Unternehmungen has not paid any dividends for many years, and there is none in sight in the near future; and Schuckert & Co., of Nürnberg, who paid a 10 per cent dividend only eight days before, had to make the sudden announcement that the dividend could not be paid this year. The accumulator companies, especially those who gave irresponsible guarantees for "mobile accumulators," have suffered greatly, which, however, is no loss to the street railway interests, as these companies have caused nothing but trouble to the street railways, and will leave them alone in the future. The following table shows the capital stock and quotations on the stock of the different companies on Jan. 1, 1899, and October, 1901. And in the last column the loss due the drop in prices between columns 2 and 3.

NAME OF ROAD	Length of Road (i.e., Length of Streets Along which Tracks Are Laid)	Length of Track Laid Along These Streets.	Length of All Tracks (Inclusive of Depot, Switching Tracks, etc.)
Grosse Berliner Strassenbahn.....	233.87 km	401.67 km	453.34 km
Berlin-Charlottenburger Strassenbahn	26.50 "	52.81 "	59.73 "
Suedliche Berliner Vorortbahn	19.45 "	31.44 "	31.44 "
Westliche Berliner Vorortbahn.....	29.64 "	61.46 "	61.46 "
Total of all roads owned by the Grosse Berliner Strassenbahn	309.46 km	547.38 km	605.97 km
Perliner elektrische Strassenbahnen.....	17.42 km	34.64 km	37.46 km
Behrenstrasse—Treprow Mittelstrasse—Panlow			
Berlin-Schlesischer Bahnhof—Treprow ...	4.78 "	7.48 "	7.72 "
Ges. f. d. Bau von Untergrundbahn (Underground road)			
Berlin-Hohenschonhausen	4.99 "	6.41 "	7.21 "
Continentele Ges. f. elektr. Untern. Nuernberg			
Total of all street railways in Greater Berlin.....	336.65 km	595.91 km	658.36 km
Strassen-Eisenbahn-Gesellschaft, Hamburg	138.83 km	240.32 km	271.60 km
Hamburger-Altonaer Centralbahn	9.14 "	14.37 "	16.37 "
Altona-Blankeneser Bahn	8.35 "	8.83 "	9.28 "
Total of all street railways in Greater Hamburg	156.32 km	263.52 km	296.65 km
Strassenbahn—Hanover	137.32 km	225.25 km	266.36 km
Muenchener Trambahn.....	47.77 "	91.52 "	102.65 "
Grosse Leipziger Strassenbahn.....	55.71 km	107.41 km	121.98 km
Leipziger Aussenbahn.....	1.36 "	1.63 "	1.63 "
Leipziger elektrische Strassenbahn.....	44.62 "	80.74 "	86.21 "
Total of all street railways in Greater Leipzig	101.69 km	189.78 km	209.82 km
Deutsche Strassenbahn—Dresden.....	44.04 km	86.78 km	92.03 km
Loessnitzbahn (Koeniglich - Saechsische) Staatsbahns)	8.15 "	16.50 "	17.26 "
Dresdener Strassenbahn.....	54.01 "	103.14 "	115.58 "
Total of all street railways in Dresden.....	106.20 km	206.42 km	224.87 km
Duesseldorf Railways	29.49 km	55.59 km	56.99 km
Stuttgarter Rys. (incl. Cannstatter Rys.)..	26.32 "	38.87 "	40.43 "

NAMES OF FIRMS.	Capital Stock	Price per Share		Loss Due to Drop in Price
		January 1, 1899	October, 1901	
	Marks			Marks
Accumulatoren-Werke, Boerse.....	4,500,000	142	96½	2,070,000
Accumulatoren-Fabrik, Hagen.....	6,250,000	142½	120.6	1,370,000
Koelner Elektrizitäts-Anlagen.....	16,000,000	103¾	27	12,160,000
Kummer Elektrizitäts-Gesellschaft.....	10,000,000	160	1¾	10,000,000
Mire & Genst.....	3,609,000	194½	158	1,300,000
Allgemeine Elektrizitäts-Gesellschaft.....	60,000,000	255.90	173	49,600,000
Zuercher Elektrizitäts-Gesellschaft.....	24,000,000	138	114	5,760,000
Berliner Elektrizitäts-Gesellschaft.....	25,200,000	216	160	14,000,000
Continentale Ges. fuer elektrische Unternehmungen, Nuernberg.....	32,000,000	115	58	18,200,000
Frankfurter Elektrizitäts Ges.....	15,000,000	107	57	7,500,000
Elektrizitäts-Gesellschaft, Lahmeyer.....	10,000,000	164	103	6,100,000
Elektrizitäts-Gesellschaft, Schuckert.....	42,000,000	227	500	53,300,000
El, Licht & Kraftanlagen, Berlin.....	30,000,000	118	96	6,600,000
Elektrische Unternehmungen.....	30,000,000	158	90	20,400,000
Hamburger Elektrizitäts-Werke.....	15,000,000	145	144	150,000
Helios, Koeln.....	20,000,000	156	35	24,000,000
Schlesische Elektrizitäts-Ges.....	4,000,000	122	104	700,000
Siemens & Halske.....	54,000,000	178	145	17,800,000
Stettiner Elektrizitäts-Gesellschaft.....	4,000,000	150	130	800,000
Union Elektrizitäts Ges., Berlin.....	24,000,000	171	111	14,400,000
Total.....	429,550,000			266,410,000

The above table shows that firms having a total capitalization of M.429,500,000 have lost since Jan. 1, 1899, M.266.4 million, or 61 per cent.

A great deal of interest is being manifested in a new method for the reduction of earth currents to a minimum, which has been devised by Gisbert Kapp, who described it before the Electro-technical Club, of Berlin. On account of the importance of this subject to street railway companies the new method will be briefly described.

It was Gisbert Kapp who about six years ago proposed the insertion of small boosters in the return feeders, which are used to a large extent throughout Europe. These boosters should "draw the current out" at several points along the track. The boosters are excited by the positive current of the feeders, so that the "drawing out" action of the negative feeder is proportional to the load on the line at any particular instant. The first large road to use this system was that of Glasgow, on which in the several sub-stations over a dozen of such boosters of 1000 amp. each have been installed. The difference of potential between the various rail-feeding points is never more than 1 volt. Such close regulation, however, is only necessary in cities with a

large system of gas and water pipes. But in such cases the railway system is also very large, so that the cost of boosters and rail-feeders is not very large in comparison with the total cost of the installation.

The case is quite different, however, when we consider straight roads, without many branch lines, which are supplied with current from one end. In such a case the "boosted return feeder" system is not commercially applicable, because the cost is too great in comparison with the total cost of the installation. Most roads of this character, however, are located outside of city limits and where pipes are few, so that the need of a small return voltage is not so important. An approximate regulation would suffice in such cases, and this is supplied by Kapp's new method, which is considerably cheaper. Kapp proposes to break the electrical connection between the rails at several points. He then returns the current through a small booster, which has a series excitation, and is inserted between the negative pole and the rails. The difference between this and the old method is, that in the latter the boosting is done at only one point on the line, while with the new method the boosting is done at several points, so that the potential differences, as well as the danger zones, are considerably decreased. The distance along which the rails are electrically disconnected must be greater than the distance between the first and last wheels of a train. The booster is placed in a small shed, and only needs occasional attention.

The new method may be illustrated by the following example:

The road is single-tracked, 20 km long, with a headway between cars of ten minutes, the trip taking one hour. With a maximum speed of 25 km per hour, and five to six stops, about 240 amp. are required at 500 volts. The central station is at one end. The resistance is 0.02 ohm per kilometer, and the current density 12 amp. per kilometer. With the ordinary method of track return there will be a drop of potential of 48 volts on the whole line. The theoretical potential of the tracks with respect to the earth is -32 volts at the station and +16 volts at the terminal.

If it is assumed that at three points, *i. e.*, at 2.4 km, 5.8 km and 10.0 km, distant from the station, boosters are installed, then their operation is as follows:

At	2.4 km	12 volts	× 212 amp	= 2,550 watts
"	5.8 "	12 "	× 170 "	= 2,040 "
"	10. "	12 "	× 130 "	= 1,560 "

The total power of all three boosters is therefore about 6.2 kw.

If the efficiency of the motor generator is assumed as small, say 60 per cent on account of the small voltage, the boosters have to be supplied with 10.4 kw under the assumption that no current flows through the earth. There are 1440 watts more required on account of the loss of 6 volts between 0.0 km and 2.4 km, so that it requires 11.84 kw to return the current with this method. Under the same conditions the return of the current without boosters requires 32 volts × 240 amps. = 7.76 kw. The boosting, therefore, costs about 4 kw for a ten-minute headway, and correspondingly less with lighter traffic. For 3000 car km traveled daily the central station would have to furnish about 50 kw additional for the boosted rail return.

For a 3000 car km traffic the station has to furnish about 1850 kw, so that the excess power required amounts to only 2.7 per cent. The coal bill will also be 2.7 per cent greater. For this outlay, however, and the comparatively small first cost of the boosters, the company gains the advantage of very small and confined earth currents.

Kapp concludes from the above example that the danger to pipes is about 23 per cent as much with the new method as with the old. This holds true for the very improbable case that pipes run parallel with the tracks along the entire 20 km distance, which is seldom found in actual practice. If pipes are only met with at various points along the road the boosters can be so inserted that there is very little danger of injuring the pipes.

The Municipalization of the Vienna Electric Street Railways

BY E. A. ZIFFER

In a recent issue of this paper an account was published of the offer made by the city of Vienna to the operating street car company for the purchase of the road. On Jan. 28, 1902, the stockholders held a special meeting to consider this offer, and a spirited debate, lasting for nearly eight hours, was indulged in. Finally, however, the offer was accepted by a vote of 11,952 shares for acceptance and only 828 against. The proposition, which was laid before the stockholders by the board of directors, was a very interesting document, as it pictures with remarkable frankness the brief history of the organization, and sets forth sound reasons why

the stockholders should accept the city's proposition. The paper explains further how the company had failed to receive the city's support from the very start, such as freedom from payment of taxes, which was expected to be granted when the company was organized. That there were, furthermore, a number of differences between the city and the company, which resulted in continuous strife, which in turn proved the city authorities to be very inconsiderate, and to endanger frequently by their actions the very life of the company. There was, for example, the cable controversy, the differences in regard to fares, etc. And because a refusal to accept the city's offer would only mean a renewal of old battles and a temporary depreciation of the value of the stock, and because the prospects for the future were not very encouraging, with the checking of natural development, the board of directors have seen fit to advise the stockholders to accept the city's proposition.

In estimating the cost of the road to the city, the balance of June 30, 1901, was presented, and it was shown that the company hands over to the city property amounting to 35.9 million kronen. As the city pays the company 62,000,000 kronen, it follows that 27,000,000 kronen are paid for the operating franchise.

In making up an approximate liquidation balance, including the first half year of 1901, it was found that each share could be redeemed for 305 kronen. The German Bank, however, only offers 300 kronen to the stockholders. It should be further remarked that since the winning of the tax suits by the company each share is worth 5 kronen more, and if the company should win the income tax suits which are now in the courts each share will be worth 20 kronen additional. The current quotation on the 300 kronen shares is 287.

At the close of the discussion the city's offer was finally accepted, and the Bau und Betriebsgesellschaft dissolved. The board was instructed to ask for the State's sanction of this proceeding and to liquidate the company's affairs. The condition was attached, however, that the city must fulfil the conditions of its offer by April 30, 1902, at the latest.

At the same meeting, the City Council decided to accept the plans for the extension and operation of the street railway system; 39,510,000 kronen will be expended according to the plan for the extensions, but no details regarding the expenditures are made public. It should be stated, however, that the agreement shows an evident desire on both sides to work in harmony and to avoid rather than create difficulties.

The city gives the Siemens & Halske Company the contract for the further extension of the system, and this firm agrees to finish the entire work by Nov. 30, 1903, and will lease the road thereafter for a period of twelve months. The sum of 39,510,000 kronen will be paid to the firm in instalments proportional to the work executed. The condition is imposed by the city that, wherever and whenever possible, local labor and products shall be selected. As a guarantee for the faithful carrying out of its contract, the firm gives a security equal to 5,000 kronen per kilometer, but at no time must the amount exceed 150,000 kronen. In case the company fails to carry out any part of the agreement the city has a right to impose a fine up to 300 kronen for each failure. If the company fails to complete a section when agreed upon or interrupts the work without good cause, the city can impose a penalty up to 50,000 kronen. The company must build the lines indicated and selected for the price agreed upon up to the close of the year 1903. Hereafter the city must, at least until the close of the year 1906, first ask the Siemens & Halske Company to construct additional lines. If no agreement with that company can be reached, then the city is entitled to receive bids from other companies.

The city reserves the right to build underground lines to connect with the city lines and to operate the same in conjunction with the city lines. Should the city decide to build such lines before the end of 1906, the company must first be asked to construct the same.

The company will take provisional charge of the operation of the road at the expense of the city until Jan. 1, 1904, up to which time the lines still missing must be completed.

Siemens & Halske will pay the $4\frac{1}{8}$ per cent, yearly interest on the 285,000,000 loan. The company must take the current from the city's central station, the maximum price charged being 15 Heller per kilowatt-hour. The company must pay during 1902, 1,870,000 kronen, during 1903, 2,170,000 kronen to the city, while the latter agrees to pay any taxes which may be imposed.

For operating the road the firm receives 2 per cent of the yearly gross receipts, any possible loss must be borne by the company, while the profits go to the city. The company's security amounts to 500,000 kronen.

The Great Britain Railways Development Corporation has been incorporated at Trenton, N. J., to build and operate electric roads in rural England.

Annual Meeting of the St. Louis Transit Company

The annual meeting of the St. Louis Transit Company was held March 11, and officers and directors were elected as follows: Murray Carleton, president; Corwin H. Spencer, first vice-president; A. B. Du Pont, second vice-president; James Adkens, secretary and treasurer; Frank R. Henry, auditor; directors: A. H. Bauer, A. D. Brown, Patrick Calhoun, Murray Carleton, James Campbell, Eugene Delano, Charles D. McGuire, F. E. Marshall, H. S. Priest, Corwin H. Spencer and William H. Thompson.

The same officers were elected by the United Railways Company, with the single exception of the second vice-president, Mr. Du Pont, that company having no second vice-president. Most of the voting was done by proxy, 113,384 shares being represented out of a total of 172,613.

The annual report for the year ending Dec. 31, 1901, submitted at the meeting, shows earnings as follows:

Gross earnings	\$5,777,599
Operating expenses and taxes.....	3,692,400
Net earnings	\$2,085,198
Other income	6,313
Total	\$2,091,512
Interest and dividend.....	2,617,142
Deficit	\$525,630
Per cent expenses and taxes to gross earnings.....	63.91

COMPARATIVE STATEMENT

	1901	1900	Increase
Gross earnings	\$5,783,913	\$4,469,207	\$1,314,706
Expenditures	3,692,400	3,646,487	45,913
Net	\$2,091,513	\$822,719	\$1,268,793

The satisfactory results as shown by the increase in the gross earnings, and the successive and gradual reduction of operating expenses each quarter, as shown below, warrant the conclusion that the results for the year ending Dec. 31, 1902, will show a gratifying surplus.

	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Gross earnings.....	\$1,303,221.74	\$1,483,414.07	\$1,515,256.92	\$1,475,706.84
Operating expenses and taxes	949,541.14	948,341.46	930,834.81	863,683.17
Net earnings	\$353,680.60	\$535,072.61	\$584,422.11	\$612,023.67
Percentage of operating expenses and taxes to gross earnings	72.86	63.92	61.43	58.53

President Carleton's report shows that at the time of the consolidation of all the street railways of St. Louis into the United Railways Company, with the single exception of the Suburban system, all the different constituent companies owned power houses with an aggregate capacity of 24,000 hp. On the completion of the new station of the St. Louis Transit Company it will have a total capacity of 50,000 hp, and the total mileage of track operated is 361.7 miles.

Total revenue passengers carried during the year 1901 were 117,546,811, an increase over the previous year of 26,929,432, or 29.91 per cent.

During the year 1901, there was expended for acquisitions, betterments and improvements of properties of the United Railways Company, for refunding maturing bonds, and for purchase of un-acquired capital stock of subordinate or constituent companies the sum of \$4,337,307.

The St. Louis Transit Company up to Nov. 1, 1901, had incurred an indebtedness of \$4,000,000 in making additions, etc., and had received from the United Railways Company certain securities, and will, at various times during 1902, receive additional preferred stock for like purposes.

In view of these facts, the board of directors, believing it advisable to sell certain bonds and stock held by it and to be acquired, authorized the issuance of \$6,000,000 5 per cent collateral trust notes, payable three years from Nov. 1, 1901, of which \$4,608,000 has been issued, the balance to be executed during 1902 at dividend periods.

What is known as the Northern power house, now in course of construction in North St. Louis, cost, up to Dec. 1, 1901, \$792,955. When put into operation it will result in a saving of cost of power of \$140,000 per year.

The report mentions, also, that an option for one year, which has been given on \$2,500,000 United Railways 4s, was by mutual consent withdrawn, and in lieu thereof the \$2,500,000 were pledged to secure the payment of the collateral trust notes.

Large Westinghouse Shops

The Westinghouse Machine Company has just awarded the contract to the Cambria Steel Company, of Johnstown, for the steel work for the great new pattern shops and gray iron foundry to be erected this spring at Trafford City, Pa., on the Pennsylvania Railroad. James Stewart & Co. will construct the remainder of the buildings. The new plant, with equipment, will cost over \$1,000,000 and will give employment to 2000 men. The new works will concentrate two of the present foundries operated by the Westinghouse Machine Company. Further additions to provide for the Westinghouse Electric & Manufacturing Company will be made in the future.

The foundry building will be 612 ft. long and 184 ft. wide. It will contain three cupolas and will provide for an annual capacity of 100,000,000 lbs. of castings. The machine company now uses each year 50,000,000 lbs. of castings, and it is estimated that by the time the new works is completed the annual needs will have reached 75,000,000 lbs. The new plant will be equipped with electric cranes and travelers, and will be fitted with the most modern appliances to reduce the cost of operation to a minimum.

Adjoining the foundry will be a three-story pattern shop, 603 ft. long and 80 ft. wide. This shop will be fitted with every convenience for the making and safe storage of the valuable patterns of the company. An office building will also be erected nearby. The two plants will be placed on a twenty-two-acre site, and the floor area will be about five acres. The work of construction will be started at once, and it is the intention to complete the shops by next January.

The steel work in the two buildings alone will amount to 7,500,000 lbs. It will be hurried at once. The contract was awarded through the Pittsburg agent. Stewart & Company, who will build the structures, gained a splendid reputation in the fast building of the Western Pennsylvania Exposition and the Westinghouse buildings at Trafford Park, Manchester, England.

It is the intention of the Security Investment Company, an allied Westinghouse interest, to build a comfortable little city about the new works. Plans for this are now being made.

Another Hearing at the Boston Subway

The committee on Metropolitan affairs of the Massachusetts Legislature will give a third hearing, on April 4, upon the Boston Subway propositions. It is expected that at this hearing the Hon. A. E. Pillsbury, counsel of the Boston Elevated Railway Company, will state the definite proposition of that company, with respect to the building of a new subway. This will follow, in a measure, the lines of the so-called Matthews bill, but will differ from it on some important points. There is no substantial basis for the assumption that any subway bill will be passed this year, as it is practically certain that Governor Crane will sign no bill granting to the company the exceptional privileges contained in the Matthews-Livermore proposition, and neither can it be expected that the committee will report, or the company accept, a bill which will satisfy all the interests involved in the case. The outlook is that between the extremes of the Governor and public opinion, on the one hand, and the known desires of the company upon the other, all subway legislation will come to little this year. It is a cause of regret that legislation has been so long delayed, for the elevated system has been in operation nine months, its influence upon the transit situation carefully studied, and meanwhile the congestion in Washington Street grows apace, with the additional uncertainty of the exact relation of the new East Boston tunnel to the prospective subway, which stops its advance beyond Chatham Row. An illustration of the small part which electric cars play in the congestion of the Boston streets has been evidenced by the great strike of teamsters, freight handlers, coal carriers, express and longshoremen, which has given the streets a deserted, holiday or Sunday appearance, and enabled electric car schedules to be maintained with the utmost facility.

Prizes for High-Speed Locomotives

The Society of German Mechanical Engineers, influenced by the recent experiments in electric rapid transit in Berlin, has offered first, second and third prizes of M.5,000, M.3,000 and M.2,000, respectively, for the best design for a steam locomotive, with a single car carrying one hundred passengers and their baggage, to run 75 miles an hour on a straight and level track.

Interurban Lines Secure Entrance to Cincinnati

After a number of conferences between the Cincinnati Traction Company and the interurban companies seeking entrance to the city an agreement has been reached as the result of which the roads will enter the city over the tracks of the Cincinnati Traction Company. The interurban companies, it will be remembered, were seeking the aid of the Legislature to secure entrance to the city, but the bill now in the Legislature will not be passed.

Mr. George R. Serugam, president of the Cincinnati & Eastern, Rapid Run and Cincinnati Suburban Railway Companies, has succeeded in arranging terms for the entrance of his roads, and they will operate cars to the center of the city. An arbitrator was appointed to decide the compensation to be received by the Cincinnati Traction Company, which has not been made public. A difference in the gage of the tracks of the roads represented by Mr. Serugam and those of the Cincinnati Traction Company, which are 5 ft. 2 ins., will necessitate the changing over of a portion of the tracks of the Suburban lines, which were laid for 4 ft. 8½ ins.

There are now six interurban electric railways built or nearly completed up to or into Cincinnati. They are: The Millcreek Valley Street Railway Company, which already has an arrangement by which it enters the city to Fountain Square; the Southern Ohio Traction Company, which now connects with the Cincinnati Traction Company at College Hill; the Rapid Railway Company, which is now building from Lebanon down the Lebanon and Montgomery Pike to Norwood; the Suburban Traction Company, which will extend from the East End line to Bethel; the Cincinnati & Eastern Electric Railway, which is now nearly completed from Linwood to Coney Island and California; and the Cincinnati, Lawrenceburg & Aurora Electric Street Railway Company, which now connects with the tracks of the Cincinnati Traction Company at Anderson's Ferry.

Fender Tests in St. Louis

An extended series of tests of car fenders was recently made on the lines of the St. Louis Transit Company and the St. Louis & Suburban Railway Company for the benefit of the committee appointed by the Common Council to investigate the subject. A number of dummies were prepared, and were placed in several positions on the track, viz: Standing up in center of the track, facing the car and back to the car; lying down in center of the track, head toward the car and feet toward the car; on the face across the track, on back across the track, on both rails, standing, kneeling and lying down, kneeling in center of track, back toward the approaching car, and face toward the car. In each case the car was backed 200 ft. away and run against the dummy at a speed of about 7 miles an hour, which is the average rate for cars in the business section of the city. The fenders which were attached to the vestibule fronts were required to be 6 ins. from the rails, and those attached to the trucks 3 ins. The tests on the St. Louis Transit Company's lines were witnessed by General Manager Du Pont, General Superintendent Grand and other officials of the Suburban Railway Company; Hiram Phillips, president of the Board of Public Improvement; Sewer Commissioner Hedmann, Street Commissioner Varrelman, Harbor Commissioner Henry Alt, and probably 200 onlookers. The averages made by fender devices in the recent tests have been tabulated and the showing is in favor of Ira Clarke's Alameda fenders. G. Rittenhouse's device ranks second. The report prepared will be considered by the fender committee of the Board of Public Improvements.

Electric Railway and Lighting Plan in Iloilo

A. Burlingame Johnson, formerly United States Consul at Amoy, China, has been in New York recently on business connected with an electric-lighting and proposed railway plant owned by him and his associates in Iloilo, Philippine Islands. The lighting machinery has already been purchased, and will be shipped this week. It will include two 100-kw General Electric alternators, Harrisburg engines and Stirling boilers. Power for the railway system, when that has been equipped electrically, will probably be taken from the same station as that used for lighting.

The company's railway property consists of about 9 miles of track connecting Iloilo, Jaro and Molo, three towns having an aggregate population of about 60,000. Mr. Johnson expects to leave New York this week for his home, 318 Twenty-Third Avenue, Denver, and will sail for the Philippines via Vancouver on May 5.

A Complimentary Dinner to C. C. Martin

On the evening of Saturday, March 15, a large number of the citizens of Brooklyn assembled at the Montauk Club, and tendered to Charles C. Martin, a complimentary dinner in recognition of his long service to the best interests of Brooklyn. By his untiring devotion to all matters pertaining to the Brooklyn Bridge, with which he has been connected since almost the first days of its conception, he has made himself one of the most noteworthy citizens of the borough, and the banquet was attended by a great number of well-known local street railway men, engineers and men prominent in municipal affairs on both sides of the East River. The hearty words of praise and congratulation which came from the speakers of the evening, were enthusiastically applauded by the entire assemblage, who showed their appreciation of Mr. Martin's life-long efforts in a most emphatic manner.

One of the pleasantest features of the banquet was the presentation to Mr. Martin, before the formal speech-making, of a bronze statue of David, which was accepted by the guest of the evening in a few remarks, which showed the deep emotion and high appreciation he felt at the honor bestowed upon him.

O. F. Nichols acted as toast-master. Among the speakers were former-Mayor David A. Boody, of Brooklyn; Irving M. Scott, of San Francisco, builder of the battleship "Oregon"; Martin W. Littleton, assistant district attorney, whose eloquence at the Street Railway Association's banquet last October will be long remembered by all those who had the opportunity of hearing it, and Colonel H. G. Prout, editor of the *Railroad Gazette*, who responded to the toast of "The Engineer" in an address which was full of praise for the past management of the Bridge, and replete with good advice, both from the engineering and municipal standpoint, to those who may follow in the control of this most important highway of the world. Colonel Prout pointed out that whereas the London Bridge carried 90,000,000 people a year, the Brooklyn Bridge was traversed by 100,000,000, notwithstanding the fact that a large portion of the Londoners were pedestrians, while very few walked across the East River. He also remarked the significant fact that of all the 700,000,000 people who have crossed the Bridge since its opening in 1883 but one passenger has been killed by the Bridge cars.

Among the well-known men present, a number of whose names are familiar to street railway men throughout the country, were the following:

William C. Redfield, of the J. H. Williams Company; Charles A. Moore, of Manning, Maxwell & Moore; Gustave Lindenthal, the present Bridge Commissioner; Alfred Wagstaff, D. H. Valentine, J. L. Greetsinger, president of the Brooklyn Rapid Transit Company; J. C. Brackenridge, John Arbuckle, the Rev. M. E. Harlan, Henry Seibert, M. T. Davidson, Charles E. Teale, George A. Price, N. T. Thayer, Henry Hentz, W. H. Garrison, C. L. Rositer, ex-president of the Brooklyn Rapid Transit Company; D. D. Whitney, T. S. Williams, William V. Hester, C. W. Boynton, George W. Plympton, A. Augustus Healy, F. W. Hooper, J. Adrianee Bush, W. N. Dykman, Joseph C. Hendrix, R. P. Chittenden, W. D. Sargent, F. A. Guild, George V. Brower, C. W. Gearhart, L. L. Buck, C. W. Hunt, secretary of the American Society of Civil Engineers; R. S. Buck, S. R. Probasco, C. B. Martin, C. W. Rice, W. B. Yearance, James Owen, G. W. Tillson, J. J. Hopper, J. M. Wakeman, vice-president and general manager of the STREET RAILWAY JOURNAL; George Blatchford, George Pegram, K. L. Martin, W. J. Baldwin, B. W. Folger, John Lundie, George B. Cornell, H. A. Fairbairn, N. P. Lewis, William J. Ford, Leonard Moody, J. L. Wells, F. H. Newcomb, S. W. Baldwin, E. I. Horsman, F. H. Baldwin, C. G. Roebbing, P. J. Bennett, H. F. Williams, N. Poulson, C. D. Meneeley, Edward Barr, W. C. Andrews, associate editor of the STREET RAILWAY JOURNAL; R. R. Crowell, W. Pearson, N. P. Collins, Nathaniel Robinson, J. H. Dwyer, F. L. Bartlett, J. D. Youmans, George F. Dobson, W. H. Reynolds, M. W. Nolan, E. C. Shaler, C. D. Pollock, J. A. Drew, H. A. Lachieotte.

The Strike at Norfolk

The troops which have been on duty at Norfolk during the street railway strike were recalled on March 17, but on March 18 it was thought that it would be necessary to order them to duty again. The withdrawal was followed with great violence, with which the civil guards seemed entirely unable to cope. Many passengers have been hurt by flying missiles, and on March 18 a shot fired into a car in the suburbs passed through the hat of a passenger on the car. Many of the strikers have returned to work during the past few days.

Semi-Convertible Cars for the City of Mexico

The J. G. Brill Company, of Philadelphia, is shipping twenty cars of its patented semi-convertible type to the Compañia Limitada de Tranvías Electricos de Mexico. Aside from their fine construction and handsome appearance these cars are exceptionally interesting on account of their special design, intended to meet the severe climatic conditions of the Mexican metropolis. The intense sun and extremely dry atmosphere encountered at such an altitude in the tropics, produces a shrinkage in the most carefully seasoned wood, rendering the use of large, unprotected, thin sections extremely unsatisfactory, and the manner of construction by which the difficulty is overcome in the Brill designs is simple, but effective.

The cars are built with straight up-and-down sides, and instead of being paneled with wood are faced with $\frac{1}{8}$ -in. sheet steel. This steel covering is backed up with narrow poplar boards, thus furnishing non-shrinking and very substantial sides. To meet certain local conditions the upper sash of the windows are made stationary. In other respects the semi-convertible features do not differ from the usual Brill form. The sash are raised into recesses in the roof, where they are entirely hidden, the operation of raising and lowering the windows being as easy and simple as the ordinary drop-sash method. The comfort of the cars is increased by a gain in interior width of $7\frac{1}{4}$ ins., obtained by doing away with the necessity of sash wall pockets.

It speaks well for the Brill semi-convertible car that it is recognized as suitable for use in the torrid zone. In fact, as regards coolness, it has much to commend it in comparison with the ordinary open car. For example, the free circulation of air is frequently prevented in the ordinary open car by passengers standing at the sides and in front of those seated. This cannot occur in the Brill semi-convertible car, as standing passengers occupy the aisles. Therefore, all have the benefit of the rush of air produced by the speed of the car. These cars have proved themselves to be exceedingly suitable for interurban service, and will, without

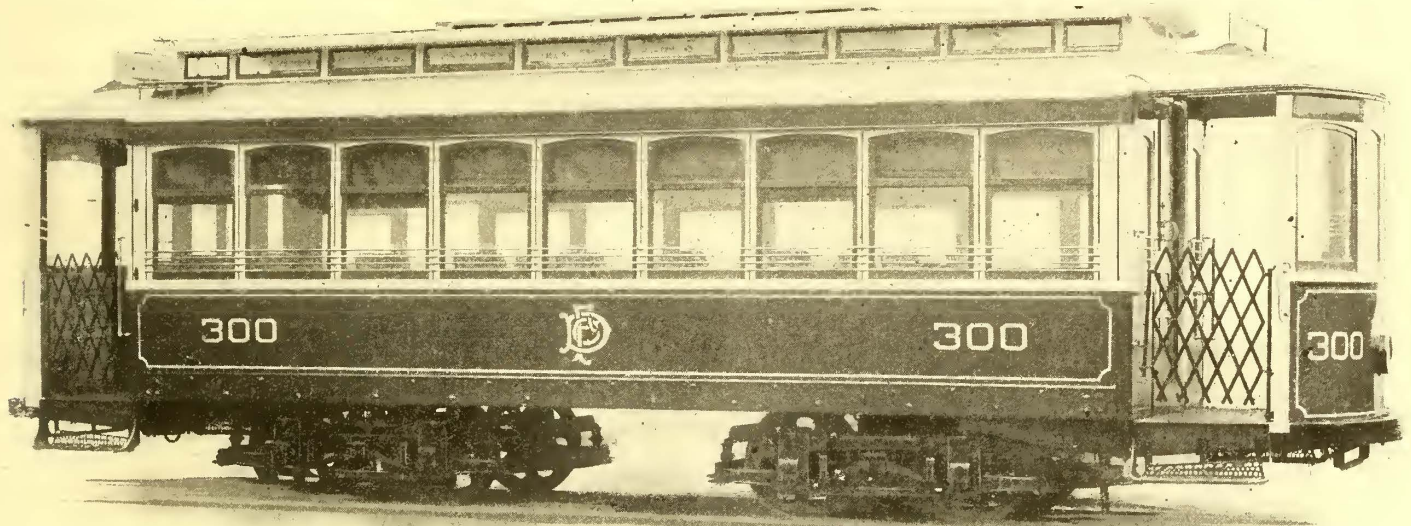
Three-Cent Fare Proposition at Indianapolis

The Interurban Terminal Railway Company has applied for a franchise on about 80 miles of street in Indianapolis, the rate of fare to be 3 cents. The president of the company is Charles Finley Smith, an Indianapolis banker, who is also president of the



INTERIOR OF MEXICAN CAR

Indianapolis & Martinsville Rapid Transit Company, which is building a line from Martinsville to Indianapolis. This move has ostensibly been made because of the difficulty four or five interurban companies have had in making satisfactory terminal ar-



DOUBLE-TRUCK CLOSED CAR FOR MEXICO

doubt, be very popular on the long runs to the towns around the City of Mexico. The economy of road operation with a single equipment of cars, and especially an equipment instantly available for all sorts of weather, must also make them popular with the managers.

The length of the cars are 34 ft. 9 ins. over the crown pieces and 8 ft. 2 ins. wide over the sills. The vestibules at each end have three drop sash, and open sides. The gates fold against the body.

There are nine large windows on each side, giving, with the high and wide monitor deck, a very airy appearance. Roller curtains are contained in the window recesses in the roof. Four-bar bronze tube window guards extend from corner post to corner post outside the windows, and the end and vestibule windows are similarly guarded. The interiors are finished in cherry, enriched with inlaid stripings of white wood and carvings. The handsomely decorated light-green ceilings are of three-ply veneer. The seating arrangement is comprised of seven reversible-back seats on each side, and longitudinal double-seats at the corners. Each car is fitted with the following Brill patented specialties: angle-iron bumpers, Dedenda gongs, radial draw-bars and ratchet brake handles and is mounted on Brill 27-G trucks.

rangements for coming in over the Indianapolis Street Railway tracks. These interurban companies consider the rate of 3 cents per passenger for the privilege of coming in over the city tracks and using the city line power as too much, although that is a rate common in a number of other cities. The proposition of the Indianapolis Interurban Terminal Railway Company covers not only terminal lines for the interurbans, but a complete city system as well, including a number of crosstown lines. Mr. Smith estimates that the 80 miles of road can be put in for \$3,000,000, or \$37,500 per mile.

The Canadian General Electric Company has started a miniature railway in the Longue Pointe Asylum, Montreal, Que., to carry food to the different wards. The motor car is of 5 hp, 10 ft. long and 4 ft. high, and runs on a $15\frac{1}{2}$ gage track. The track runs around three sides of the block, and including the side track to the kitchen, covers a distance of over 3000 ft. It is proposed to have other cars, capable of seating a dozen persons, to carry the sisters to various parts of the building.

The Everett-Moore Situation

The bankers' committee in charge of Everett-Moore affairs has secured from the syndicate and other leading stockholders of the Northern Ohio Traction Company an agreement to sell their holdings in the company at 37½ for common stock and 87½ for the preferred. The stock is selling at 34 and 85 respectively.

It seems probable that in the near future there will be important developments with regard to the future of the Lake Shore Electric Railway, as it is understood that the United States Court is to be petitioned to issue an order for the sale of the property. It is said that a number of the leading creditors of the company plan to bid for the property at receiver's sale. The debts of the road amount to \$4,500,000, and it will require an expenditure of \$500,000 to place the property in first-class condition. It is not believed that the Everett-Moore syndicate has very much of an equity in this property, and whatever equity it secures will depend upon the arrangements which are made with the creditors for the organization of the new company. Incidentally, it is believed that the stockholders of the Lorain & Cleveland Railway who held on to their stock will fare much better than those who exchanged their holdings for the stock of the Lake Shore Electric Railway Company.

Considerable stock of the Detroit United has been turned in on the proposition to sell the stock at \$75, but the majority of the shareholders are still holding off. The committee is not confident, however, that it will be able to sell the stock at \$75 if it does secure a majority.

The bankers' committee is still hopeful of selling the Detroit & Toledo Shore line at a fair figure, as it is thought the syndicate has an equity of nearly \$1,000,000 in this property.

Representatives of three syndicates are still looking over the property of the Toledo Railways & Light Company with a view to purchasing it, but there are no new developments in this situation.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED MARCH 11, 1902

694,940. Vehicle Axle; J. H. Bowling, Ozone, Tenn. App. filed July 18, 1901. Two stub journals are fixed to the end of an axle-bar, said journals being hollow to form reservoirs for oil from which openings lead to the bearing surfaces.

694,942. Car Truck; C. M. Carnahan, Allegheny, Pa. App. filed February 20, 1901. A side member of the truck is composed of an upper structural member for its full length and a lower structural member connected therewith and terminating at and forming sides of the journal-box housings.

694,982. Interlocking Rail Connection and Crossing; H. B. Nichols, Philadelphia, Pa. App. filed November 9, 1901. The crossing rail abuts against the opposite sides of the main rail and engages therewith by means of a dovetailed connection.

694,995. Car Axle Journal Box; W. E. Sanders, Helena, Mont. App. filed August 3, 1901. The box is made in two parts embracing that portion of the axle between the wheels. The bearings are located near the hubs of the wheels, and the axle is in two parts, one of which telescopes into the other.

695,098. Car Seat; T. Finney, Glasgow, Scotland. App. filed September 6, 1901. A detachable connection between the seat-body and back-rest whereby the former may be reversed by the movement of the latter or independently thereof.

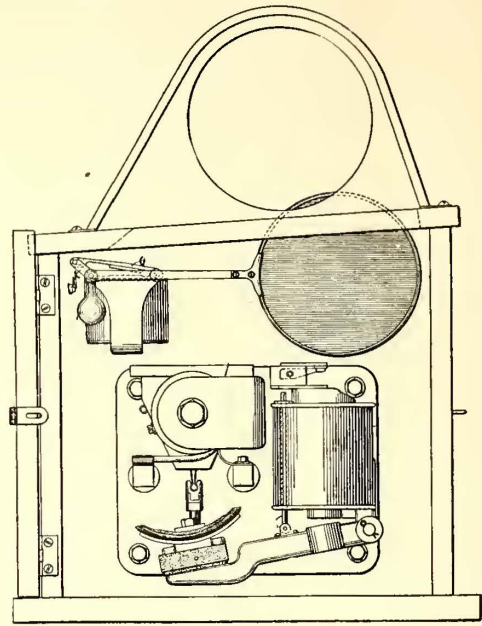
695,118. Controller for Electric Motors; R. H. Read, Schenectady, N. Y. App. filed July 26, 1901. Tubes conveying compressed air are trained upon the contacts so that blasts of air can be directed against the contacts when the circuits are broken, in order to interrupt the arcs.

695,122. Signal System for Electric Railways; S. B. Stewart, Jr., Schenectady, N. Y. App. filed May 13, 1899. A signal is thrown into view adjacent to the track whenever a section of the exposed conductor is charged.

695,130. Brake Mechanism; W. S. Adams, Philadelphia, Pa. App. filed July 27, 1900. Relates to a special arrangement of the brake rigging.

695,131. Brake Mechanism; W. S. Adams, Philadelphia, Pa. App. filed December 18, 1900. The brake lever is arranged at the center of the truck to reduce the variations in connection with the rod that runs to the car body and the source of power, due to the divergence of the center lines of the truck and car body when rounding curves.

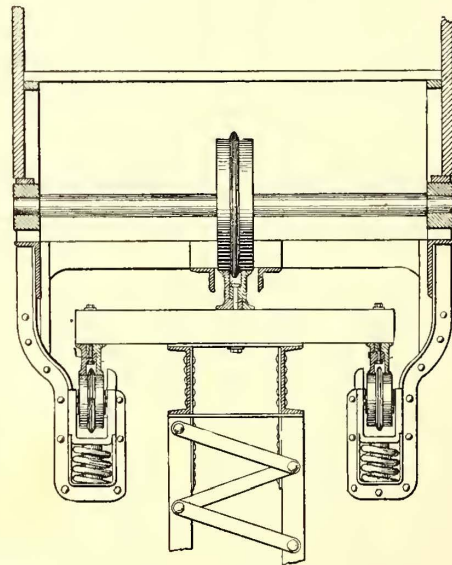
695,137. Mono Railway; L. Beecher, Batavia, N. Y. App. filed July 25, 1900. The car wheel has a center flange and two treads to fit a rail having a groove in the middle.



PATENT NO. 695,122

695,138. Rail; L. Beecher, Batavia, N. Y. App. filed July 25, 1901. Relates to the manner of securing such a rail as is mentioned in the previous patent, when constructed in two parts.

695,144. Electric Brake; F. E. Case, Schenectady, N. Y. App. filed April 4, 1898. When the controller handle is moved beyond the cut-off point it engages contacts which start a small motor to wind the brake drum; a worm gear is interposed in the rigging to act as a lock to hold the brakes applied when the motor has stopped.



PATENT NO. 695,137

695,248. Brake-shoe; A. L. Streeter, Chicago, Ill. App. filed June 25, 1901. The shoe is provided with openings in its face adapted to receive dressing blocks which can be inserted temporarily to dress down flat places in the wheel.

695,307. Turn-table; C. M. Hampson, Denver, Col. App. filed November 20, 1901. The table has a flattened dome on its top plate for guiding the wheels of the vehicle and the top plate turns on ball bearings.

695,340. Life-saving Mechanism for Tramways; W., T. W. H. and P. C. Philipson, Bolton, Eng. App. filed December 27, 1901. Details.

695,361. Brake Mechanism; W. S. Adams, Philadelphia, Pa. App. filed April 25, 1901. A construction intended to maintain a proper working connection between the main brake lever carried by the truck and the rod that runs to the source of power on the car body, when the car is on a curve and the relative movements

of the trucks and car body throw their center lines away from each other.

695,383. Magnetic Traction; S. A. Gibbs, Tacoma, Wash. App. filed June 19, 1901. Magnets mounted with their poles closely facing the rails increase the tractive power of an engine.

695,419. Brake-shoe; A. L. Streeter, Chicago, Ill. App. filed March 15, 1901. The attaching lug is secured directly to an insert which extends the full length of the shoe.

ENGINEERING SOCIETIES

MASSACHUSETTS STREET RAILWAY ASSOCIATION.—The annual meeting of the Massachusetts Street Railway Association was held at Young's Hotel, Boston, on March 12, and was attended by over one hundred prominent steam and electric railway officials. Capt. George M. Tompson, of Wakefield, delivered an address on "How Steam Railroads Build and Operate Electric Railways," basing his remarks upon his experience in building a 30-mile line between Portsmouth and Rye Beach, N. H., for the Boston & Maine Railroad. Captain Tompson went into the subject at considerable detail, and stated that, in his opinion, the steam and electric roads each have many days of usefulness ahead.

PERSONAL MENTION

MR. H. M. SLOAN, general manager of the Calumet Electric Street Railroad Company, contributed an interesting article recently to the *Calumet Record* on "Municipal Ownership and Operation of Street Cars."

MR. ROBERT W. BLACKWELL, of the British electrical, engineering and contracting firm of R. W. Blackwell & Company, Ltd., has sailed for England after a visit of some two months' duration in the United States.

MR. HARRY DE STEESE, formerly with the Morris Electric Company, of New York, has formed a connection with Mr. C. K. Hill, of Pittsburgh, dealer in electrical supplies. Mr. De Steese's headquarters will be at 210 Seventh Street, in that city.

MR. J. H. HARRIGAN, superintendent of the Dayton, Springfield & Urbana Railway, of Urbana, Ohio, has been appointed superintendent of the Columbus, Buckeye Lake & Newark Traction Company, of Columbus, Ohio. Both roads are controlled by the same interests.

MR. P. W. DAVIES, operating secretary of the British Electric Traction Company, London, who has been in this country for the past three weeks, looking for men to take back to England, sailed on the S. S. St. Louis Wednesday, March 19. Mr. Davies was accompanied by eight new men for the British system, six of whom will be employed as motormen, inspectors or starters, and two as operating men.

MR. W. C. DOUBLEDAY has resigned as secretary of the Jersey City, Hoboken & Paterson Street Railway Company, of Hoboken, after being in the employ of the company for about twenty years. Mr. Hugh McLaughlin, who has been in the employ of the company for some time, succeeds Mr. Doubleday.

MR. LEONARD LEWISOHN, the well-known operator in copper, died in London a few days ago. Mr. Lewisohn, besides his many connections with industrial enterprises, was president and director of the Perth Amboy Railroad, of Perth Amboy, N. J., and a director of the Great Falls Street Railway Company, of Great Falls, Mont.

MR. GEORGE STANLEY has been appointed purchasing agent of the Cleveland Electric Railway Company, of Cleveland, Ohio, succeeding Mr. Charles Wason, who resigned with the change of control of the property. Mr. A. W. Sweeney, for a number of years secretary to Mr. Horace Andrews, has been made secretary to the president of the company.

MRS. JOHN I. BEGGS, the wife of President Beggs, of the Milwaukee Electric Railway & Light Company, died suddenly on March 14, after a brief illness, at the family home at Harrisburg, Pa. Mrs. Beggs had not been in good health for some time and had recently returned from an extended trip abroad. Mr. Beggs will have the sympathy of all in his bereavement.

MR. A. G. MAISH has been appointed superintendent of the Des Moines City Railway Company, of Des Moines, Ia., succeeding Mr. W. G. Owens, resigned. Mr. Maish was formerly secretary of the company. He will have to assist him in the operation of the road Mr. E. R. Cunningham, formerly superintendent of the Fort Dodge Electric Light & Railway Company. Mr. Owens has been with the company since 1890, and resigns to take up the business of stock raising near Des Moines.

MR. J. D. HARVEY is now conducting a business in financing street and interurban railway and electric lighting properties at First National Bank Building, Chicago, and has some promising propositions under way. Mr. Harvey will take entire charge of financing and constructing, relieving owners of franchises and rights of way who are unfamiliar with the business of all further trouble in the matter.

MR. WILLIAM M. BOOMER, who is said to have built the first electric railway in Canada, died at his home in Detroit a few days ago. Mr. Boomer was fifty-five years of age. Thirty years ago he established a street railway line in Windsor, Ont. While at the head of the company he experimented with electricity as a motive power, this being one of the first practical applications of electricity to a commercial road on the Continent. Nine years ago he sold his interests in the railroad and engaged in other business in Detroit. He was an active member of the Detroit Board of Trade.

MR. GORDON CAMPBELL has been made purchasing agent of the Washington Traction & Electric Company, Washington, D. C., vice Mr. R. N. Barrows, whose resignation to join the Westinghouse Companies was announced in this column a few weeks ago. Mr. Campbell has been master mechanic of the Washington road for a number of months and will continue to hold that position, as well as his new one. His long experience as purchasing agent of the North Jersey Street Railway Company will make him thoroughly at home in his new duties, giving him a familiarity with the trade that will prove decidedly advantageous to the company. Mr. Campbell's office is at 2411 P Street.

MR. ALBERT E. POND, formerly superintendent of the Winchester Avenue Railroad Company, of New Haven, Conn., who has just accepted a position at Boston, was agreeably surprised a few days ago by his former associates in New Haven. As a testimonial of esteem and respect, as well as of appreciation of his efforts to deal fairly with the men in his employ, the employees of the Winchester Railroad presented Mr. Pond with a handsome cut-glass punch bowl, also a set of resolutions to which were attached the name of one hundred and fifteen men who were under Mr. Pond's supervision. Mr. Pond was connected with the Winchester Avenue Railroad for ten years.

MR. F. G. L. HENDERSON, who has resigned as superintendent of the Newton Street Railway Company, of Newton, Mass., after continuous service for thirteen years, was banquetted by his former associates on Feb. 12, when he was presented with a handsome gold watch as a token of esteem. Mr. Henderson is now connected with the Boston Suburban Electric Companies, being located at the president's office in Newtonville. He is connected officially with all the roads of the system. Mr. Henderson first entered railroading when he was nineteen years of age, accepting a position with the Boston & Albany Railroad, where he served for about fifteen years. He resigned from this company in 1882, becoming prominently identified with a large publishing



F. G. L. HENDERSON.

house. This position he resigned shortly to become identified with the company from which he has recently resigned. Mr. Henderson is the inventor of a car sign illuminator, which is a combined sign and lamp holder, and which provides for the illumination of revolving signs on the bonnets of electric cars.

MR. WILLIAM W. MAC CORMACK, division superintendent of the North Jersey Street Railway Company, of Jersey City, N. J., died at the home of his parents in Bayonne last week, after an illness of only a few days. Mr. MacCormack was born in Scotland thirty-one years ago, and came with his parents to this country when a child. He was educated in Albany, N. Y., and graduated from the High School of that city. Mr. MacCormack early evinced a liking for mechanics and made a study of mechanical engineering, traveling extensively in Europe and America. He became connected with the North Jersey Street Railway Company about two years ago, succeeding to the position made vacant by the resignation of Mr. Harry Fuller, who is now connected with the Washington Traction & Electric Company. Mr. MacCormack's father, Mr. John MacCormack, is chief engineer of the American Stoker Company, of New York.

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, March 19, 1902.

The self-correcting capacity of the money market by means of a higher money rate, has been effectually demonstrated this week. What the various agencies are in this process were pointed out in this column last week—the cessation of gold exports, the increase in New York drafts upon the interior cities, and the lending of trust company resources directly, instead of through the depository banks. The first of these influences had already manifested itself a week ago, and since then a further decline has occurred in the foreign exchanges. The second has not shown itself very emphatically as yet, but the continued rise of domestic exchange rates indicates that the flow of currency toward New York will grow larger from now on. It is the last of the three relieving factors—the shifting of local loans—that has given the greatest sustenance so far to bank resources. As everyone familiar with the New York banking situation knows, the trust companies and other outside lending institutions are inclined to keep a full balance at the Clearing House so long as call money rates are as low as $2\frac{1}{2}$ per cent. But when the rate advances, as it did a week ago, to 4 per cent and over, it becomes more profitable to draw down these balances and loan them out independently in the market than to keep them on deposit merely for the interest they receive. This operation of withdrawal and subsequent relending is what has gone on extensively during the past week, and chiefly on this account the Clearing House banks reported a decrease of \$14,300,000 in their loans last Saturday. The accompanying reduction of deposit liability went so far toward offsetting the loss in cash that the surplus reserve decreased less than \$1,000,000. The indications are that the decline in bank reserves which has been in progress for the past month and a half has now run its course, and that henceforth there will be a slow improvement. It is better for the present that the call loan rate be kept comparatively stiff; otherwise the lending by trust companies, which is such an important help, would cease, and sterling exchange would probably rise to the gold export level again. As we pointed out a week ago, the money situation can be regulated easily enough by a moderately high money rate. It is a corollary of this that a high money rate is necessary to protect the market. Money on call at the Stock Exchange has loaned as high as 5 per cent during the week, but the average figure has been about 4 per cent. Time money quotations are unchanged at $4\frac{1}{4}$ per cent and $4\frac{1}{2}$ per cent for all dates on good collateral.

The Stock Market

The week's share market has been pretty uniformly strong, but with no material change in its main characteristics. Speculation continues narrow, with a tendency to run more into stocks which can be easily lifted or depressed, as the case may be, rather than into stocks with a broad, general market. Here and there more positive signs of pool support have appeared, as, for example, in the Southwestern railroad issues, which have recovered their recent losses on reassuring news concerning the winter wheat crop, and again in the anthracite and bituminous coal shares, which have responded to the more confident feeling that the threatened labor troubles in their section will be averted. But the advances in these quarters have hardly been of an important character, and the range of speculative interest has not been wide. So far as a general drift may be discovered in prices, it is upward rather than downward. Granting that the public are exceedingly cautious about renewing their ventures, the floating supply of stocks is so strongly held by one another of the various syndicates, and bank credits are so easily obtained, that it is easier within certain limits to put the market up than to put it down. The developments in the money situation have, as we have just noted, been of an encouraging nature, and there is no longer any real fear of a check to the speculative dealings from that quarter. The Northern Securities case still hangs on like a veritable old man of the sea, and it continues to be somewhat questionable whether anything like a general improvement can occur so long as this grave uncertainty is not dispelled. Nevertheless, should hopes of an early decision be disappointed, there is a fair chance that the market may come to ignore the matter for the time being, and that other and more favorable influences may dominate its movement. Many sound-minded observers are inclined to the view that with average crops this season, assuring the maintenance of the present prosperity for another year at least, the market will enter upon another fair-sized campaign for the rise. It rather strengthens this belief, that the dealing this week should have been so prompt to reflect the

better tidings from the crop regions. Amalgamated Copper has been, and bids fair still to be, the conspicuous exception to the upward tendency of the stock list. But as a factor of general significance, the weakness in the copper shares is far less serious than it was three months and one-half ago, because it no longer has any connection with trade conditions. Gross blunders in the management of the property, buying up a huge surplus of product when prices were at the top and dumping it out at an awful loss when prices were at the bottom, has impoverished the Amalgamated Company's treasury, and has made it exceedingly doubtful whether the quarterly dividend to be voted upon in April will be paid at all.

A remarkable recovery in Manhattan has furnished one of the sensational incidents of the trading. To find the true reasons for the movement, the comments made in this column a week ago upon the previous decline have only to be recalled. It is now abundantly clear that the stock was purposely marked down as low as possible for purposes of accumulation, and that the purchases could not be completed without a more or less violent up-bidding of prices. We have reason to believe that an important interest, heretofore a stranger to the company, has been secretly acquiring a very large holding. For expediency's sake the identity of this interest must, for the present, be concealed, but it is violating no confidence to state that it is one of the strongest in the financial world. As for the outside motives for the advance, those who have made a study of Manhattan's earnings during the past six months have no doubt as to what they are. The speculative interest in Brooklyn Transit has taken advantage of the strength of Manhattan to bid up their specialty. Metropolitan is lagging behind the rest, owing to the uncertainty of how successful the opponents of the new company scheme may be. The best information still is, however, that the deal will go through.

Philadelphia

Dealings in Union Traction have been on a much smaller scale than in the case of previous weeks. The lack of any further information concerning the "deal" checks new buying, while, on the other hand, the stock appears to be too strongly held to allow of a decline. Nearly all the week's transactions have occurred around the single figure of $39\frac{3}{4}$. Philadelphia Traction fell off two points from the recent top on light offerings. The other traction shares of less importance in the Philadelphia trading list, have been entirely featureless. Odd lots of Consolidated of New Jersey sold at $70\frac{3}{8}$, American Railways at 43, United Traction of Pittsburgh preferred at $50\frac{1}{2}$ and 51, Easton Electric at $19\frac{3}{4}$, and Fairmount Park Transportation at 21. Bond sales comprised Consolidated of New Jersey 5s at $110\frac{1}{2}$, Electric-People's Traction 4s at $98\frac{1}{2}$, United Traction of Pittsburgh 5s at 116, Syracuse Rapid Transit 5s at $102\frac{1}{2}$, Newark Passenger 5s at 118, and Citizen Passenger of Indianapolis 5s at $109\frac{1}{2}$.

Chicago

Every indication in the Chicago stock market this week has pointed toward consolidation at an early date of the Union Traction and City Railway properties. A month ago City Railway shares sold down to 190; a week ago they were quoted at 218. This week urgent bidding for all available offerings carried the price up to 230. Union Traction common advanced on heavy trading from 15 to $17\frac{3}{4}$, and the preferred from 49 to 54, while West Chicago (the lessee company) shares went up from below 97 to 100. Apparently the success of the consolidation plans will not be assured until the uncertainty surrounding the franchise extension is satisfactorily dispelled. All the street railway interests are a unit in their efforts to have the City Council bring the matter to a speedy conclusion. Shares of all the elevated lines have been firm on the excellent traffic comparisons which continue to be made. With the exception of Lake Street, however, where a few sales were made at $11\frac{1}{2}$, there has been practically no business outside the Metropolitan common. These shares are up two points to $41\frac{3}{4}$ under active buying. The Douglas Park extension, recently opened, is proving a great success as a feeder to the main line. The Northwestern Elevated officials and those of the St. Paul Railroad are likely at any time now to get together and arrange for joint handling of the Evanston business. According to the best information the plan is to have the elevated coaches go to the surface at the northern terminus, whence they will be hauled to Evanston by St. Paul engines.

Other Traction Securities

The only noteworthy incident in the Boston dealings during the week was a further rise in Boston Elevated from 168 to 173. This was an advance of over 11 points, as compared with a fort-

night ago. Suggestion is made that the recent unexplained weakness in these shares was simply the result of manipulation to help the accumulation of new holdings. Massachusetts Electric issues, though inactive, held firm around 37 for the common and 97 for the preferred. United Railways of Baltimore securities, anticipating yesterday's defeat in the Legislature of the "six-tickets-for-a-quarter" bill, have risen again to top figures, the common stock going up to 167/8, the income bonds to 715/8, and the 4 per cent generals to 943/8. Other Baltimore sales for the week comprise Norfolk Railway 5s at 111, Toledo Traction 5s at 104 1/4, Charleston Consolidated Railway 5s at 87 1/2, Lexington Railway 5s at 102 and 102 1/2, and Nashville Railway 5 per cent certificates at 66 and 66 1/4. Columbus Street Railway common and preferred are quotably higher at 51 1/2 and 102, respectively, but there is no change in the local quotations at New Orleans and Louisville. North American shares have had a remarkable advance on the New York Stock Exchange. The old rumor that the company's charter may be made use of by the Northern Securities people is wholly discredited. In the absence of any definite information, the movement looks like nothing more than one of the pieces of manipulation in inactive specialties with which Wall Street has been generously treated during the past month. St. Louis traction securities have recovered sharply following the annual report of the company issued during the week, which showed net earnings of \$2,000,000 for the twelve calendar months of 1901, as against \$822,000 in 1900. The new San Francisco securities have occupied a prominent place in the New York curb trading. The subscription privileges after selling around 100 3/4 for most of the week rose sharply yesterday to 102 1/2. Changes in the common and preferred are slight, with the former at 23, and the latter at 62 1/2; while the bonds are selling around 89. There was a slight falling off all along the line in traction stocks on the Cleveland Exchange last week. Five hundred shares of Cleveland City sold at 107 1/2 and 108, a drop of 5 3/4 points. About three hundred of Cleveland Electric sold at 85, one-half point off from last sales. Four hundred of Detroit United went at 69 and 69 3/4, also a drop of one-half point. A small block of Northern Ohio Traction preferred sold at 85; practically stationary.

Security Quotations

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

	Closing Bid 1901	March 11	March 18
American Railways Company.....	143	143	143
Boston Elevated	167	169	169
Brooklyn R. T.....	63 3/8	a66 7/8	63 3/8
Chicago City	215	*223	215
Chicago Union Tr. (common).....	14 1/2	17 1/2	14 1/2
Chicago Union Tr. (preferred)	48 1/2	54	48 1/2
Cleveland City	105	105	105
Cleveland & Eastern	a30	a30	a30
Cleveland Electric	84 3/4	84 3/4	84 3/4
Columbus (common)	50	51 1/2	50
Columbus (preferred)	102	102	102
Consolidated Traction of N. J.	70	70	70
Consolidated Traction of N. J. 5s.....	110 1/4	110 1/4	110 1/4
Consolidated Traction of Pittsburgh (common).....	24 3/8	24 1/8	24 3/8
Consolidated Traction of Pittsburgh (preferred).....	64 1/2	64 1/2	64 1/2
Detroit United	69 1/4	68	69 1/4
Electric-People's Traction (Philadelphia) 4s.....	98 1/2	98	98 1/2
Elgin, Aurora & Southern.....	34	34	34
Indianapolis Street Railway 4s.....	85	85	85
Lake Street Elevated	11 1/4	11	11 1/4
Manhattan Ry.	128 1/4	134 1/4	128 1/4
Massachusetts Elec. Cos. (common).....	36	36 1/2	36
Massachusetts Elec. Cos. (preferred).....	96 3/4	96 3/4	96 3/4
Metropolitan Elevated, Chicago (common).....	40	41 1/2	40
Metropolitan Elevated, Chicago	190 1/2	90	190 1/2
Metropolitan Street	167	168 1/4	167
New Orleans (common).....	30 1/2	30 1/2	30 1/2
New Orleans (preferred)	104 3/4	105	104 3/4
North American	96	118	96
Northern Ohio Traction (common).....	33 1/2	33 1/2	33 1/2
Northern Ohio Traction (preferred).....	85	85 1/2	85
North Jersey	28	28	28
Northwestern Elevated, Chicago (common).....	38 1/2	38	38 1/2
Northwestern Elevated, Chicago (preferred).....	86	86	86
Philadelphia Traction	100	98	100
St. Louis Transit Co. (common).....	26	29	26
South Side Elevated (Chicago).....	112	112	112
Southern Ohio Traction	a60	..	a60
Syracuse (common)	21	21	21
Syracuse (preferred)	61	61	61
Third Ave.	129	130	129
Twin City, Minneapolis (common)	115 1/2	115	115 1/2
United Railways, St. Louis (preferred).....	82 1/4	84 3/8	82 1/4
United Railways, St. Louis, 4s.....	87 1/2	88 3/4	87 1/2
Union Traction (Philadelphia).....	39 1/2	39 1/2	39 1/2

* Ex-dividend. (a) Asked. † Last sale.

Iron and Steel

The problem before the iron and steel industry still is how to make production catch up to present and future demand. This difficulty was increased during February by a forced curtailment of the product of some of the blast furnaces, owing to the inability of the railroads to haul a sufficient fuel supply. According to the usual statistics of the *Iron Age*, the combined output of the furnaces decreased from 334,007 tons on Feb. 1 to 323,721 tons on March 1, and naturally stocks on hand fell off another 25,000 tons. The reserve stores of pig iron for the entire country are down now below 100,000 tons—something like three days' consumptive requirements. It has been found impossible, under these circumstances, to any longer hold prices in check, and Bessemer pig is quoted at \$17.50 a ton, against \$17 two weeks ago. Steel billets are quoted at \$31, and steel rails at \$28. Fresh purchases of foreign steel billets for delivery in the Middle Western States are reported. No further importations of pig iron, however, are recorded.

Metals

Quotations for the leading metals are as follows: Copper, 12 3/4 cents; tin, 26 1/4 cents; lead, 4 1/8 cents, and spelter, 4.35 cents.

BIRMINGHAM, ALA.—The Steel City Railway Company and Warrior River Power Company are to be merged into the Birmingham & Steel City Railway & Power Company. The object of the new company is to build an electric railway for which a franchise was recently granted. The company is organized with a capital stock of \$2,000,000. Bonds to the amount of \$2,000,000 are to be authorized, but only \$1,500,000 of these will be issued at once. The company will build a power plant on Warrior River, 28 miles from Birmingham. It will be built under the supervision of the Southern Industrial Company, of Birmingham, of which R. R. Zell is president. The consolidation was negotiated by the Maltby-Hornady Company, of Cincinnati, bankers.

SAN FRANCISCO, CAL.—The purchasers have paid over to the shareholders 90 per cent of the purchase price for the Market Street Railway system. The stockholders received certificates of deposit on the Sub-Treasury in exchange for the stock and bonds.

EAST ST. LOUIS, ILL.—A meeting of the stockholders of the St. Louis & East St. Louis Electric Railway Company has been called for May 10, to vote on propositions to increase the capital stock of the company \$250,000 to \$500,000 and to authorize bonds to the amount of \$500,000. The bonds are to be secured by a mortgage on all the rights and property of the company.

JERSEY CITY, N. J.—The United Traction & Electric of New Jersey has declared a dividend of 1 per cent, payable April 1.

CAYADUTTA, N. Y.—The Cayadutta Electric Railroad Company has applied to the Railroad Commission for permission to issue a mortgage on its properties and road for \$1,000,000, of which amount \$350,000 is to be applied for the retirement of 6 per cent bonds and \$200,000 for the retirement of 5 per cent bonds outstanding. Part of the remaining bonds will be expended for the construction of an extension from Johnstown to Tribes Hill.

CLEVELAND, OHIO.—The stockholders of the Cleveland, Painesville & Eastern Railway will meet April 10 to pass on the proposition of increasing the capital stock of the company from \$1,500,000 to \$2,000,000. The object is to provide funds for the Ashtabula extension and to liquidate unfunded and floating debt and other liabilities.

CLEVELAND, OHIO.—The Eastern Ohio Traction Company, a consolidation of the Cleveland & Eastern Railway, the Cleveland & Chagrin Falls Railway and the Chagrin Falls & Eastern Railway, has increased its capital stock from \$1,000 to \$2,500,000.

CLEVELAND, OHIO.—It is now generally accepted that the consolidation of the Cleveland Electric Railway and the Cleveland City Railway will be fully perfected by June 1 at the latest. Stock in the Cleveland & Electric Syndicate, which was formed primarily for the purpose of effecting the consolidation, is said to have been heavily oversubscribed. It is understood that Senator Hanna subscribed for stock to the amount of \$350,000, but because of the stock being oversubscribed he will get only \$200,000 worth. The amount allotted to other subscribers has been cut down proportionately.

FORT WORTH, TEX.—Frank H. Ginn, of Cleveland, Ohio, was the purchaser of the Glenwood & Polytechnic Street Railway at its recent receiver's sale. The price paid was \$55,000. It is not definitely known who Mr. Ginn represents in the purchase of the property, but it is reported that he bought it in the interest of the Northern Texas Traction Company, which is building and will soon have in operation an interurban road between Fort Worth and Dallas.

AUSTIN, TEX.—The date of the sale under foreclosure of the Austin Rapid Transit Railway has been set for May 6. The upset price is fixed at \$100,000.

MARACAIBO, VENEZUELA.—The owners of the street railway in this city are contemplating changing from mule to electric power. The line is 5 miles in length, with 2-ft. 6-in. gage, and few curves or grades. Power will probably be hired from the local lighting company. Dr. J. M. Coates Cole, Maracaibo, Venezuela, may be addressed.

TABLE OF OPERATING STATISTICS

Notice.—These statistics will be carefully revised from month to month, upon information received from the companies direct, or from official sources. The table should be used in connection with our Financial Supplement "American Street Railway Investments," which contains the annual operating reports to the ends of the various financial years. Similar statistics in regard to roads not reporting are solicited by the editors. * Including taxes. † Deficit.

Table with columns: COMPANY, Period, Total Gross Earnings, Operating Expenses, Net Earnings, Deductions From Income, Net Income, Amount Avail-able for Dividends. Rows include companies like AKRON, O., ALBANY, N. Y., AUGUSTA, GA., BINGHAMTON, N. Y., BOSTON, MASS., CHICAGO, ILL., CLEVELAND, O., DENVER, COL., DETROIT, MICH., DULUTH, MINN., ELGIN, ILL., HAMILTON, O., LONDON, ONT., MILWAUKEE, WIS., MINNEAPOLIS, MINN., MONTREAL, CAN., NEW YORK CITY., OLEAN, N. Y., PITTSBURG, PA., PHILADELPHIA, PA., RICHMOND, VA., ROCHESTER, N. Y., SCRANTON, PA., SCHENECTADY, N. Y., SYRACUSE, N. Y., TOLEDO, O., W. NEW BRIGHTON, S. I., and Staten Island El.