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During 1907 the Street Railway Journal printed and circulated 427,250 copies, an average of 8216 copies per week Of this issue 7500 copies are printed.

Fuel Records and Station Outputs

Station log sheets are now in such wide use that it is generally taken as a matter of course that safe deductions from the daily records can be made as bases of future action in dealing with power plant equipment and its operation. A careful study of the operating conditions of a large number of stations in different parts of the country, however, inclines one to the belief that too much reliance should not be placed upon daily power cost variation and that radical changes in the handling of a given station should follow observations spread over a much longer period than twenty-four hours. This applies particularly to the fuel records in relation to the energy output of the plant.

Most modern stations are provided with both water and steam-driven exciter units, and in some installations part of the auxiliary condensing equipment is electrically operated. The hours of service of electrical and steam auxiliaries often vary considerably from day to day, according as more or less exhaust steam is needed for heating the boiler feed water, or according to the repair or shutdown of other units. If the coal consumption per kilowatt-hour is calculated on the basis of total kilowatt-hours generated at the plant, as obtained from the sum of the generator recording wattmeter readings, the efficiency of the plant will be somewhat different from the operation on the same load with steam auxiliaries. The performance of the station can be judged better on the basis of the kilowatt-hours delivered to the outgoing circuits, as measured by the totalizing wattmeter, or individual feeder wattmeters in alternating-current stations. Thus if the total generated output of a plant when using all its electrical auxiliary equipment is 100,000 kw-hours and the coal consumption is 350,000 lb., the fuel per kilowatt-hour appears to be 3.5 lb.; with steam auxiliaries the output may drop to 95,000 kw-hour and the coal consumption may perhaps rise to 380,000 lb., showing 4 lb. per unit. Comparing the fuel records with the total delivered output of 95,000 kw-hours, the coal consumption with electrical auxiliaries rises to 3.7 lb. per kw-hour, a figure which affords a fairer comparison than the one previously given. These differences in conditions should be noted on the log sheets.

The exact determination of full consumption in a day is not a difficult matter in plants where hand firing is the practice, but in many installations where mechanical stokers are in service, it is a very serious problem unless the company can afford to go to considerable expense in the installation of weighing hoppers in the coal delivery chutes below the bunkers. Great economy in the handling of fuel between the car or barge and the boiler furnace seems to introduce difficulties in the weighing of the daily tonnage consumed, as far as the medium capacity plants are concerned. If equipment for this purpose is now available, or shortly will be, applying to stations of from 5000 to 25,000 kw rating, it is clearly open to the manufacturers to show what can be done in those stations. Coal measurements by volume are unsatisfactory on account of the varying percentages of entrained moisture—at least for accurate work. The present status of some of these large stations with respect to the measurement of their fuel consumption in terms of carloads per month is certainly an argument against decisive action on the daily kilowatt-hour basis.

To draw intelligent conclusions day by day the records must clearly be complete and carefully compiled, automatic as far as practicable, and full with respect to weather,

humidity, temperature, fuel weights and other cardinal operating conditions. Since it is safe to say that no two days' runs of a commercial railway or lighting power plant are ever identical, the greatest care is required in discriminating between apparently conflicting data. Only by analyzing tendencies and averages through longer or shorter periods can a sound basis for changes in power plant operating policy be secured.

Electric Canal Haulage

The A. I. E. E. paper on this topic by Messrs. Stillwell and Putnam is notable as containing more valuable experimental data than have hitherto been available on this interesting subject. The conditions restricting canal haulage are of a somewhat peculiar character. There are still in existence many canals, dating from a period prior to the introduction of railroads, which are the property of the public and have been kept up at public expense, remaining in considerable use up to the present time. In this country there are, too, various canals owned by private corporations still in use, and others that have been abandoned years since. The concrete problem to be solved is how to gain from the existing canals still in service the greatest measure of economic usefulness. Many critics have said that the best thing to do with a canal is to drain it and to lay a good double track at the bottom. There is much to be said for this hard view of the case, yet the fact is there is a field still for water transportation, and it is very unlikely that the public canals will be given over for railroad rights of way unless in the unexpected and undesirable contingency of Government administration of railways. The canals are before us—what can be done with them to make the best of the existing situation?

Electric haulage has been tried, and is being tried in various places, by various methods. The electrically driven towboat supplied with power from a trolley wire over the canal—the towing cable picked up by an electrically driven winch, the locomotive and the specialized electric tractor have all had their advocates. It seems pretty clear from theory and experience that the two first named are objectionable on the ground of efficiency and that the towboat in addition is likely to create a serious amount of wash. The tests made by the authors of this paper were directed at the two devices last mentioned, both of which seem somewhat promising. The towing locomotive is merely a mining or similar compact locomotive working on a track laid on the towpath and pulling one or more canal boats while relying on its weight for the necessary adhesion. The tractor is a special machine running on a mono-rail structure along the towpath and gaining adhesion not only by weight, but by gripping the structure. In virtue of this power the towing machine and the structure can both be light and comparatively inexpensive without sacrificing towing power. In fact in some of the experiments the tractive efforts required with four-boat tows rose to more than one-half the actual weight of the tractor. The track in this case took the form of an I-beam gripped above and below by an automatic device that adjusted the grip to the cable pull required. It was found that the efficiency of the tractors was slightly less than that of the running locomotive against which they were tested, owing to the mechanical features necessary, the loss, however, being somewhat lessened by the use of one motor on the tractors as against two on the locomotive.

The canal boat is not built for speed, nor is a canal constructed to withstand wash, but at moderate rates of progress the drawbar pull required for haulage is very modest indeed. Much depends on the amount of water under the boat, as has long since been found in steamship trials. In these tests on the Lehigh Canal there was but 18 in. or 20 in. of water to spare, yet the drawbar pull with a four-boat tow at 3 m.p.h. was barely 4 lb. per ton. With more water below even this figure could have been cut down almost to one-half. The trials could not be extended over any wide range of speed, but the approximate formula for effective pull turned out to be $p = 0.45\ V^2\ T$, wherein p is in pounds, T in short tons and V in m.p.h. It is certainly true that with any sort of reasonable attention to model and draft the "tonnage coefficient" for canal haulage could be reduced to an astonishingly low figure somewhere near to one pound per ton for 3 m.p.h. The chief working difficulty seems to be with steering. The lateral component of pull is very troublesome, especially with several boats in tow. Could this trouble be ameliorated it ought to be possible to haul freight with an expenditure of power and labor astonishingly small. The speed, to be sure, is low, but still about as fast as modern railway freight haulage, including the customary delays. With a carefully worked out scheme of electrical haulage the existing canals could be made vastly more useful than now and probably at a rather moderate expense. It seems hardly likely that any more traffic canals will be built, yet this is no reason for failing to bring to their full value those that are already in being.

Electric Railway Appraisals

The physical valuation of a railway property is one of the most difficult tasks in the field of the consulting engineer. Unless the object of such an appraisal is clearly defined and constantly kept in view as the work progresses, it is idle to expect that the estimates of different parties will even approximately agree. It is essential to know whether a valuation is desired for purposes of taxation; as a basis of rate making; to determine a fair purchase price; to fix upon a selling price; to settle the amount of a bond issue; or to determine the general deterioration or improvement of the property as a whole. As the character of the equipment does not alter the general condition of the appraisal problem, it makes little difference in the methods whether a steam or an electric road be under investigation.

Justice Brewer, of the United States Supreme Court, has held that in ascertaining the fair value of the property used by a corporation maintaining a highway under legislative sanction, "the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute and the sum required to meet operating expenses are all matters for consideration. We do not say that there may not be other matters to be regarded in estimating

the value of the property." Questions of franchise requirements and special taxes, rentals of leased lines, the obligation to pay interest and dividends on other securities and the rapid progress in the development and manufacture of improved types of apparatus, apply particularly to electric railways in addition to the above points.

In cases where there may be disputes over the results of an appraisal, it is desirable for the parties in conference to prepare as complete a list as possible of the factors which bear upon the case. Certain items can be eliminated by mutual agreement, depending upon the object of the appraisal. Thus the tangible property is the essential item in an appraisal for taxation purposes. Opinions may differ as to the propriety of taxing earnings or rather earning capacity. Clearly the present value of the equipment rather than the total cost of construction, including replacements, is the fairer basis for taxation. The present value may by no means be the cost of duplicating the property, and so it goes. The one most important policy in dealing with questions of this kind is sharpness of definition. In no other way than by a clear statement of the factors involved in each particular case can arbitrary and possibly one-sided results be secured.

The capitalization of earning capacity is in many quarters considered but an equivalent for stock-watering, but surely the extent to which earning power may be safely discounted can be better estimated on the basis of an expert appraisal of the property as a whole than in any other way. The combined fixed and operating costs of the property cannot be accurately forecasted without a pretty thorough appraisal. Certainly in new projects it would be extremely difficult to secure the necessary capital if no reasonable allowance could be made for future earnings when the project is completely developed. Circumstances alter cases, but in a field where so much depends upon the original assumptions, those assumed conditions must be clearly set forth before a sound judgment can be made upon the value of a given estimate. After all, the routine drudgery of an appraisal is mainly the examination and valuation of the physical property. Once this is carefully done the other factors can be included and discarded as conditions demand.

Pilot Lamps in Power Stations

As power plant service extends and individual installations grow larger it becomes advantageous to utilize every resource for saving labor so far as this can be done without complicated and expensive apparatus which may fail and interrupt the service. The increasing use of pilot lamps illustrates the utility of a relatively simple device in saving steps and promoting safe operation. The best high-tension switching installations now include red and green pilot lamps in the bench board or vertical panel equipments, and the operation of circuits of dangerous voltage has thereby been made safer both inside and outside the generating station. It is a desirable practice to connect the pilot lamp across the secondary circuits or automatic switch coils of transformer lines in both power and sub-station to supply additional evidence that the circuits are open or closed, particularly in cases where the switches are concealed or where remote control apparatus is in service.

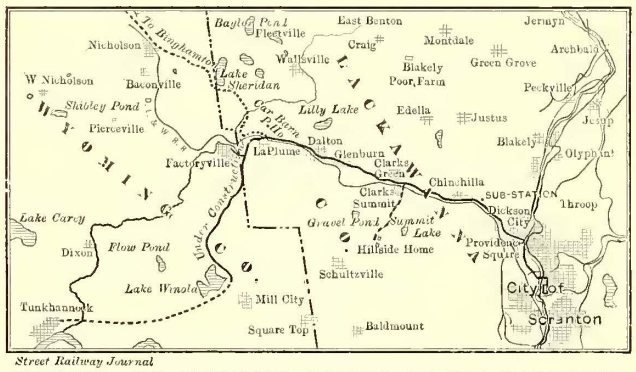
In connection with power plant auxiliaries a field exists for the convenient use of pilot lamps. In large stations the oiling system generally requires that two or more pumps shall be in service or ready for immediate use to force the filtered oil from the basement or engine room floor level to a high level storage or distributing tank. It is important to know that the pump is working at the proper steady rate in order that a reserve unit can be promptly cut in if trouble arises. If the oil pump is located in some out-of-the way corner in the basement the same attention that would be accorded in a more exposed location is seldom given it. It is a simple matter to rig up an electric contact on the moving parts of the pump which will flash a 16-cp incandescent lamp at any desired point in the station, preferably at a central place in the engine room. If the pump stops, slows down or speeds up unduly the fact becomes known at once and the continuity of the lubrication assured. In one plant recently visited the engine room is about 400 ft. long and a lamp indicator for the oil pump is conveniently located above the switchboard near the center of the building.

In this plant there are thirty-one boilers arranged in a double row with a central firing aisle between. About one-third of the boilers are provided with induced draft, the balance being operated upon chimney connections. Two fans are installed, each being driven by a separate engine, and the blowers are operated mainly at the period of peak load unless additional boiler capacity is wanted suddenly during the day for the combined railway, power and lifting service of the station. The induced draft boilers are located at the extreme end of the boiler room, and to enable the boiler room foreman to see just what one or both fans are doing, the pilot lamps have been connected with the engines so that at each revolution of the direct-connected fan a flash is given on an incandescent suspended in the firing aisle opposite the fans. The fan speed is thus visible from one end of the boiler room to the other, and if the steam pressure falls suddenly with a reserve margin in speed at the fans, additional draft can at once be secured.

As it does not pay to install indicating instruments in separate station auxiliary circuits, these are often left without any indication of their condition, especially in plants where subdivision of the switches exists in connection with lights or motors in the coal pockets, pump room, special pump chambers or houses, storage or repair compartments. The use of red pilot lamps in such circuits, carried back to the house panel on the switchboard if desired by pressure wires, affords an inexpensive method of keeping watch of the circuit conditions and enables current that might be wasted to be saved. It is equally easy to equip the boiler feed pumps with pilot lamps which will flash the approximate rate of feed water supply at any point in the plant, particularly in stations too small to require a special man at the feed pumps all the time. Telephone calls and engine room signals are also readily equipped with pilot lamp or transparency connections, and in one or two instances pilot lamps have been very successfully used to show which of a score or more feeder circuit breakers has opened under overload, thereby considerably shortening the time of interruption.

THE NORTHERN ELECTRIC STREET RAILWAY COMPANY OF SCRANTON, PA.

Whoever travels through the anthracite coal belt in the vicinity of Scranton, Pa., cannot fail to notice the numerous unsightly culm piles and breaker buildings which disfigure



Street Railway Journal

PRESENT AND PROPOSED ROUTES OF THE NORTHERN ELECTRIC STREET RAILWAY COMPANY, SCRANTON, PA.

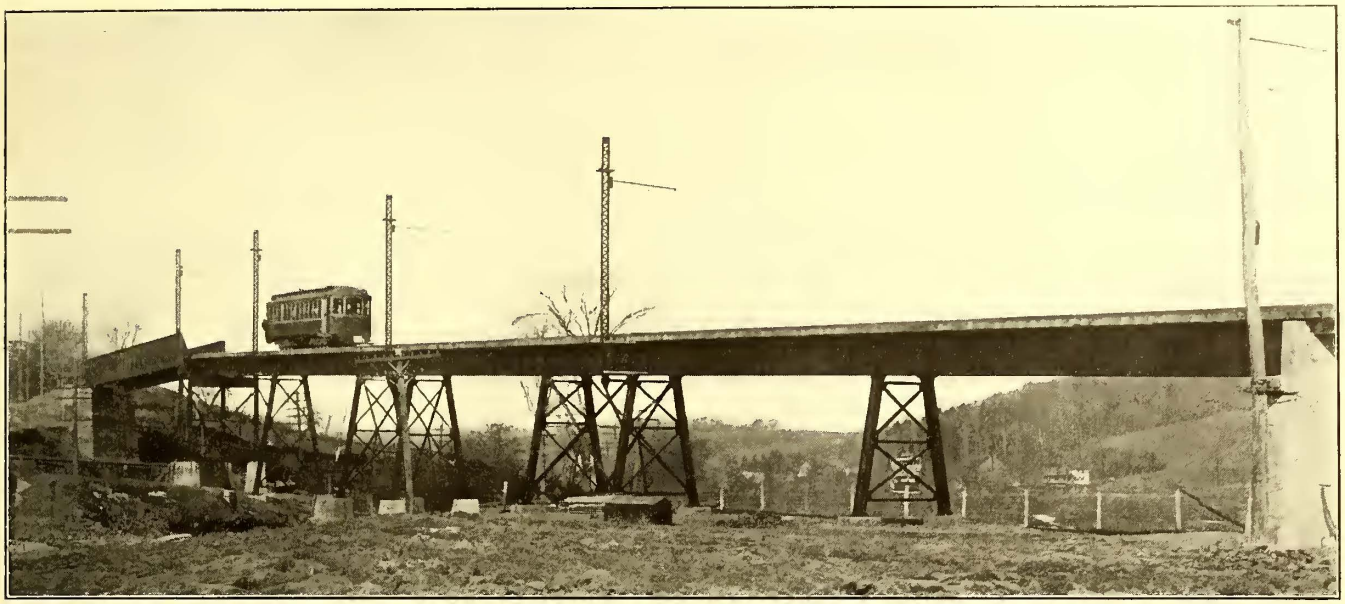
the timber-stripped hills. Yet a few miles north of the territory made desolate by the miner lies one of the prettiest mountain and agricultural districts in the State. The workers in Scranton have always appreciated the value such a region would be to them for residential purposes, but hitherto the territory has been practically inaccessible for the commuter. The only means for traveling north was by the Lackawanna Railroad, which, together with the public highway, occupied practically all of the available land in the defile formed by the hills. Owing to its enormous carload freight business, the steam railroad could not give the proper attention toward the development of local passenger business; neither was any strong effort made to foster local freight traffic and thus relieve the farmers and dairymen from the long and expensive wagon hauls to Scranton.

While the construction of an electric railway through this country had been agitated for several years, the engineering difficulties discouraged active work until early in 1906, when the Northern Electric Street Railway Company was organized to build an electric railway from Scranton, paralleling the Lackawanna Railroad to Factoryville and thence diverging to the west to reach Lake Winola, a noted summer resort. The general layout of the line is shown in the accompanying map, from which it will be noted that

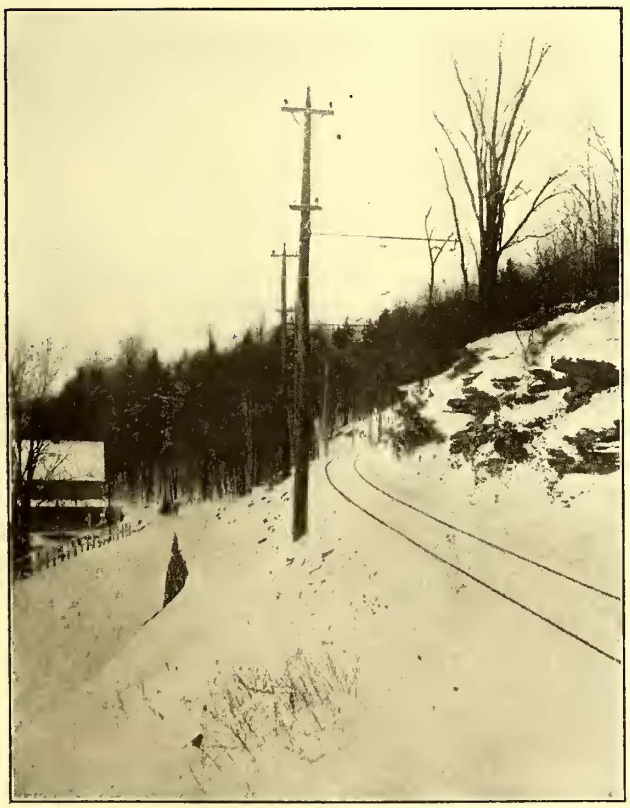
THE ENTRANCE TO SCRANTON FROM THE NORTH VIA LEGGETT'S CREEK GAP

the section now in operation extends from Providence Square, Scranton, to Factoryville. The section to Lake Winola is under way and should be completed in time for the summer business. The dotted lines indicate the future extensions of the system to Tunkhannock on the west and

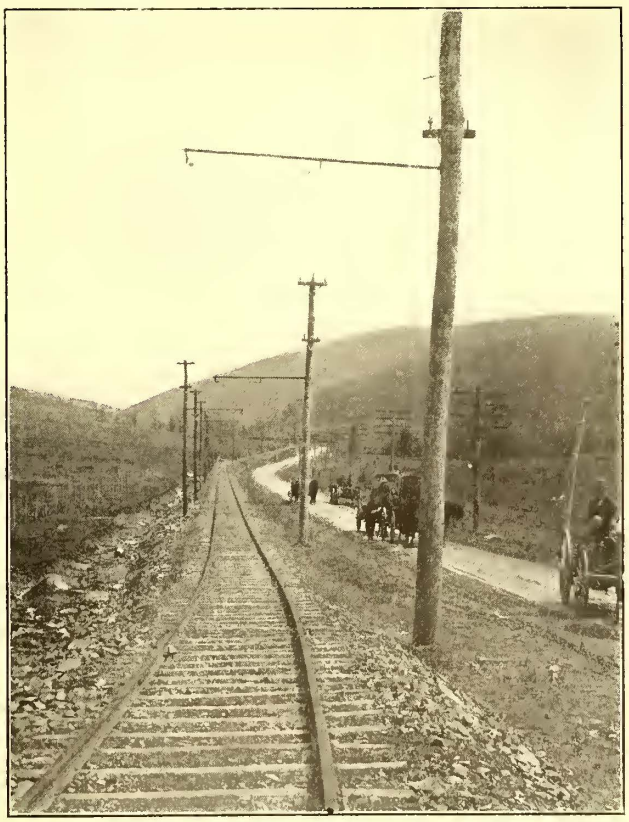
Nicholson on the north. In all about 27,000 people will be served by the new line. Of these 15,000 constitute the summer population in or near the towns along the route and 12,000 are in the second and third wards of Scranton. These figures take no account of pleasure riding from the rest of Scranton, which has a total population of 125,000, and from other towns to Lake Winola.



NORTHERN ELECTRIC STREET RAILWAY COMPANY'S STEEL VIADUCT, 450 FT. LONG, CROSSING THE LACKAWANNA RAILROAD'S TRACKS AT LA PLUME



ENTERING FACTORYVILLE ON PRIVATE RIGHT OF WAY



FOLLOWING THE HIGHWAY

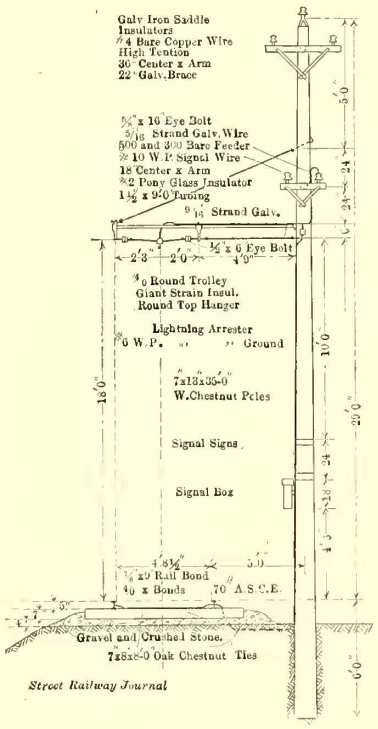
THE ROUTE

The Northern Electric Street Railway begins in the business center of Scranton, operating for 2 miles along North Main Avenue over the tracks of the Scranton Railway Company's line to Providence Square, at the foot of West Market Street, from which point it operates over its own tracks. The next 2 miles run through the populous second and third wards, which hitherto have been without street railway facilities.

The following 4 miles of the line leading out of Scranton illustrate the conditions which had to be overcome in laying out this line. This section is known both as Leggett's Creek Gap and Providence Notch, and the valley thus formed was occupied by a toll road. Rather than enter wearisome negotiations, the promoters of the electric railway purchased the turnpike company outright, thus assuring ownership of the only possible entrance for an electric

railway from the north. The income from tolls more than pays the interest on the purchase price. Part of the road has been widened by blasting to make room for the railway line without interfering with wagon traffic.

On leaving the turnpike, the route is alongside the State highway on private right of way for a distance of 2 miles, thence diverging from the State highway to reach Glenburn, Dalton, La Plume, Factoryville and Lake Winola. The present right of way is 6.9 miles long and varies in width from 18 ft. to 50 ft.; 5.7 miles are on and along the public highway. The extension to Lake Winola, a distance of about 5 miles, is entirely on a private right of way 50 ft. in width and is being rapidly constructed. It is expected that this branch will be completed and in operation about June 1. This will form an important feeder, especially during the summer, as it is considered the finest pleasure resort in this section of Pennsylvania.



CROSS-SECTION OF ROADBED AND OVERHEAD CONSTRUCTION

POWER HOUSE OF THE NORTHERN ELECTRIC STREET RAILWAY COMPANY, BETWEEN DALTON AND LA PLUME, PA.

TRACK

The rails used throughout are 70-lb. T section, laid on 7 ft. x 8 in. x 8 in. oak and chestnut ties. Rock, gravel or hard coal ashes are used for ballast. The maximum grade is 7 per cent. The outside rails of the curves are elevated 4½ in. to 5 in. in accordance with the best practice. All the main line switches on the public highway are of Manard steel and those along the right of way are split points with double spring frogs. The track work was furnished by the Pennsylvania Steel Company and the "Protected" type rail bonds by the Mayer & Englund Company.

At Ackerly there is a steel viaduct 444 ft. long, built by the Shoemaker Bridge Company, and at La Plume, where the track crosses over the Delaware, Lackawanna & Western Railroad, is a steel viaduct 450 ft. long with a wooden approach of 108 ft. The plate girders over the tracks of the Delaware, Lackawanna & Western Railroad have a span of 109 ft. 7 in. and were constructed by the McClintic-Marshall Construction Company. Aside from these viaducts, all bridges and cattle passers are constructed of steel and concrete.

OVERHEAD CONSTRUCTION

The principal features of the overhead construction will be noted in the drawing which includes a cross-section of the roadbed. All of the power wires are carried on 35-ft. chestnut poles set about 6 ft., frequently in blasted rock. The 16,500-volt, three-phase, 25-cycle transmission system consists of three No. 4 bare copper wires carried on Locke insulators on the top cross-arm. The other cross-arm is 7 ft. lower and carries the signal and feeder wires. The trolley wire is No. 0000 throughout and is suspended between two Giant strain insulators 18 ft. above the rails.

POWER HOUSE AND SUBSTATION

The power house is located midway between Dalton and La Plume, and as will be seen from the map this point practically is in the center of the line which eventually will extend beyond Lake Winola to Tunkhannock. The station is 9.6 miles from Providence Square, Scranton, where the company's transmission system ends, and is 7.2 miles from the substation at Chinchilla. The other substation which feeds toward Factoryville and Lake Winola is in the power plant.

The power house is a well-lighted brick and steel structure with a fireproofed wooden roof. The engine room is 55 ft. x 73 ft. 6 in. and the boiler room 50 ft. x 62 ft. The transformer room, which opens directly on the back of the switchboard, is 10 ft. 4 in. x 30 ft. 1 in. projecting in front of the engine room as shown in the accompanying view of the power house. The floor levels of both the boiler and transformer sections are below that of the engine room.

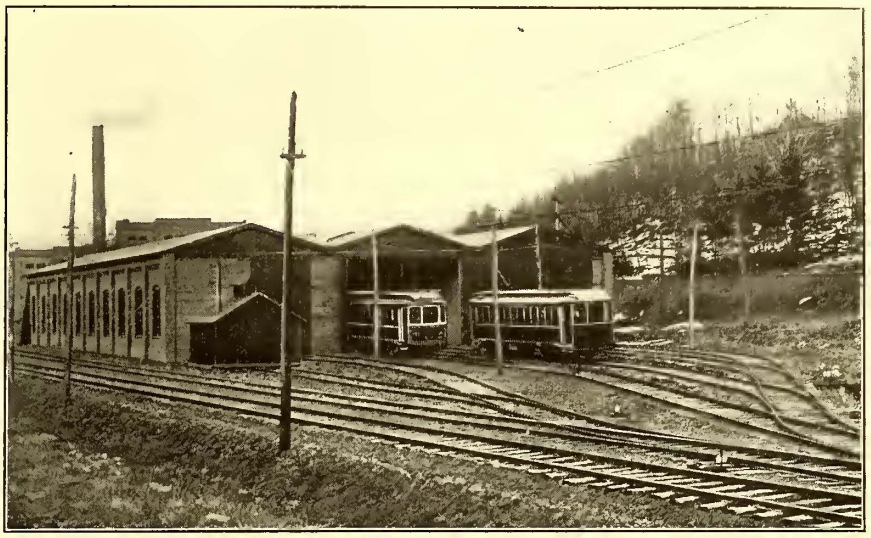
The steam generating equipment consists of three 320-hp Heine water tube boilers fitted with McClave & Brooks rocker grates and steam blowers. The feed pumps are of

the Canton Pump Company's outside packed pattern and are connected to a 1000-hp Wickes open heater. There are no other auxiliaries, as fuel is too cheap here to make their use worth while. The fuel used is anthracite culm which is carried in the company's cars and dumped from the trestle entering the boiler room at a total cost of $0.75 to $0.80 a ton. The average cost of power was only $0.0065 per kw-hour the last six months of 1907, although the daily output did not usually exceed 4100 kw-hours. Doubtless even this figure will be lowered when the station is operated up to its full capacity.

The power equipment consists of two 400-kw, three-phase, 370-volt, 25-cycle generators direct connected to two 150-r.p.m. Hooven-Owens-Rentschler cross-compound Corliss engines. The exciting current is furnished by two 17½-kw generators run at 400 r.p.m. by 25-hp Ridgway engines. The generator cables after being carried to the common bus are tapped there for connections to three 125-kw transformers, which step up the potential to 16,500 volts for transmission to the substation at Chinchilla. The two 200-kw rotaries in the main station are connected directly to the 370-volt busbar and deliver 600 volts direct current to the line.

The floor space of the engine room is ample to permit two 75-kw lighting sets to be installed when a contract is made to furnish illumination for the adjoining boroughs, and there is also room for a 1000-kw turbine. As the engine room is spanned by a 15-ton Maris crane, there will be little difficulty in making the proposed installations or changes in the present equipment.

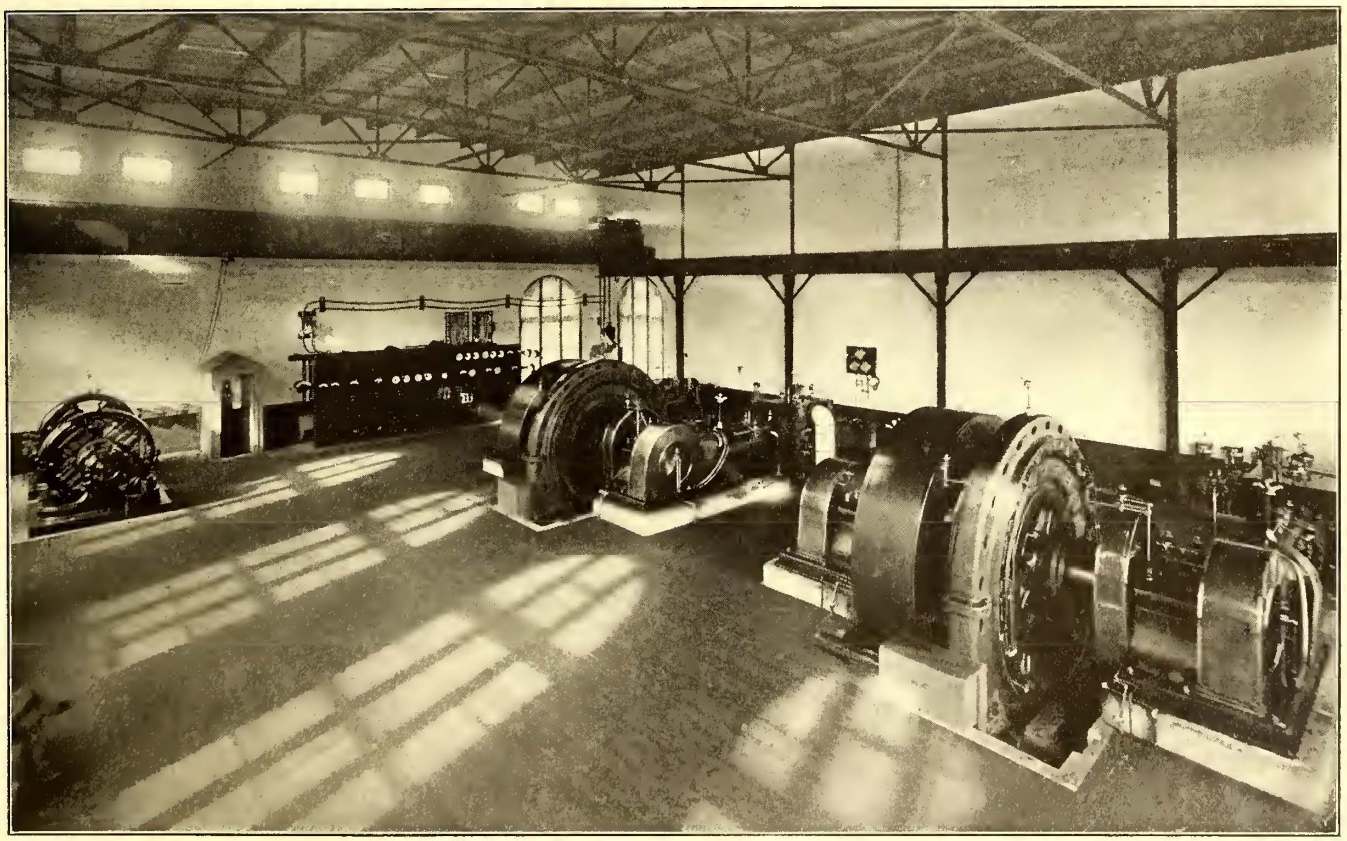
The Chinchilla substation is a fireproof brick building 22 ft. x 40 ft. and contains two 200-kw rotaries together with six 75-kw oil-cooled step-down transformers. All of the electrical equipment throughout the power plant and substation was furnished by the Westinghouse Electric & Manufacturing Company.



CAR HOUSE AND SHOPS OF THE NORTHERN ELECTRIC STREET RAILWAY CO.

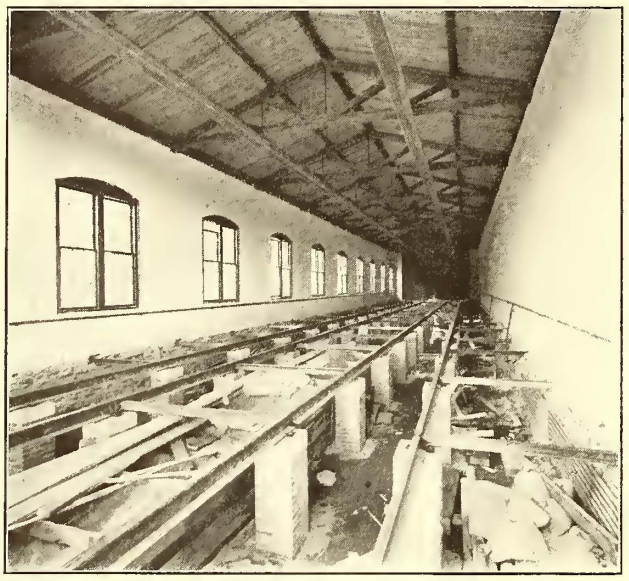
CAR HOUSE

The car house is but a few hundred feet from the power plant, and, in fact, is heated by steam therefrom. The building is of steel and brick with a five-ply tar felt roof. It is divided into three sections separated by 12-in. fire walls. Two of the sections are used for storage, while the third serves for storage of material, repair shop and general offices. The pits are of the open type, the rails being laid



INTERIOR OF NORTHERN ELECTRIC STREET RAILWAY COMPANY'S POWER STATION

on brick piers with cross-members for the devil strips, as shown in the interior view. The latter illustration also shows the steam pipes laid along the wall. The storage capacity of the building is fourteen cars, but there is ample room for extension in either direction, if it should be necessary in the future.

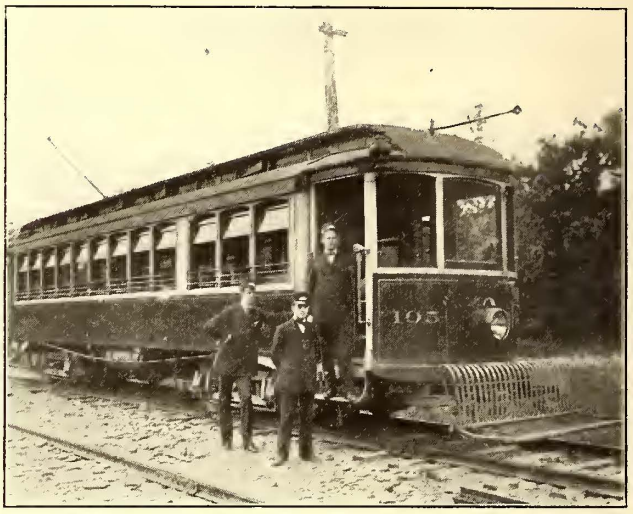


PIT CONSTRUCTION IN THE CAR HOUSE

ROLLING STOCK

A detailed description of the straight and combination baggage and passenger cars used by the Northern Electric Street Railway Company appeared in the STREET RAILWAY JOURNAL of July 6, 1907. The present rolling stock consists of twelve semi-convertible passenger coaches, two combination baggage and passenger cars, three milk and express cars, one flat bottom work car, one closed line car and one McGuire-Cummings snow sweeper. The passenger and baggage cars were built by the J. G. Brill Company, of Philadelphia.

The passenger cars have a seating capacity of forty-eight persons and are handsomely finished in cherry, upholstered in red plush in the passenger compartment and leather in the smoking compartment. Overhead individual bundle racks are supplied in addition to electric heaters, push buttons and lights of high candle power. The passenger cars have a length over all of 46 ft. and are 8 ft. 10 in. wide. They weigh, including trucks and motors, 46,000 lb. Each car has four 50-hp Westinghouse 101-D motors mounted on 27-E 1 trucks with 6-ft. wheel bases. The rolled steel wheels are from the Schoen Steel Wheel Company and the cast steel from the Railway Steel Spring Company, both of 33-in. diameter. All cars are equipped with straight air brakes and wired for Mosher arc and incandescent headlights.



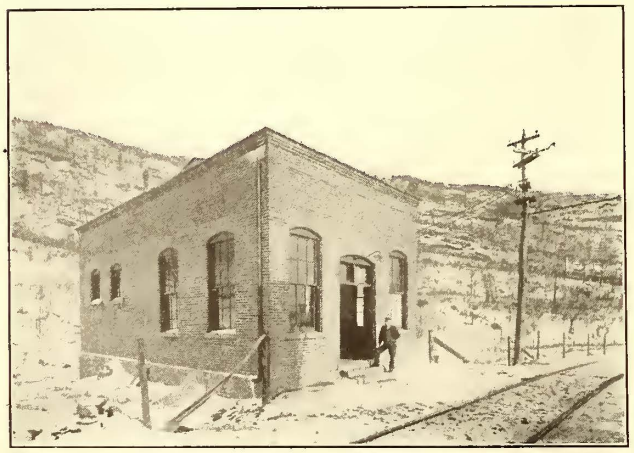
STANDARD STRAIGHT PASSENGER CAR

The combination cars do not differ materially in dimensions and equipment from the passenger cars.

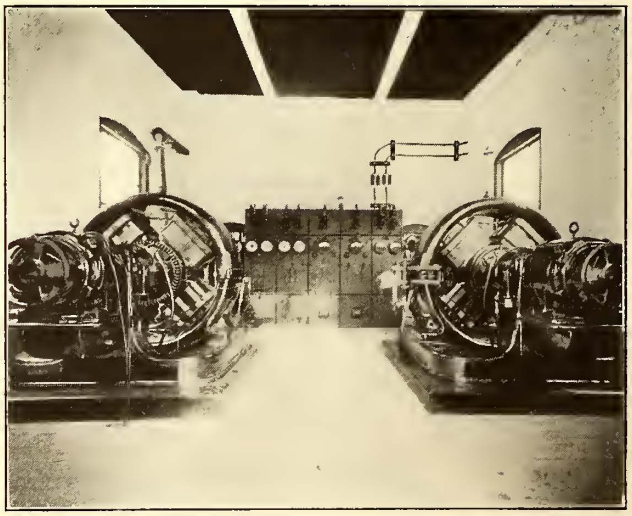
The milk and express cars are 40 ft. long by 8 ft. 5 in. wide over all. They are mounted on No. 27-G trucks of 4-ft. 6-in. wheel base, with the same equipment in motors control and air brakes as the passenger cars.

The double-truck, 20-ton work car illustrated was designed and built at the company's shops and is of the following dimensions: Length over bumpers, 33 ft.; length over platform, 30 ft.; width over platform, 7 ft. 6 in.; extreme width over stake pockets, 8 ft. 6 in.; height of platform above rail, 4 ft.; top of trolley base above rail, 11 ft. 3½ in. The car bolster is made of steel plates ¾ in. x 9 in. and 1 in. x 9 in. The outer side and end sills are made of 10-in. x 30-lb. channel iron inlaid with 6-in. x 8-in. yellow pine timbers, which support the ends of 2½-in. oak plank flooring. The center sills are 6-in. 17-lb. I-beams placed at 24-in. centers and riveted to the bolster and end beams.

The controller cab is placed in the center of the car.



SUBSTATION AT CHINCHILLA



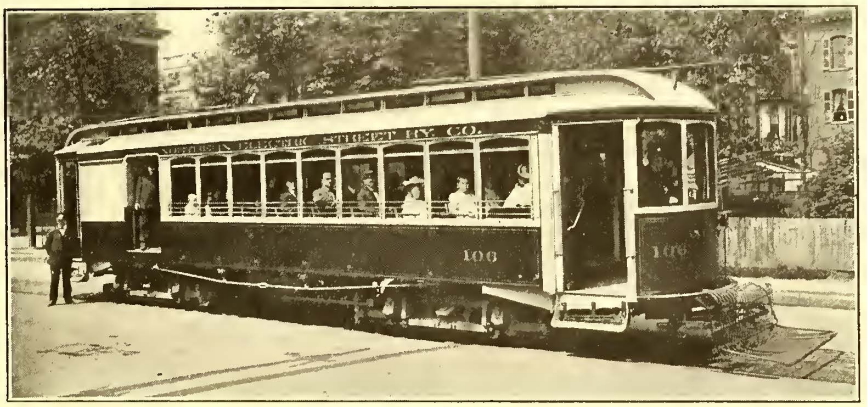
INTERIOR OF CHINCHILLA SUBSTATION

The base is only 2½ ft. x 5 ft., but is widened to 4 ft. 6 in. x 5 ft. 0 in. at 2 ft. 6 in. above the car floor to permit rails, poles and other long material to be loaded in greater number. By using stake pockets and a plank frame the car is also adapted for hauling coal, ashes, etc. It is made without truss rods to allow for equipment space underneath. The body is supported on two Brill No. 27 trucks with 5-ft. 10-in. wheel base, placed 20-ft. centers. The wheels are of 33-in. standard cast steel, axles 4½ in. in diameter. The car is equipped with four GE-57 motors geared to 17-69 ratio, operated by one K-14 controller. The controller and the Westinghouse straight air-brake equipment are new and the motors second hand.

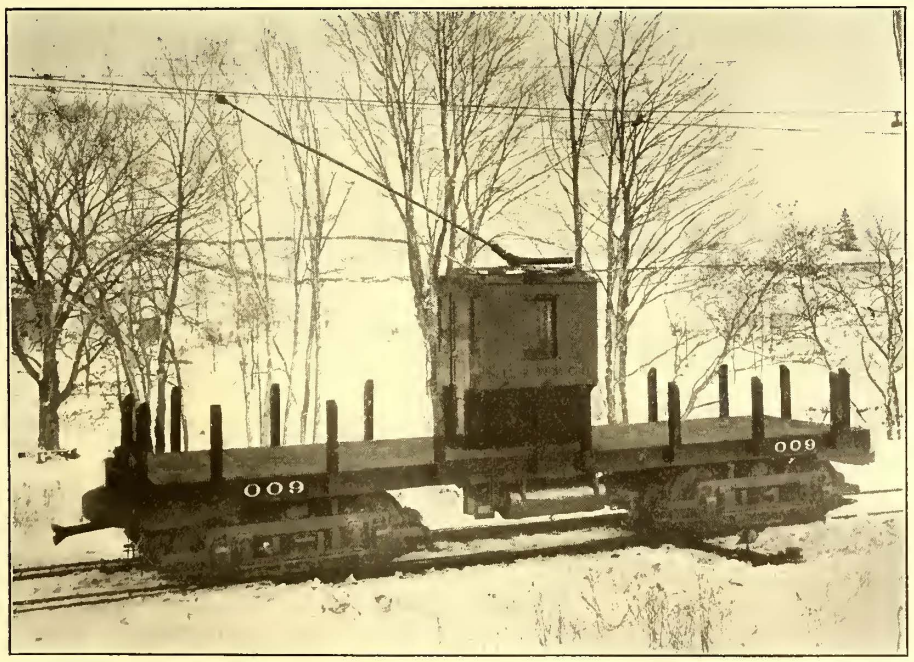
SCHEDULES, FARES AND TRAFFIC AGREEMENT

The schedule speed of these cars outside of city limits is 16.2 miles per hour, including stops, with a possible maximum speed of 49 miles per hour, and a half-hour service to Factoryville is now being maintained. The growth of business sure to come with the opening of the Lake Winola line will probably call for a 15-minute service, which will be entirely practicable, as the turnouts are only 1½ miles apart. Aside from the Lake Winola travel the company anticipates considerable pleasure traffic to Clark Summit, where it has purchased 12 acres of woodland for a picnic ground.

For the convenience of passengers in inclement weather, shelter booths are provided at frequent intervals along the line. All road crossings are electrically lighted by the company.



COMBINATION PASSENGER AND BAGGAGE CAR



WORK CAR BUILT BY THE NORTHERN ELECTRIC STREET RAILWAY COMPANY

The fares average about 2 cents a mile for one-way rides, but reductions are made for round trips and book tickets. Thus the excursion fare to Factoryville, covering 30 miles in all, is $.50, while book tickets are sold at $.22 each, based on buying 25 tickets for $5.50. The fare to Lake Winola, 22 miles from Scranton, will be $.90 for the round trip and $.50 one way.

Under a 999-year traffic agreement with the Scranton Railway Company, over which the Northern Electric Street Railway operates for 2 miles to get into Scranton, the city company receives 2½ cents for every passenger carried over its tracks by the interurban company. The city company furnishes the power and track, while the interurban railway gives the cars and crews. The freight receipts are divided on a mileage basis, the city railway receiving 17½ per cent of the gross earnings for the use of its tracks, power and freight terminal.

FARE REGISTRATION

Owing to the division of city fares with the Scranton Railway Company, the Northern Electric Street Railway Company uses a combination of the usual single fare cash registers for all passengers beside the duplex fare receipt for interurban riders. For example, upon reaching the city limits when coming from Factoryville, the conductor enters the register reading on the "through passenger" column of his report. Upon reaching the Scranton terminus the conductor counts his tickets, writes down the number of duplex fare receipts issued and also the last reading of the register before setting it to zero for the return trip. The number of exclusively city riders, therefore, is shown by the difference between the last register reading and the number of duplexes.

On the trip from Scranton to Factoryville the conductor on reaching the city limits enters in the "through passenger" column of his report the number of interurban passengers indicated by the tickets collected and duplexes issued. On reaching Factoryville the fare tickets are recorded, the duplexes issued on the entire trip are counted and the register reading entered as at the Scranton terminal.

All duplexes are serially numbered and in case of mutilation the conductor must issue a new one and turn in both halves of the unissued ticket. In case a register gets out of order the conductor must write in the space for remarks the number of unregistered city fares collected and the time during which the register could not be used. Employees

riding on numbered badges are recorded on the back of the conductor's report.

FREIGHT BUSINESS

The country traversed by this company is occupied exclusively in producing milk, butter, eggs and vegetables for the Scranton market. The value of this produce aggregates many hundreds of thousands of dollars annually and the expense of hauling it in wagons, sometimes for 20 miles, is very great. Depending on the season of the year, from 500 to 700 forty-quart cans of milk are hauled in wagons through Leggett's Creek Gap into Scranton daily. In addition to milk, large quantities of butter, eggs, vegetables, hay and other produce are brought into the city over the same route in wagons. As the Northern Electric Street Railway can profitably transport this produce at a much smaller expense than it is now costing the farmers, it has been determined to give particular attention to this class of freight business. The company has not yet prepared a regular schedule covering all the classes of freight to be handled, but has confined most of its efforts at present to developing the milk traffic. The regulations and rates covering this business are given as follows:

The Northern Electric Street Railway Company rates for the transportation of milk and cream from points named below to Scranton, Pa. In effect Feb. 15, 1908:

	Chinchilla.	Clarks Summit.	Dalton.	Factoryville.
Package of 50 tags, each for can of 40-qt. capacity	$6.50	$7.50	$9.00	$10.00
Package of 50 tags, each for can of 20-qt. capacity, or 12-qt. case	3.25	3.75	4.50	5.00
Books of 1000 tickets, each ticket good for transportation of one 20-qt. can or 12-qt. case (2 tickets for 40-qt. can or case larger than 12-qt.)	65.00	75.00	90.00	100.00
In case the shipper does not use tag or book, cash must be paid to conductor before milk will be loaded, at	.13	.15	.18	.20

For 20-qt. can or 12-qt. case, ½ rate for 40-qt. can.
For cream, double the above rates.

Conditions upon which tags and books are sold and shipments carried:

1. The above rates include the return of empty cans or cases at the convenience of the company.

2. In cases, where books are used, shippers must assist in loading when required to do so.

3. In consideration of the paying in advance for the books of tickets, and the assistance in loading, a discount of 5 per cent will be allowed on the book rate.

4. When tags are used for transportation, a tag must be attached to each can or case before it will be accepted; each can or case must also have a shipper's tag, giving the name of consignee and destination.

5. Milk will only be carried on scheduled express cars.

6. Tags and books of tickets can be secured at the company's main office, 406 Linden Street, Scranton, Pa.

MILK TAG

A view of one of the milk tags is presented on this page. The following notice is printed on the back of this ticket:

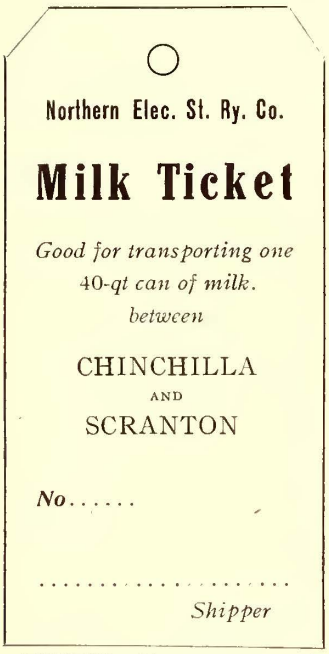
In consideration of the reduced rate charged for the transportation of this can and its contents it is agreed that the railway company shall not be responsible for damages to milk occasioned by delays from accidents or unavoidable causes, or from frost, heat or the elements, and the company will not be liable for the non-delivery in any certain time, nor for loss of such property after same has been unloaded at destination.

MISCELLANEOUS

The operating results shown by six months operation ending Dec. 31, 1907, of the 10-mile section from Scranton to Dalton were as follows: Gross receipts, $51,234.67; operating expenses, rental of tracks, terminal, taxes, etc., $35,689.47; net earnings, $15,545.20; total car miles, 156,779; earnings per car mile, $0.3268; daily earnings per car, $52.92; total revenue passengers carried, 517,575: average earnings per passenger, $0.099, and gross earnings per mile of track operated, $4,269.56.

The opening of the line to Factoryville should more than double the traffic without increasing the interest charges or the cost for car house and power attendants. In addition the next six months will show the influence of the freight business and later of the summer pleasure travel. The suburban home-building movement has hardly had the chance to begin, so taken all in all at least a year's operation will be required to indicate the traffic possibilities which await this railway.

The officers of the company are as follows: President, A. J. Connell; secretary and treasurer, Ezra H. Ripple; general manager, Richard W. Day; chief engineer and superintendent of construction, S. A. Dilley; superintendent of motive power, R. L. Koehler; superintendent of transportation, J. C. Meixell. The consulting electrical engineer was Wm. R. Corson, of Hartford, Conn. Among the directors are T. J. Foster, president of the International Text Book Company, Scranton, Pa., and F. L. Fuller, president of the New York & Queens County Railway Company, Long Island City, N. Y.



PRINTING ON FRONT OF MILK TAG

ONE OF THE MILK AND EXPRESS CARS

THE INTERSTATE COMMERCE COMMISSION'S PROPOSED CLASSIFICATION OF ACCOUNTS

BY C. L. S. TINGLEY
Second Vice-president American Railways Company.

About March 1 every electric railway in the United States received from the Interstate Commerce Commission a pamphlet entitled "Accounting Series Circular No. 20," bearing date of Jan. 10, 1908, to which a reply is requested by March 28.

The first five pages of this remarkable document are taken up by a letter addressed to accounting officers of electric lines, which letter purports to explain the balance of the document and how it came to be issued.

The subject treated, namely, a system of accounts for electric railways, is of vital importance to every electric railway in the country, and this document should be most carefully studied by all before reply is made to the commission. The time allotted is all too short, and owing to the delay in sending out (i. e., from Jan. 10 to March 1) should in justice to the carriers be extended to at least May 15.

To proceed to a consideration of the question, however, issue must be taken with the facts alleged in the letter as follows:

In the second paragraph thereof the commission states that it is making an effort to develop a uniform system of accounts for electric lines. Such uniform system of accounts was developed by the Street Railway Accountants' Association 10 years ago, and has been and is to-day in use by a vast majority of the electrically operated roads in this country, and the form of report prescribed by the association in conjunction with this system of accounts, and approved by the Association of State Railroad Commissioners, has been adopted and is now used by a large majority of the States requiring reports from carriers, so that the discussion therein invited is not the only practicable means of obtaining the results sought.

In October, 1906, the Accountants' Association was called in consultation on this question by the Interstate Commerce Commission. It met their representative openly and frankly. It has used every effort to co-operate in an intelligent manner, but apparently without success, as the commission in its wisdom has seen fit to disregard practically every suggestion made by the Accountants' committee and convention, so that it is hard to see how the invitation to make criticisms and suggestions, contained in the third paragraph of the circular, is to be taken seriously.

The fundamental principle laid down in the opening of this circular is erroneous, namely, that there shall be uniformity of accounting between all classes of carriers if by such uniformity is meant the uniformity sought to be imposed by the classification set forth in this circular. It would be perfectly practicable to have uniformity as to a limited number of very general accounts should the same be thought desirable, but it is as impracticable to have a useful system of accounting for electric railways which shall be uniform with the steam classification as it is to attempt to compare the price of coal and the price of eggs. The fundamental principles which underlie the two systems of transportation are absolutely and totally dissimilar.

The steam road in the main is a system of transportation constructed upon its own private right of way, traversing, as a rule, one or more States and connecting large centers of population, to which it looks for its main source of income. Its prime mover is the steam locomotive attached to each and every train. Its unit of transportation is the train operated on fixed schedules at more or less infrequent intervals and stopping at stations located at comparatively long distances. Its compensation for the carrying of passengers has a maximum limit fixed by State law on a mileage basis. Its compensation for carrying freight is a fluctuating quantity, more or less subject to negotiations under the regulations of the State and Interstate Commissions, and using the year 1902, that being the latest year in which statistics of both steam and electric carriers are available, deriving 72.2 per cent of its income from the carrying of freight and 22.76 per cent from the carrying of passengers. (I. C. C. Report, 1902, p. 76.)

On the other hand, the electrical carrier is in the main designed for local service. The vast majority of its trackage is on the streets of our cities and towns and a very insignificant proportion of mileage only is on privately owned right of way. The result of this is that the electrical carrier is subject to many regulations as to speed, service and the care of streets and highways which are utterly foreign to and unknown in steam practice.

The prime mover of the electric railway is the fixed power house, where the current for the operation of the entire system is generated and which runs continuously during the hours of the operation of the road. The unit of transportation is the car. The service and stops are frequent and the fares are usually prescribed by municipal ordinance and with but little regard to the distance to be traversed. Its revenue is mainly derived from the transportation of passengers, as in the year 1902 94.5 per cent of its revenue came from that source and only 6/10 of 1 per cent from the transportation of freight and express matter. (U. S. Census, 1902, p. 67.) The volume of passenger business done by the electrical carriers in the year 1902 was $234,100,000 and the volume of passenger business done by steam roads in the same year was $392,900,000, whereas the total business done in the same year by the electric roads was $247,500,000 and by the steam roads $1,726,400,000. As this volume of business in the electric roads was done by 799 carriers, it shows that the average business per carrier was slightly in excess of $300,000 per annum, and when you eliminate the companies in a dozen large cities the average business would be very much reduced.

A compilation prepared by the STREET RAILWAY JOURNAL and published in 1907, shows that out of the 481 companies which published their gross earnings during 1906 21¾ per cent have gross receipts of $500,000 or over and 78¼ per cent reported gross receipts of less than $500,000. As no company having gross receipts of less than $25,000 was considered in this compilation and as most of the 683 companies not reporting were small roads, the percentage of companies with gross receipts of less than $500,000 would undoubtedly be in excess of 80 per cent if all the facts were known. Again, the sum of the gross receipts of these 481 companies was in excess of $358,000,000, of which over 85½ per cent represented the earnings of companies having gross receipts of $500,000 or over, and only 14½ per cent, the 78¼ per cent of the companies with gross receipts of $500,000 or less. The average gross receipts of the 78¼ per cent of the companies was $134,785 per annum.

In this connection the appended table showing the gross receipts in a graded scale from $5,000 per annum and under to $1,000,000 per annum and over, for the States of Pennsylvania, New York and Connecticut, is of interest. These statistics are gathered from the official reports of the State and are therefore authoritative, and it is interesting to note

that 111 of the 115 companies in the State of Pennsylvania fall below the average of $300,000 gross receipts mentioned above and that 80 of the 99 companies in New York fall below the same average and that 12 of the 14 companies in Connecticut fall below the same figures.

Gross receipts.	Number of companies in each class in the following states: Pennsylvania.	New York.	Connecticut.
$5,000 or under	5	5	..
$5,000 to $10,000	5	7	..
$10,000 to $15,000	7	7	2
$15,000 to $20,000	4	5	..
$20,000 to $25,000	9	5	1
$25,000 to $30,000	6	3	..
$30,000 to $40,000	10	3	..
$40,000 to $50,000	10	8	..
$50,000 to $60,000	9	10	2
$60,000 to $75,000	6	2	1
$75,000 to $100,000	11	5	2
$100,000 to $125,000	6	3	3
$125,000 to $150,000	2	7	1
$150,000 to $200,000	6	4	..
$200,000 to $300,000	5	6	..
$300,000 to $500,000	5	3	..
$500,000 to $1,000,000	7	6	..
Over $1,000,000	2	10	2
Total	115	99	14

It is therefore apparent that owing to its cost the departmental organization maintained by the steam carrier is utterly out of the question upon the average electrical carrier, and as the basic principle of the classification under discussion is departmental accounting, it is utterly inapplicable to the conditions now obtaining in electrical practice.

Up to the present time the only reason given by the commission for this change is that it would enable it to compile its statistics and give a complete analysis of the cost of transportation by all classes of carriers. Doubtless this would be interesting, and, if accurate, the statistics would have some value, but when uniformity can only be obtained by the destruction of the work of 10 years, rendering useless a mass of statistics and a system of accounts known and recognized all over the world by bankers, investors, public accountants and the United States Census Department, as well as the carriers, the price seems out of proportion to the benefit. Moreover, when accuracy can only be obtained among smaller companies at the cost of a receivership the cost becomes not only unreasonable, but exorbitant.

From a consideration of what has been said it is very apparent that the vast majority of the companies in this country are of far greater value to the communities which they serve and the traveling public in general than they are to their stockholders. In fact, it may safely be said that there are hundreds of companies to-day whose sole justification for existence is the fact that they perform a public service. They have never paid their stockholders a dollar and it is doubtful if they ever will.

This brings us to the next point in the circular, namely, the line of demarkation between a large and small company. This line should certainly be drawn far higher than the point suggested by the commission, namely, $50,000 per annum. It should be at least $300,000 per annum and preferably $500,000 per annum, for no company with gross receipts of less than a million dollars can afford to keep up a departmental organization, and until a departmental organization is maintained the classification under discussion is absolutely futile, as it would be simply an agglomeration of guesses, estimates and arbitrary sub-divisions. Of late years accountants have been priding themselves that the days of the old-fashioned bookkeeper were rapidly passing away and that in his place there was growing up the profession of accountancy, men highly trained either through practical experience or by special preparation in our universities, capable of dealing with accounts on a scientific basis, of bringing them to the basis of absolute fact and of doing away with estimates, surmises and suspicions. Now all this is to be swept away and we are to return to the good old days of guess work. For what? In order that the statistician and student may be provided with a set of figures more or less, and generally less, reliable, which are comparable with another set of figures arising out of a different class of business. The proposition is simply preposterous.

The prime object of a classification of accounts is to disclose to those interested the true cost of conducting a business and to enable the management to conduct the business intelligently and economically. The classification heretofore provided has done this with reasonable exactness, and the tentative classification submitted at the Atlantic City Convention last October further amplified and analyzed the already existing accounts. It was in harmony with the previous classification and was constructive and not destructive. It preserved the continuity of the figures and permitted an intelligent conduct of the business.

The analysis of accounts submitted for the so-called smaller lines is unobjectionable except for its introduction of strange and cumbersome nomenclature and also for the fact that if the companies following it are to be restricted to it, it is lamentably weak in the analysis of power accounts. It is, of course, also subject to the criticisms which will be made on the text attached to the primary accounts.

As the question of depreciation is in the hands of a special committee it would be unbecoming to discuss it at this time.

We now come to one of the most prominent, and at the same time most objectionable features of the classification, namely, joint facilities. It is the height of hypercriticism to state that the 2½ cents paid by an interurban company out of a nickel which it has collected on the tracks of the urban company and which is paid over to the urban company for the use of track and power is any less an income derived from the public than is the nickel collected on the urban company's car operated over the same track, and an effort to sub-divide this 2½ cents and apply it to accounts Nos. 45, 46, 104, 105, 115 and 116 would be the height of absurdity. For example, in one city there are three purely urban companies in operation and owning track; there are three interurban companies owning and operating their own track in the same city and there are eight interurban lines (including the three above referred to) entering that city and operating in whole or in part over the tracks of all the companies. In some instances the tracks on the streets of the city are owned solely by one urban company, in some they are owned jointly by two urban companies, in some they are owned jointly by two urban companies and an interurban company, in some they are owned jointly by one urban company and one interurban company, in some they are owned jointly by three urban companies. Not to be tedious and to take only one example, one of these interurban companies enters the city and runs for possibly a mile and a half over track of a single urban ownership; it then runs over track of joint urban ownership for four blocks; it then runs for one block over track owned jointly

by two other urban companies; it then runs for two blocks over a single urban ownership, and it then runs some of its cars over four blocks of track owned by another interurban company and an urban company, and then for one block over the tracks of the other interurban company. The sum paid for the use of track and power is based on the number of passengers carried in the case of passenger business and on the number of round trips made per car in the case of freight business. It would take a skilled man to sub-divide these rentals, and if it were to be done on any reliable basis —that is to say, that the amount apportioned should bear its actual proportion to the wear and tear or service rendered, in which case the weight of the car and what not would have to be taken into consideration—it will be a guess of the rankest kind and absolutely worthless, for unless statistics are accurate and reliable they are worse than none at all. Furthermore, as this use of trackage invariably involves the use of current, and as that current must be taken and is taken from a common trolley, an equitable apportionment for the use of current is absolutely out of the question. It is true that it might be metered on the car, yet if that were done that particular car would not stand its proportion of line loss, at once affecting the accuracy of the statistics. Furthermore, meters carried on cars, subject to the jar and motion of the car, are not nearly so correct as the fixed meter in the station, again interjecting the element of uncertainty into the computation.

The conclusions of the commission that these accounts fill a long-felt want on the part of the public cannot be admitted. The public knows little and cares less about such over-refinement of accounting. The long-felt want on the part of the public is the longest ride it can get for a nickel and to dodge paying that nickel as often as it can. If the existing classification is kept honestly and faithfully the public will get just as much useful information as it can possibly get from this agglomeration of guess work.

The closing paragraph of the circular is worthy of special attention. "Those officers who are not familiar with the 'classification of operating expenses' and of 'expenditures for road and equipment' as prescribed for steam carriers, and who desire a copy will be furnished with the same on application." Like the scorpion, the sting of this document is in its tail. It is the steam classification all the way through and that is not applicable to electric work. The steam classification is the product of years of experience by steam accounting officers and undoubtedly fits their conditions and needs. Reasoning logically, the electric classification should be the product of the years of experience of electric accounting officers who know the requirements of their business as no purely steam accounting officer can. It is a notable fact that during the conference in Washington during the winter 1906-7 between the steam accounting officers and the electric accounting officers, when differences of opinion arose in regard to the treatment of matters electrical, that the officers of three of the largest steam roads in the country, and the only three who have had much experience with electrical operation, were in accord with the electric accountants every time, for they had studied the electrical problem and they knew wherein it differed from the steam problem. Furthermore, one of these same three officers was a member of the special committee which drafted the preliminary report upon which the Accountants' Association based its tentative classification, which was adopted at Atlantic City. In all fairness this accountants' classification should have been the basis of this circular and not, as is the case, the steam classification.

Pages 7, 8 and 9 are verbatim the instructions to steam roads (I. C. C. Classification of Operation Expenses, etc., p. 10 *et seq.*), a change in the nomenclature of the equipment being made to give the appearance of fitting the case. As about two-thirds of it, however, is applicable to freight and deals with the compensation for and repairs to foreign cars, it has very little application to electric carriers, and to many of them it will be about as intelligible as if printed in Hebrew.

In considering the text of the classification the question arises as to why the costs of the ballast train should be charged to ballast whereas the cost of the train distributing ties is charged to roadway and track, as is also the cost of the train picking up and distributing rails. Under the instructions as to rail fastenings, no mention whatever is made of spikes.

Account No. 10, bridges, trestles and culverts, assumes in all cases that the bridge, trestle or culvert is owned by the carrier, while there is no question but that the majority of bridges over which electric carriers operate are owned by the municipality and that contributions or taxes are paid to the municipality for the right to operate over the bridge. In this is also interjected the question of departmental accounting by requiring the sub-division of the pay of various employees and also the cost of trains, work cars, etc. On all but the very largest properties this would simply be an approximation or guess, except by an expenditure for clerical hire entirely out of proportion to the results to be obtained.

The text of the sub-heading snow and snow fences and snow sheds, under account No. 12, has been taken bodily from the steam classification without the necessary modifications to adapt it to the classification under discussion and should be redrafted. The same applies to the note under account No. 13, there being no account entitled other track material.

Account No. 14 is strictly steam. The telegraph and telephone lines of an electric carrier are usually carried on the pole line used for carrying its power transmission and conductor wires, and it would be ridiculous to attempt to sub-divide the cost of maintenance of poles, cross arms, etc., in carrying the various classes of wires. There are also provisions for superintendent of telegraph lines and his clerks, etc., an official who, I venture to say, is absolutely unknown to the electric railway business.

Accounts Nos. 15, 24, 32, 42, 63, 70, 88, 100 and 113, superintendence, are departmental. This applies to those sub-accounts wherever they appear throughout this classification. To be carried out accurately and logically there is many a man who would have to carry a time clock or some other device around with him in order properly to apportion his time and meet the distribution called for.

The same is true of office supplies, etc. In fact, if this classification is to be enforced a vast majority of the roads will be compelled to largely increase their clerical force by assigning a man to each department, thereby multiplying their expenses for that item many times. The treatment of injuries to persons is again thoroughly illogical from the electrical point of view. It is safe to say that the injuries and damage account of the average electric railways would simply appall the average steam road operator, and to attempt to divide the time of the employees of the claim department among the several accounts would simply be to create confusion. Furthermore, why should injuries to persons be charged to this account and no provision made, for example, for the injury or wrecking of a vehicle by

reason of a work train operated on the public highway. Stationery and printing is another shining example of departmental accounting. The writer has in mind six or seven companies, each of which maintains one office and in each of these offices is one adding machine and that one adding machine is used for all computations which require that assistance on that road. It would simply be a physical impossibility and an absurdity to endeavor to distribute the cost of that machine and its operation on any reasonable basis. The same will apply to pencils, ink and a multitude of office supplies.

The same is true of insurance. While it is perfectly feasible to make an absolute distribution of insurance at the average rate, yet this is not a true measure of the cost, because, as is well known, insurance rates are made by taking the values of the various classes of property and applying the rates to each separate class, computing the premium on each class; then taking the totals of these, dividing them by the total value; thus securing the average rate. Should these accounts be charged with the insurance at the average rate or at the specified rate on the class of property insured?

Account No. 17 raises the question of the joint use of poles for carrying the various wires or other conductors of the carrier. The writer has in mind at least two properties on which the high-tension transmission lines, the low-tension feeder, the overhead trolley, the private telephone lines and the signal line are all carried on the same pole line. It would seem that the simple statement of this fact would produce its own answer—ridiculous.

Account No. 29 erroneously includes power plants already otherwise provided for.

Account No. 34 calls for the inclusion of repairing of the electric equipment of snow equipment. On most roads, particularly the small ones, the electric equipment of the snow equipment consists of motors transferred from cars which are normally used in the summer time. That is to say, the summer schedule almost invariably provides for more cars than are operated in winter, and the equipment under these cars is not allowed to lie idle in winter time, but is placed under the snow equipment. When such motors come to be repaired, should their repairs be charged to account No. 34 or to account No. 53, or to some of its analogous accounts, according to the service that the motor is in at the time at which the repair is made, or according to the surmise of the official in charge of equipment as to the service it was in when the wear took place?

Account No. 36. The electric locomotive is not in very general use except on electrically operated divisions of steam roads.

Account No. 40 calls for a charge to this account of the electrical current consumed in removing ice and snow, a thoroughly impracticable provision. While it is true that it would be perfectly possible to place a meter on snow plows and sweepers and get some more or less accurate record of the current consumed upon those cars, a meter on equipment subjected to the use to which snow-fighting equipment is subject would not record very accurately; furthermore, the line drop would not be accounted for and therefore the figure would not be correct. In addition to this, on many roads track scrapers are attached to passenger cars and a considerable amount of removal of ice and snow is accomplished by the car when performing its regular service. A large part of this text is absolutely steam.

Accounts Nos. 44, 45 and 46, joint facilities, are treated of fully in the preceding discussion.

Accounts Nos. 53 to 58. There are few roads, I imagine, where the motors remain fixed under any one car and where the duty to be performed is analogous. They are even interchanged among the various classes of cars and it would be almost impossible to allot the repairs in accordance with the service in which the wear and tear occurred.

Account L and its sub-accounts are fully covered in the preceding discussion.

Account No. 72 is also absolutely steam; it largely does not apply to electric roads and what does apply is subject to the same criticism as accounts 15, etc.

Account No. 79 is an absurdity and should be considered in conjunction with accounts Nos. 80 and 81. The same criticism applies to all three. They would require a multiplicity of meters; an elaborate system of meter inspection, reading and computation, all to accomplish no useful result. In many cases, for example, crossings are lighted by current from the trolley; this current is not used for the propulsion of cars, but the light may be necessary for the safe operation of the road or may be required by municipal ordinance. The same is true of the diversion of steam; it is quite common to heat the shops and car house with exhaust steam from the power plant; the steam having been exhausted is of no further use in the power plant and imposes no burden thereon. It is an absurd refinement, therefore, to credit the power plant with its use, even admitting that it were practicable to fix an equitable compensation for it.

Accounts Nos. 85, 86 and 87 conflict in part with account No. 98.

Account No. 90 provides for officers and employees unknown in electrical operation.

Accounts Nos. 93 and 94 suggest the query as to what would be done when the general office and the station were the same room and the functions therein provided for performed by the general office force.

Account No. 95. The first paragraph of this text conflicts with account No. 96. This account also raises the query as to how you would account for the cost of lighting and heating cars which are lighted and heated by the same current which propels them. This account is mainly steam and an over-refinement.

Account No. 96 conflicts with account No. 95.

Account No. 98 conflicts with accounts Nos. 85, 86 and 87.

Account No. 99, switchmen, crossings, flagmen, etc. These are almost invariably employed by the steam road crossed and rarely if ever employed by the electric road for a highway crossing, due to the fact that the electric road usually stops at the highway crossing. When at the crossing of electric and steam roads they are usually the employees of the steam road and are not paid directly by the electric road.

Draw Bridge Operations. What would be done with a draw bridge that was turned by an electric motor with current drawn from the trolley, the attendant being furnished by the municipality?

Yard Men and Yard Supplies and Expenses. These are practically unknown in electrical practice, being essentially steam road operation.

Lubricants for Electric Locomotives. The sub-account is amusing, as the only machinery on an electrical locomotive is the same as that on a motor car and it would be hard to find use for valve or engine oil thereon.

Other Supplies for Electric Locomotives. An electric locomotive does not differ except in the power of its motors

from an ordinary motor car and is usually equipped with an electric headlight.

Account No. 101. All of this is based on steam practice and makes no provision whatever for the very large class of small accidents caused by collision with vehicles in the streets, which would not be covered by "damages to stock on right of way," as the vehicle has as much right in the streets as has the electric carrier and is not a trespasser.

Account No. 103 is subject to the same criticism as heretofore given to injuries and damages under previous heads.

Accounts Nos. 104 and 105, joint facilities, are fully covered in the preceding discussion.

Account No. 106 would raise the query as to why the freight claim agent should be charged to this account and the passenger claim agent charged specifically.

Accounts Nos. 115 and 116 are fully covered by the preceding discussion.

The tentative classification of expenditures for road and equipment, account No. 2, makes no provision for payments to municipalities. Account No. 8 includes the cost of guard rails on curves. In electrical practice these are very frequently a physical part of the special work and should be included under account No. 9. The text under account No. 9 makes no mention whatever of special work as that term is understood in electrical practice.

Accounts Nos. 14 and 15 are not clear. Account No. 16 is not in harmony with the corresponding maintenance account.

Accounts Nos. 19, 20, 21 and 24 are subject to the same criticism as to poles as are the corresponding maintenance accounts.

Account No. 22. Track bonds in electrical practice are commonly a manufactured article and are not made from wire by the carrier. The rails are usually drilled at the mill for receiving the same. Should bonds for third-rail conductors be charged to account No. 22 or account No. 25?

Account No. 30 seems to use the term car house as more or less synonymous with shop and is to that extent inaccurate.

Accounts Nos. 43, 44, 45, 46, 47 and 48 seem to be a useless and impracticable sub-division of the subject and apt to become misleading after the lapse of time. Motor equipment might very readily be purchased primarily for use under passenger cars and in the evolution of time be transferred to combination cars or express cars or mail cars or freight cars or electric locomotives. It is not an asset whose use is fixed and determined once and for all at the time of its purchase.

Account No. 60 makes no provision for damage to vehicles or other property injured during and by reason of construction.

Account No. 61 states that discounts on securities issued for construction purposes are not a proper charge against construction. To what then should they be charged? The par value of the securities must ultimately be paid and that is what your property costs you. What is meant under account No. 62 by expenses incurred in the disposal of securities? Is it the discount above referred to?

A careful perusal of this document betrays an attitude of mind on the part of the commission which is, to say the least, unfortunate. It recalls very forcibly Carlyle's definition of the word King, "The man who can; the strong man." It betrays a disposition to exercise arbitrary power and force upon a great industry against its earnest protest and logical reasoning a classification of accounts utterly inapplicable to its conditions, and, furthermore, it is an affront to the intelligence of every man in the electrical business. While its date purports to the public that less than thirty days elapsed between the conference and the issuing of the circular, it is grossly misleading, for almost three months elapsed between the conference and the issue. Again, the numerous errors betray a most careless and indifferent preparation, showing that no thought whatever has been given to the merits of the question by the commission, but merely a most hasty adaptation of the steam classification to electrical nomenclature. The writer feels like closing his discussion with the words of Job to his comforters, "Truly ye think ye are the people and that with ye shall all wisdom die."

THE INTERSTATE CLASSIFICATION AND THE SMALL RAILWAY

BY R. N. WALLIS
Treasurer Fitchburg & Leominster Street Railway Company.

The Interstate Commerce Commission, having by law the power to prescribe, without consultation, a system of accounts for electric railways under its jurisdiction, and, by its influence with State Commissions, for electric railways quite generally, has accorded to the industry the courtesy of submitting its suggested classification to the companies for criticism before decreeing it. In full fairness it invites frank criticism and suggestion not only as "to the specific questions enumerated," but "any criticism and suggestions pointing to the improvement of the classifications are invited." Nothing could be fairer than this attitude. It is to be hoped that the companies will respond in kind, giving the classification careful and impartial analysis and making suggestions so clearly the result of unbiased experience that the Commission will be aided in its attempt to adopt a classification acceptable to the companies and expressing the best accounting practice. This the larger companies will surely do, but the ones to whom the classification means most—the smaller companies of under half a million annual receipts—will most likely neglect the opportunity. Being most seriously concerned, the small companies should take the greatest interest.

The large company keeps its accounts in great detail anyway. It must do so because of its size. The small company has been accustomed to a comparatively simple system of accounting. To jump from present simple methods into the quite complicated system necessary to secure the accounting required by the Commission will mean a very considerable increase of expense, effort and red tape to the average road having annual receipts under $500,000. The system of accounts as outlined covers not only the company's bookkeeping but its accounting down to the youngest track greaser or lantern boy. It means also to a considerable extent a departure from established railway accounting traditions.

The needs and limitations of the small company should be carefully considered. Under $500,000 annual gross receipts (and these are all "small companies" to whom an extended classification could easily prove burdensome) there were reported by American Street Railway Investments for the fiscal year 1906, 374, or 78 per cent of the whole number reported whose receipts were above $25,000. The classification should fit the 78 per cent primarily rather than the 22 per cent of larger companies.

From the standpoint of the smaller company, it seems unfortunate that the Commission deems it necessary to con-

struct a classification which shall conform closely to steam railroad practice. This adds greatly to the complexity of the system and makes it more burdensome to the road whose accounting must be simple. The steam railroad man has always looked upon the street railway business as a sort of simplified railroad business, the same business in miniature. By plain logic the railway would be a toy to the railroad man. Merely apply railroad practice to the railway business and it would be managed much better than by the bred-in-the-bone railway man handles it. As fast as steam railroad managers have undertaken the railway business they have discovered the fallacy of this reasoning. They have to adopt different methods. The two businesses are distinctly different. True, they touch in similarity at many points, but at a great many more points they are not even parallel. This is exactly true of the accounting in the two industries. Wherever steam railroad practice is forced upon electric railway accounting at points where they are not parallel there arise conditions which do not fit and which become correspondingly burdensome. These conditions are harder upon the company whose accounting must be simple than upon the company which can afford a highly trained accounting force.

One fundamental principle of the proposed classification bears hard upon the small road and might, it would seem, be changed without destroying to any considerable degree the value of the general scheme. This is the extreme division of minor supplies and expenses. Such, for instance, are stationery, stable expenses, oil and waste, power expenses for work cars, etc. To more than 90 per cent of the companies these items separately, or indeed in the aggregate, are very small in amount, yet the labor and care of separating them out as required is very great, out of proportion to any possible benefits. A very considerable elimination of this feature would tend greatly to lessen the burden upon the smaller companies. Add to this certain items (as injuries, insurance, etc.), which are scattered liberally through the classification and are fully as much "general expenses" as some so classified, and the classification becomes much simplified. This detailed division in effect increases the number of accounts, especially for the small roads, considerably beyond the 116 nominal accounts. The result of the change in this principle would not be a large element in disturbing conformity with steam railroads.

An electric railway company which comes under the observation of the writer has a gross income of somewhat under $300,000 per year. The number of accounts upon its ledger is 65, including revenue, expense, capital and special accounts. A few of these accounts are further sub-divided, but only in the bookkeeper's spare time (usually in the winter months) and accounts receivable are carried in detail on a separate ledger. The management of this road is very careful in its study of conditions through statistics, too. It is a successful property and has been for 20 years. This number of accounts amply meets the manager's and directors' needs in the study of its finances. Why should it not meet the legitimate needs of the public?

The writer estimates that to follow out the proposed classification conscientiously will require about 250 accounts in place of the 65 now in effect. The word "conscientiously" is used, but in fact it becomes a matter of physical impossibility on the small road when the number of accounts and instructions becomes too generous. If it were a matter only of the cash book, ledger, voucher record and other such books and forms as are made up by the office accountant a proper classification in great detail would be easier. But every additional detail branches through the whole system down to every individual who must account for his own time and that of his companions and the supplies they use. These men on a small road are people who must proceed in accounting lines by very simple steps. And this assumes a conscientious endeavor to be accurate on the part of the accountant and everyone who contributes information to his use. When methods become slipshod and careless accuracy vanishes unless instructions can be very simple.

Of course, the question of the public need enters into this matter. But the writer greatly doubts whether any benefit to the public requires a detail of division in accounts which shall be burdensome to the company. Indeed it may be questioned if a classification as detailed as the one under consideration given to a business such a large proportion of whose units are small ones does not defeat the ends it seeks to attain by rendering accurate uniformity impossible. This certainly is true if the small road finds it physically impossible so completely to divide its accounts without guessing and estimating and pro-rating. The Commission recognizes this fact by making a simplified classification which it applies to roads of under $50,000 receipts annually. One may assume from the general invitation to criticism that this limit is not necessarily finally fixed. Then it becomes proper for the small roads under a half million or so receipts to imagine the tentative classification as fitted each to its own case and inform the Commission of the probable results. To a road of $300,000 receipts a jump from a satisfactory schedule of 65 accounts under reasonably exacting conditions to 250 accounts, all at one bound, is a considerable undertaking. Nor should the small road take the stand that "when the time comes we can get around it somehow." If this classification is adopted by the Interstate Commerce Commission and the Commissions of the various States it becomes law. Laws should not be promulgated which are unenforcable. No schedule of this kind should go out which it will be impossible for a considerable part of those for whom it is intended to fully follow. The time to have it right is now

The necessity of arranging a classification which shall be reasonably certain to stand unchanged is important to the accountant of the small road who must spend much effort and care in educating every clerk and foreman who at any point touches the accounting system to every change.

The question of destroying accurate comparison with previous years, and the extent to which the classification may be found unfitted to the business and so require change after going into effect with future years and the like, are questions which affect large and small companies, investors and the public alike.

The Norumbega Park Company, of Newtonville, Mass., has recently signed a contract for doing away with the two large columns at the front corner of the steel theater stage at Norumbega Park. Since this theater was built the company has had more or less criticism from patrons who occupied seats behind these two columns, and is now removing them, so that there will be an absolutely clear amphitheater with an auditorium with a seating capacity of more than 3000 and absolutely no obstruction of any nature whatever between any one of the patrons and any act on the stage. In addition to this the company is installing a box-ball alley, enlarging property rooms in anticipation of putting on even better and higher priced vaudeville acts and is also enlarging the penny-in-the-slot building.

REPORT OF THE ILLINOIS RAILROAD COMMISSION

The report of the Railroad and Warehouse Commission of Illinois for the year ending June 30, 1907, has just been published. The Commission has jurisdiction over the interurban and elevated electric railway companies in the State, but not over the surface street railways. On this point the Commission says that it has frequent inquiries as to the condition of street railway companies, "and it might be well to suggest that these public utility companies enjoying special privileges from the State and municipal governments ought to be required to make report to some department so that public information might be had of their condition." In the following figures interurban electric and elevated lines only are included.

These companies had a main line mileage on June 30, 1907, of 1184.83, an increase for the year of 249.07 miles. The total mileage of second, third and fourth main tracks was 192.99, an increase of 2.29 miles. The mileage of industrial tracks was 7.80 miles, an increase of 3.67 miles, and the mileage of yard tracks and sidings was 71.30 miles, making a grand total of tracks of all kinds of 1456.92 miles, an increase for the year of 269.49 miles.

The capital stock and funded debt of this class of roads for the year ending June 30, 1907 was $177,443,007, an increase for the year of $16,855,779, and is accounted for in the additional mileage built and put in operation. The average capitalization (capital stock and funded debt) per mile of interurban road was $73,053, and per mile of road for the elevated railways was $1,967,780.

The income account is shown by Table I.

TABLE I

Classification	1906	1907
Gross earnings from operation	$12,280,192	$13,956,210
Operating expenses	6,573,261	7,747,332
Income from operation	5,766,031	6,208,878
Income from property and other sources	682,845	892,866
Total income	6,389,776	4,986,165
Expenses assignable to fixed charges	4,423,277	4,986,165
Net income	1,996,499	2,381,798

Table II shows a comparison of dividends paid ending with the fiscal years as of June 30, 1906 and 1907, respectively:

TABLE II

Name of company	1906	1907	P. c. on com.	P. c. on pref'd
Alton, Granite & St. L. Trac. Co.	$15,000	$57,334	1½	...
Aurora, Elgin & Chic. R. R. Co.	.....	193,750	...	6½
Chic. & Oak Park El. R. R. Co.	52,722	.....	...	...
Chic., Bloom. & Decatur Ry. Co.	2,786	.....	...	...
Danville, Urbana & Cham. Ry. Co.	47,785	.....	...	...
E. St. Louis & Sub. Ry. Co.	153,900	239.995	...	7¼
Illinois Valley Ry. Co.	.....	20,000	...	...
Met. West Side El. Ry. Co.	.....	130,608	...	¾ of 1
No. Kankakee Elec. Lt. & Ry. Co.	.....	2,282	7	...
People's Traction Co.	.....	5,694	...	...
Rockford & Interurban Ry. Co.	40,750	53,000	5	6
So. Side El. R. R. Co.	412,952	412,952	4	...
St. Louis & Belleville Elec. Ry. Co.	15,000	18,750	2½	...
St. Louis & Northeastern Ry. Co.	2,074	.....	...	...
Total	$742,969	$1,134,365	...	...
Increase	.....	$391,396	...	...

The total assets and liabilities for the year ending June 30, 1907, were: Assets, $195,474,221, increase for the year of $21,749,623; liabilities, $190,978.041, increase for the year of $21,251,727, a net surplus of assets over liabilities of $4,496,180.

Table III gives a comparative summary of earnings and income for the lines in Illinois.

TABLE III

Classification	1906	1907
Car Earnings:		
Passenger earnings	$10,811,182	$12,076,666
Mail	3,608	5,867
Express and package freight	41,743	90,436
Advertising in cars	135,480	130,165
Total, including miscellaneous	$11,016,920	$12,371,696
Freight Service:		
Freight revenue	446,320	594,371
Total freight earnings, including miscellaneous	$446,320	$594,371
Other Earnings from Operation:		
Sale of light, heat and power	52,116	28,395
Advertising (not in cars)	79,872	76,546
Total, including miscellaneous	$659,421	$692,975
Total earnings from operation	$12,122,661	$13,659,044
Income from property owned	682,759	735,513
Total earnings and income	$12,805,420	$14,394,557
Increase for the year ending June 30, 1907	.....	1,589,137

A comparative summary of expenditures for the lines in Illinois follows in Table IV.

TABLE IV

Classification	1906	1907
Maintenance:		
Way and structures	$564,470	$720,283
Equipment	921,832	$1,001,739
Transportation:		
Operation of power plant	1,359,872	1,602,627
Operation of cars	2,377,785	2,731,678
General expenses	1,255,219	1,579,105
Unclassified expenses	29,752	.....
Total operating expenses	$6,508,930	$7,635,432
Total fixed charges	4,391,278	4,724,068
Total operating expenses and fixed charges	$10,900,208	$12,359,500

Table V gives a comparative summary of traffic statistics during the fiscal years ending June 30, 1906, and 1907.

TABLE V

Classification	1906	1907
Passenger Traffic:		
Passengers carried earning revenue	183,650,979	197,781,911
Passenger and mixed car mileage	5,849,607	55,863,475
Passenger earnings per car-mile	$0.212	.....
Average amount received from each passenger	0.059	0.065
Passenger earnings per mile of road	$11,771.00	$10,550
Transfer passengers carried	6,397,108	7,638,759

Freight Traffic:		
Tons of freight carried earning revenue	1,277,566	1,452,118
Freight and mixed car mileage	689,950	470,056
Average receipts per ton per mile.	$0.048	.....
Freight earnings per car-mile....	0.656	.....
Average amount received from each ton of freight.....	$0.350	$0.40
Freight earnings per mile of road.	$751.00	$820.00
Summary:		
Gross earnings from operation...	$12,122,661	$13,956,210
Total car mileage.....	53,378,595	56,333,531
Total earnings per car-mile..	$0.232	.....
Gross earnings per mile of road	$12,820.00	$11,552.00
Operating expenses per mile of road	6,883.00	6,458.00
Net earnings per mile of road	5,937.00	5,094.00

The number of officers and employees on the surface and elevated electric railroads of the State for the year ending June 30, 1907, was 6697, being a decrease from the previous year of 29. There was paid in salaries to these employes a sum of $4,479,742, an increase of $513,980.37.

Table VI shows a comparison of the average daily compensation paid to all employes in the State of Illinois during the fiscal years:

TABLE VI

Classification	1906	1907
General officers	$7.77	$8.14
Other officers	5.21	4.96
General office clerks	1.92	1.83
Train clerks and dispatchers	2.57	2.60
Station agents	1.63	1.63
Other station men	1.59	1.61
Conductors and yard foremen	2.11	2.19
Other trainmen and switchmen	2.48	2.47
Guards	1.80	1.85
Motormen	2.33	2.37
Starters	1.89	1.99
Switch tenders, crossing tenders and watchmen.	1.94	1.79
Roadmen	1.79	1.82
Hostlers	1.72	1.60
Linemen	2.04	2.54
Engineers	3.40	3.24
Firemen	1.91	1.96
Other power-house employees	1.92	2.90
Electricians	2.46	2.41
Civil engineers	...	3.64
Machinists and mechanics	2.27	2.38
All other employees and laborers	1.63	1.72
Average rate per day for all employees, excluding officers	$2.03	$2.15
Average rate per day for all employes, including officers	2.12	2.19

The number of passengers killed by the railways considered during the year was 19, an increase of 12 over the previous year; the number of employes killed, 19, an increase of 9; other persons killed, 38, an increase of 7; the total number of passengers injured, 149, an increase of 52; other persons injured, 81, an increase of 16; total number killed, all classes, 76, an increase over the previous year of 28; total number injured, all classes, 708, an increase of 240.

The board of directors of the American Institute of Electrical Engineers has selected the following nominees for the forthcoming annual election: President, L. A. Ferguson, Chicago; vice-presidents, C. C. Chesney, Pittsfield; Calvert Townley, New Haven; Bancroft Gherardi, New York; managers, D. B. Rushmore, Schenectady; H. E. Clifford, Boston; W. G. Carlton, New York; C. A. Stone, Schenectady; treasurer, G. A. Hamilton, New York; secretary, Ralph W. Pope, New York.

MEETING OF THE NEW YORK STATE STREET RAILWAY ASSOCIATION

An executive session of the Street Railway Association of the State of New York, was held at the Fort Orange Club, Albany, on March 18. The subject of the meeting was a consideration of the proposed classification of the Interstate Commerce Commission. After a discussion a committee was appointed to prepare a report for submission to the Public Service Commission of the State and also to the Interstate Commerce Commission. The committee consists of the following members: H. J. Pierce, of Buffalo, chairman; C. Loomis Allen, of Utica; E. S. Fassett, of Albany; A. L. Linn, Jr., of New York; J. C. Collins, of Rochester, and H. M. Beardsley, of Elmira. The first meeting of this committee will be held on Monday, March 23, in the office of President Wilson, in Buffalo.

Before adjournment of the morning session one of the members read the bill now before the New York Legislature calling for the licensing of motormen and conductors by a new bureau of the Department of Labor. Among the striking features of the proposed law are the requirements that applicants for licenses must have lived in the State at least one year and that they must undergo a full month's instruction period on the line where employed. Messrs. Norton, Beach and Cole were appointed to present objections to this bill before the legislative committee, which was giving a hearing on it that afternoon.

PARCEL STORAGE IN THE WASHINGTON STREET TUNNEL

The Boston Elevated Railway Company is planning to install a parcel storage service in the Washington Street tunnel in connection with the more important stations in the shopping district. It is believed by the company that the placing at certain stations of facilities of this kind will be a great convenience to its patrons. It is probable that when the scheme is worked out it will be arranged so that shoppers can purchase articles at the adjacent retail establishments and have them delivered at any nearby tunnel station, where they may be claimed on the payment of a small fee by the passenger at the conclusion of the shopping tour. It is probable that provision will be made for the receipt and delivery of parcels from the outside and the inside of the point where tickets are to be sold or fares collected, to increase the convenience of the service to the public. The parcel service at present maintained by the great steam railroad terminals has been so convenient to the traveling public that the Boston Elevated in catering to the same class of patrons, decided that it would be an advantage to offer the same kind of service in the tunnel.

The Lewiston, Augusta & Waterville Street Railway, of Lewiston, Me., completed on Dec. 1, 1907, a line 9 miles in length between Auburn and Mechanics Falls, and expects to complete, during the summer of 1908, 41 miles more, which will connect the Lewiston, Brunswick & Bath and the Augusta, Winthrop & Gardiner systems, and will extend the system to Waterville and to other towns. Upon the completion of these new lines the company will own electric railways running through the central part of Maine, touching the sea coast on the south in the city of Bath and running thence in a northwesterly direction through Brunswick, Lisbon Falls, Lisbon, Lewiston and Auburn and thence northeasterly through Sabathus, Gardiner, Hallowell, Augusta and other towns, with additional lines radiating from Auburn to Augusta.

REPORT ON THE SUBWAY SIGNAL SYSTEM OF THE INTERBOROUGH RAPID TRANSIT COMPANY

The report of B. J. Arnold, consulting engineer of the Public Service Commission for the First District of New York, on the subway signal system of the Interborough Rapid Transit Company of New York, has just been made public. He says in part that there are in all the following number of signals:

Number of signals (home)	421
Number of signals (dwarf on main tracks)	56
Number of signals (dwarf on sidings and yards)	68
Number of home signals, including all dwarfs	545
Number of signals (distant)	216

These signals were installed in October, 1904, and at that time were the best possible. But the art of signaling has advanced and there are a few possible improvements at present.

The number of men employed on the maintenance of these signals is 47. According to the records kept by the Interborough Company during the two years extending from Oct. 1, 1905, to Oct. 1, 1907, there were 155,064,894 signal and stop operations with 497 failures, or 1 failure to 312,001 of block and interlocking signal and automatic stop movements. This is an excellent performance.

After describing the system in use, Mr. Arnold suggests, as supplementary to it, an automatic speed control device which would insure that the trains would not exceed a certain speed when entering a station. At present the speed depends upon the judgment of the motorman. Mr. Arnold believes that although the device suggested is novel, no great difficulty would be found in getting proposals and guarantees of successful operation. As it would probably take some time to install such a system, he suggests a change in the present signal system which will provide a reduction in the time required for the train to come to the station platform after the leaving train has started. According to Mr. Arnold, "the delay in train movement does not become serious until a train has been brought to a stop at the entrance to the station block. The excessive time required to get this train under motion and the corresponding low average speed at which it approaches and travels the length of the platform are handicaps which it is almost impossible to overcome by reducing the time required for unloading and loading, especially with the present type of car." If, however, the signal to the delayed train can be given as the train at the station platform begins to leave rather than when the last car leaves the platform, as at present, it is possible to reduce the delay of the following train at least 17 seconds. Such a system would include a device by which, if in any case the leaving train should slow down or stop for any reason, the incoming train will be brought quickly to a standstill. This can be accomplished by an auxiliary track stop and signal at the head of the platform, to be released only when the leaving train has entirely cleared the platform.

After approving certain changes in the signals at the Grand Central Station requested by the company, Mr. Arnold considers the question of signals on local tracks, which at present are not equipped with signals. He considers that the introduction of a block signal system on the local tracks will reduce their possible capacity from fifty trains an hour to forty trains an hour. At present about thirty trains an hour are being operated on the local tracks during rush hours. He also admits that millions of passengers are being carried annually upon the elevated roads, which are not equipped with a block signal system, and that this is done with an infinitesimally small percentage of accidents. But to secure the greatest degree of safety he thinks the local tracks should be equipped with signals.

He calls attention to the fact that in the subway system one rail of each track is used as a return while the other is used for signal purposes. This does not provide for a signal in case of a break in one of the rails of the track return circuit. At some future time it may be desirable to change over to the use of the two-rail signal system, but this is not justified at once under present conditions.

Mr. Arnold's conclusions are as follows:

1. The subway signal system is in the main modern, effective and well maintained.

2. There is no reason so far as the signal system is concerned why 90-second headway cannot be maintained.

3. This 90-second headway will eventually be desirable upon both the local and express tracks.

4. The signal system does not at present afford positive safety at the approach to stations, as the motormen are relied upon to reduce the speed of the trains.

5. In addition to the excessive platform waits additional time is lost at each station stop by holding the following train a considerable distance out of the station until the leading train has entirely cleared the platform.

6. As at present operated, delays at a station platform have a cumulative effect upon following trains so that even one prolonged stop may start a series of delays which may disarrange the schedule for an entire hour.

He then recommends:

1. That the necessary steps be taken to develop and install an automatic speed control signal system to be used as an auxiliary at station blocks which will allow the incoming train to safely approach the rear of the train at the platform and to enter the platform promptly upon the leaving of the outgoing train without sacrificing any of the standard of safety which is now maintained between stations

2. That during the development of the system there be installed at every express station the changes in the block-signal system proposed by the Interborough Company for Grand Central Station. The equipment required for these changes will reduce the present possible headway by seven seconds, and could ultimately become a part of the permanent recommended arrangement.

3. That the subway officials consider for the purpose of effecting temporary relief the installation of a manually operated permissive signal at every express station to be used to expedite a delayed incoming train and thus overcome the cumulative effects on the schedule of a prolonged station wait.

4. That the local tracks be protected by a complete block-signal system when the automatic speed-control system herein suggested has been perfected.

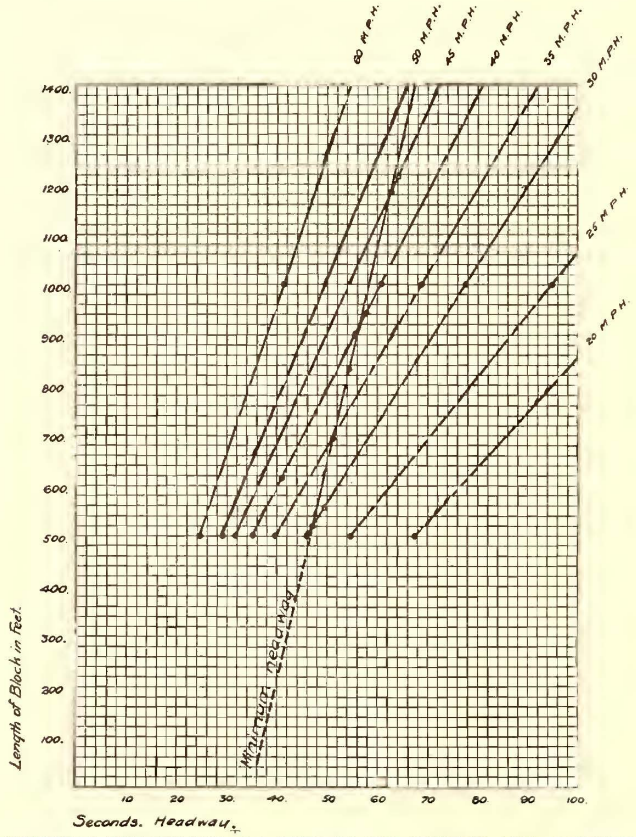
5. That, when the load on the subway increases to such an extent as to require additional conductors for carrying the electrical energy to and from the trains, the present signal system be altered so as to utilize both rails for carrying the return current, and at the same time make the system conform to the latest accepted practice whereby the signal system detects and indicates a broken or removed rail, provided the system shall at that time have proved superior to the single-rail system.

He refers to another report which is yet to be presented and then submits an appendix.

The appendix is devoted largely to a presentation of

drawings and diagrams to illustrate the suggestions contained in the report upon the signal system. One of the most interesting of these is that indicating the minimum headway with different lengths of blocks and at various speeds. In the subway the minimum length of the signal system block is based upon the distance required to brake a train, plus 50 per cent for safety. The minimum time spacing of trains, or the headway, is equal to the length of time required for a train to run three times the length of one signal system block, plus the length of time required to run the length of the train, plus 2½ seconds required for the clearing of the home and distance signals. Thus the minimum headway depends on the length of the signal system block and the speed at which the train is running.

The accompanying diagram indicates the minimum headway with different lengths of blocks and at various speeds. Continuing, Mr. Arnold says: "The minimum length of block shown in the diagram is 500 ft., which is much shorter than the minimum block now in use upon level track in the subway. Furthermore, a block distance of approximately 500 ft. is necessary for the operation of a 10-car train, as the length of a block must be slightly greater than the length of the train, and it may be desirable at some future time to operate 10-car trains in the present subway, instead of the 8-car express trains which are now run. As the maximum speed



MINIMUM HEADWAYS AT DIFFERENT SPEEDS AND LENGTHS OF BLOCKS

of the subway trains is 40 m.p.h., it will be seen that at this speed the headway varies from 35 seconds with blocks 500 ft. long to 61 seconds with blocks 1000 ft. long. At 40 m.p.h. upon a level track the actual distance required for stopping a train is 620 ft. If to this distance 50 per cent is added for safety, the minimum length of block permissible with the maximum speed of 40 m.p.h. is 930 ft., the diagram shows that with a block 930 ft. long corresponding to a maximum speed of 40 m.p.h., the minimum headway will be 57 seconds. In a similar manner the minimum headway of other speeds upon the chart has been determined, and a line showing this minimum headway at various speeds has been added to the diagram. It will be noted by this additional line that as the maximum speed of the trains increases, the headway or their minimum time interval apart must also be increased. That is, the length of the block as determined by the maximum speed must be increased in a greater ratio than the speed of the train is increased. The braking distance increases as the square of the speed, and it is on account of this law that it is impossible to increase the capacity of the subway by increasing the speed of the trains. The curves show that if the capacity of the subway is to be increased by changing the speed of the trains the maximum speed must be reduced from 40 m.p.h. to 30 m.p.h., and that if the minimum length of a signal system block is 500 ft.—the length of a 10-car train—the critical speed for maximum capacity is 30 m.p.h. If it were not for the frequent station stops the greatest economy in the use of power and the maximum capacity of the subway using 10-car trains would be attained by reducing the present maximum speed, but as soon as stops are introduced in the schedule it is necessary to sacrifice some of the possible capacity of the subway in order to attain a satisfactory average speed. The diagram indicates the extent of this sacrifice."

THROUGH ROUTES IN CHICAGO

The first of the through routes for surface cars from the north to the south sides as provided for in the new franchises of the Chicago City Railway Company and the Chicago Railways Company was to be inaugurated on Tuesday, March 17. The route is designated as No. 22 and is a combination of routes Nos. 2 and 3 as originally proposed. It is as follows:

Beginning at Halsted and Seventy-ninth Streets, east on Seventy-ninth to Vincennes, north on Vincennes to Wentworth, north on Wentworth to Twenty-second, east on Twenty-second to Clark Street, north on Clark Street to Howard Avenue, returning by the same route, except that southbound cars will run west on Archer Avenue from

Clark Street to Wentworth Avenue and then south on Wentworth. The distance from Halsted and Seventy-ninth Streets to Howard Avenue is 20 miles and the schedule time is 2 hours and 15 minutes. Cars of both companies in equal numbers will be run over the route, being stored at night in their own barns. A new form of transfer has been designed for use on this and two other through routes which will be put in operation shortly. A facsimile of one of these transfers is shown herewith. Northbound transfers will be printed on salmon-colored paper and southbound transfers on manila paper. They will be good on all intersecting lines of either company in the general direction indicated except the intersecting lines between Twelfth Street and the Chicago River. They will be good going in the reverse direction to that indicated to the first junction point only. It is expected that 35,000 of these transfers will be used in 24 hours.

ASSOCIATION COMMITTEES

The following committees of the American, Accountants, Claim Agents and Transportation associations have just been announced. The committees of the Engineering Association were published last week:

COMMITTEES OF AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION.

Committee on Membership.—Herbert H. Vreeland (chairman), New York, N. Y.; Charles S. Sergeant, Boston, Mass.; Hon. W. Caryl Ely, Buffalo, N. Y.; F. G. Simmons, Milwaukee, Wis.; E. C. Foster, New Orleans, La.; B. B. Davis, Columbus, O.; C. M. Graves, Spokane, Wash.; F. R. Henry, St. Louis, Mo.; A. W. Warnock, Minneapolis, Minn.; H. J. McGowan, Indianapolis, Ind.; C. L. S. Tingley, Philadelphia, Pa.; W. A. House, Baltimore, Md.; S. W. Mower, London, Ont.; T. K. Glenn, Atlanta, Ga.; A. H. Ford, Birmingham, Ala.; J. H. McGraw, New York, N. Y.; H. M. Wilson, Chicago, Ill.; C. B. Fairchild, Jr., Cleveland, O.; Ernest Gonzenbach, Sheboygan, Wis.; P. P. Crafts, Clinton, Ia.; T. E. Mitten, Chicago, Ill.; A. H. Classen, Oklahoma City, Okla.; J. McMillan, Los Angeles, Cal.

Committee on Subjects.—Thomas E. Mitten (chairman), Chicago, Ill.; John F. Calderwood, Brooklyn, N. Y.; R. I. Todd, Indianapolis, Ind.; F. R. Henry, St. Louis, Mo.; F. G. Simmons, Milwaukee, Wis.; H. R. Goshorn, Philadelphia, Pa.; C. L. Allen, Utica, N. Y.

Committee on Compensation for Carrying Mail.—G. T. Rogers (chairman), Binghamton, N. Y.; Capt. Robt. McCulloch, St. Louis, Mo.; Gen. G. H. Harries, Washington, D. C.; Hon. W. B. McKinley, Champaign, Ill.; P. F. Sullivan, Boston, Mass.

Committee on Insurance.—H. J. Davies (chairman), Cleveland, O.; C. O. Kruger, Philadelphia, Pa.; G. L. Estabrook, Philadelphia, Pa.; A. H. Ford, Birmingham, Ala.; R. B. Sterns, Highwood, Ill.

Committee on Municipal Ownership and Public Relations.—Hon. W. Caryl Ely (chairman), Buffalo, N. Y.; J. B. Parsons, Philadelphia, Pa.; C. W. Wetmore, Milwaukee, Wis.; J. C. Hutchins, Detroit, Mich.; H. M. Thygeson, Minneapolis, Minn.; J. A. Beeler, Denver, Col.; H. M. Sloan, Chicago, Ill.; J. J. Stanley, Cleveland, O.; Russell Robb, Boston, Mass.; Bernard Corrigan, Kansas City, Mo.

Committee on Welfare of Employees.—Edward G. Connette (chairman), Worcester, Mass.; W. A. House, Baltimore, Md.; J. M. Roach, Chicago, Ill.; J. B. Crawford, Ft. Wayne, Ind.; R. R. Smith, Louisville, Ky.

Committee on Federal and State Regulation.—Gen. G. H. Harries (chairman), Washington, D. C.; J. I. Beggs, Milwaukee, Wis.; H. J. McGowan, Indianapolis, Ind.; C. L. Allen, Utica, N. Y.; T. E. Byrnes, New Haven, Conn.

Committee to Confer with Interstate Commerce Commission, on "Depreciation."—Gen. G. H. Harries (chairman), Washington, D. C.; J. I. Beggs, Milwaukee, Wis.; F. R. Ford, New York, N. Y.; A. W. Brady, Anderson, Ind.; C. S. Sergeant, Boston, Mass.

Committee to Confer with Interstate Commerce Commission, on "Classification."—Gen. G. H. Harries (chairman), Washington, D. C.; C. L. Allen, Utica, N. Y.; F. R. Ford, New York, N. Y.; A. W. Brady, Anderson, Ind.; Hon. W. B. McKinley, Champaign, Ill.

AMERICAN STREET & INTERURBAN RAILWAY ACCOUNTANTS' ASSOCIATION.

Committee on Standard Classification of Construction and Equipment Accounts and Form of Report.—W. F. Ham (chairman), Washington, D. C.; H. L. Wilson, Boston, Mass.; F. R. Henry, St. Louis, Mo.; W. G. McDole, Cleveland, O.; C. N. Duffy, Milwaukee, Wis.

Committee on International Standard Form of Report.—H. J. Davies (chairman), Cleveland, O.; W. G. Ross, Montreal, Que.; F. E. Smith, Chicago, Ill.

Committee on Collection of Blanks and Forms.—E. M. White, New York, N. Y.

AMERICAN STREET & INTERURBAN RAILWAY CLAIM AGENTS' ASSOCIATION.

Employment Committee.—B. B. Davis (chairman), Columbus, O.; H. V. Drown, Newark, N. J.; T. B. Donnelly, Connellsville, Pa.

Ways and Means Committee.—William Tichenor (chairman), Indianapolis, Ind.; M. S. Rausch, Milwaukee, Wis.; Louis Lipphardt, Wheeling, W. Va.; H. K. Bennett, Fitchburg, Mass.

AMERICAN STREET & INTERURBAN RAILWAY TRANSPORTATION AND TRAFFIC ASSOCIATION.

Committee on Express and Freight Traffic.—H. H. Polk (chairman), Des Moines, Iowa; W. S. Dimmock, Tacoma, Wash.; A. L. Eastman, Utica, N. Y.; Chas. Paxton, Dayton, O.; J. L. Lathrop, Spokane, Wash.

Committee on Passenger Traffic.—M. C. Brush (chairman), Boston, Mass.; F. W. Coen, Cleveland, O.; E. F. Peck, Schenectady, N. Y.; Franklin Woodman, Haverhill, Mass.

Committee on Rules, City Operation.—D. McDonald (chairman), Montreal, Que.; E. J. Ryon, Schenectady, N. Y.; G. O. Nagel, Wheeling, W. Va.; R. S. Goff, Boston, Mass.

Committee on Interurban Rules.—J. N. Shannahan (chairman), Baltimore, Md.; L. E. Fischer, Danville, Ill.; J. E. Duffy, New York Association; F. D. Carpenter, Central Electric Association; Chas. Currie, Akron, O.

Committee on Training of Employees.—J. W. Brown (chairman), Connellsville, Pa.; E. P. Shaw, Jr., South Framingham, Mass.; W. C. Ludwig, Baltimore, Md.; W. R. W. Griffin, Rochester, N. Y.; C. D. Emmons, Ft. Wayne, Ind.; H. W. Fuller, Washington, D. C.

TESTS ON CLARK JOINT IN CLEVELAND

Mark Stanton, return circuit engineer of the Cleveland Electric Railway Company, has recently completed a test with a Conant bond tester of the electrical conductivity of the Clark joints in use on that line. Altogether 2652 of these joints were subjected to the test, but none was found with a resistance equivalent to 3½ ft. or more of adjacent rail length. The date and place of laying and time of testing are shown in the accompanying table.

CLEVELAND ELECTRIC RAILWAY COMPANY

Line	From	To	Track Laid	Tested	Number Tested
W. 14th St.	Abbey	Clark	Sept. 1906	Dec. 1907	328
Clark Ave.	W. 25th St.	W. 41st St.	May 1906	" "	239
Woodland	Buckeye Rd.	Wood Hill	July 1906	" "	231
Euclid Ave.	Wade Park	Anndale	Aug. 1906	" "	212
Broadway	Humbolt	W. & L. E. R.	Aug. 1906	" "	491
St. Clair	Ansell Rd.	Boulevard	Oct. 1906	Jan. 1908	67
Madison	W. 101st	L. S & M. S.	1906–1907	Feb. 1908	129
Wood Hill	Luna Park	Buckeye	Sept. 1907	Dec. 1907	216
Broadway	Orange	E. 32nd	May 1907	Dec. 1907	287
St. Clair	E. 9th St.	C. & P. R. R.	Aug. 1907	Dec. 1907	452

BIDDING SYSTEM FOR HARTFORD MEN

The Connecticut Company has announced the following plan for filling vacancies on its lines in Hartford:

Bidding-in boards will be posted for bids at least twice a year and oftener if the occasion demands. The next bidding-in will be on May 11. The day men will bid-in at 8 o'clock p. m. on May 11 and the night men at 2 o'clock p. m. on May 12. Runs will be effected Saturday, May 16. It is understood that hereafter new boards will be put up in May and November. If a vacancy occurrs in the case of a man, the run will be offered to the first night man, and the night man who takes the day man's run will have his run filled by the first extra, such assignments being held until the next bidding-in. Regular express cars, freight cars, etc., will not be posted for bids, and men running them will not be allowed to bid-in regular runs. In the event of their equipment not being run on any particular day, they will be assigned to such vacancy for that day as may occur, ahead of extra men, and they will be listed unassigned ahead of the extra men. Men running sprinkling cars will not be assigned to work other than their regular work on such cars, if any extra men are available for the work. Men on sprinkling car work will not be allowed to bid in on the May board. In event of a run or runs being discontinued, the regular men whose runs are discontinued will be given a run which may at that time be filled with a temporary assignment. Motormen and conductors will be rated on the run board according to their time of service on the end which they are working.

FINANCIAL INTELLIGENCE

Wall Street, March 18, 1908.

The Stock and Money Markets

From what has aptly been described as a "creeping bull market" the general share speculation has, during the past week, developed into one of leaps and bounds, and while professional operations have been mainly responsible for the further enhancement in values, there has unquestionably been an accession to the ranks of outside buyers. The public, it is true, have not come into the market in sufficient numbers to constitute an important factor, nevertheless there has been enough orders from that quarter to give considerable encouragement to commission brokers, who were beginning to despair. The week has been remarkably free from developments of an important nature and a good deal of the advance that has taken place has been based upon technical conditions rather than on actual happenings. One phase of the situation that has inspired considerable confidence is the apparently more conciliatory attitude of the Administration at Washington toward stock market interests. Much capital has been made out of a report that President Roosevelt had ordered an investigation of the New York Stock Exchange, but it turns out that what the President is after is the bucket shops and illegitimate stock jobbing enterprises, such as have been so detrimental to Wall Street for years, about which those having the true interests of the financial center at heart would be pleased to do anything and everything looking to their complete elimination.

The indications of further improvement in the iron and steel, as well as copper industries, brought the stocks of such companies prominently to the front in the general rise. However, the strength displayed was by no means confined to the industrials, but the railroads displayed a very conspicuous part in the general improvement, partly in response to advices that there has recently been a material reduction in the number of idle cars throughout the country. Monetary conditions remain about as they have been, and while business generally continues somewhat depressed, there are no indications of any further troubles either of a financial or commercial character. To this extent, at least, the situation has improved, and as the late serious decline in security values no doubt fully discounted all unfavorable events for some time to come, the prospect is that the stock market will continue on the up tack for quite a while, although of course intermediary reactions are to be expected.

The advent of spring-like weather, with all that that means to the local traction companies in the way of increased earnings, has created a still larger demand for the shares of all such corporations, with Brooklyn Rapid Transit the special favorite. The outlook is that all these companies are about to enter upon the most successful season in their history, consequently the present good demand for their securities

Philadelphia

There was a large volume of business transacted in the local traction issues during the past week, and prices displayed considerable irregularity. During the early part of the week pressure was brought to bear upon some of the active issues, and prices declined rather sharply, but later on the market developed strength. The upward movement, however, was of short duration, for profit taking developed near the close, prices ending the week about ¼@⅝ below the highest. Philadelphia Rapid Transit was again the feature of the trading. From 16¼ at the opening the stock was depressed to 15½, after which there was a sharp rise to 17½. Subsequently there was a reaction to 16⅝. Union Traction, after a decline to 48½, advanced to 50 and closed near the highest. Philadelphia Traction sold at 84¾, ex-dividend. Other transactions included Second and Third Streets Passenger at 250, United Companies of New Jersey at 239½@240, Consolidated Traction of New Jersey at 64½, Philadelphia Company perferred at 37½@37 and American Railways at 42¾.

Baltimore

Trading in the Baltimore tractions was confined almost entirely to the United Railway issues, all of which displayed pronounced strength on reports of large earnings. It is said that the receipts of the company are largely in excess of those of last year, and it is expected that the report of the company for the year ended Dec. 31 last, to be given out in the near future, will show an increase in gross earnings of about $450,000. The 4 per cent bonds advanced from 84¼ to 85½, while the income rose from 47 to 49. The refunding 5s sold at 74 and at 75¾ and a small lot of the stock brought 10¾. Baltimore Traction 5s brought 108½ and Memphis Street Railway 5s sold at 85.

Other Traction Securities

The Boston market was quiet, and while irregularity developed at times the general tone was firm. Boston Elevated lost a point to 128. Massachusetts Electric common advanced from 9½ to 10½, while the preferred stock rose from 44 to 48. Boston & Worcester common sold at 13, and the preferred declined a point to 55. West End issues were strong, the common advancing sharply to 86¾ and the preferred to 101. The Chicago market was firm, but without special feature. Metropolitan common sold at 16, South Side Elevated at 60 and Chicago & Oak Park preferred at 7 and City Railway 5s at 95½.

Trading in traction securities on the Cleveland Stock Exchange was rather light through the week, Northern Ohio Traction & Light Company taking the lead at figures ranging from 19½ to 20. The closing price was 19½. A few small lots of Cleveland Electric sold at 45, but the demand for this security was not strong. Calls were made for Western Ohio preferred at 51¼, Aurora, Elgin & Chicago preferred at 70 and the common stock of the latter at 28, while Cincinnati, Dayton & Toledo common was offered at 26. Some business was done on Washington, Baltimore & Annapolis pooling certificates at 10½, with 12 asked on the close.

Security Quotations

The following table shows the present quotations for the leading traction stocks and the active bonds as compared with two weeks ago:

	March 10.	March 18.
American Railways	41¼	
Boston Elevated		
Brooklyn Rapid Transit		5¾
Chicago City		155
Cleveland Electric		42
Consolidated Traction of New Jersey		64
Detroit United	30	31
Interborough-Metropolitan	7	7½
Interborough-Metropolitan (preferred)	18	19½
International Traction (common)	33	33
International Traction (preferred) 4s	60¾	61
Manhattan Railway	125	*125
Massachusetts Elec. Co. (common)		10½
Massachusetts Elec. Co. (preferred)		47½
Metropolitan Elevated, Chicago (common)	14	a19
Metropolitan Elevated, Chicago (preferred)	44	a49
Metropolitan Street	17	15
North American	45¾	50
Philadelphia Company (common)	34½	36
Philadelphia Rapid Transit	15⅝	17¼
Philadelphia Traction	—	85
Public Service Corporation, certificates	58	58
Public Service Corporation, 5 per cent notes	—	—
South Side Elevated (Chicago)	60	60
Twin City, Minneapolis (common)	—	—
Union Traction (Philadelphia)	48	49¾

a Asked. * Ex-dividend.

Metals

There have been no important developments in the iron and steel trade. While in some branches business is holding its own, there has been some disappointment in other lines. The general opinion, however, seems to be that the entire situation is slowly bettering and that in the course of several weeks the improvement will be quite marked when compared with present conditions. The railroad companies are loath to enter the market for their various requirements, and still feel the recent

money pinch and the continued falling off in earnings. In the West generally business sentiment appears to be much more bouyant than in the East, and it is stated that in some of the large cities more contracts for big buildings have been placed than there were this time a year ago. The copper metal market continues to improve, and prices are quotably higher than those prevailing a week ago. Lake is quoted at 12¾@13c., electrolytic at 12⅝@12⅞c. and castings at 12½@12¾c.

TAXATION AND PUBLIC SERVICE IN BALTIMORE

The latest weekly bulletin of the United Railways & Electric Company takes up the subject of taxation. The company shows in detail the different methods in which it is assessed in taxes by the city and State and how much it has to pay in charges in the nature of taxes, such as for repairing the streets between the tracks and on each side, although, as the bulletin points out, this provision is a relic of horse-car days, when the company's horses injured the street bed. The bulletin gives quotations from several articles written by Government and other experts on the subject of taxation showing that Baltimore gets a much larger proportionate return from the street railways than many other cities in the United States. The company distinctly states that it does not wish to be understood as complaining about present conditions or asking any reductions, but simply desires to be let alone. The article points out the great value to the city of the car service and the evils which would flow from restricting its ability to carry out its improvements and meet the problems it has to contend with. The article also shows how easy it is to overlook the individual in the aggregate when dealing with a corporation, especially a public-service corporation; that, although the charge is upon the corporation, it is the stockholder who ultimately pays the price by not receiving dividends or the public which suffers because money intended for improvements is diverted to taxes. The conclusion is that the very minute decrease in the tax rate which would result from a heavier assessment of the street railway company would be much more than counterbalanced by the impairment of the company's power effectually to carry out its necessary plans and by limiting its ability to grapple with the problems of operation with which it has to contend.

ARRANGEMENTS COMPLETED FOR FINANCING OHIO ROAD

J. J. [illegible]sident of the Cleveland, Brooklyn & Elyria Railw[illegible]pan[illegible], Cleveland, has announced that arrangements have [illegible]en completed for financing the company and that the construction of the portion between South Brooklyn and Orrville will be done this year. Next year the line will be extended to Zanesville, with a branch from Strongsville to Elyria. Right of way has been secured between Cleveland and Zanesville. For 4 miles out of South Brooklyn the road will f[illegible]w the Wooster pike, the franchise having been formally accep[illegible] few days ago, but for the remainder of the distance it will be [illegible] own right of way and a fast service has been planned. [illegible] leaving the Wooster pike at Parma the route lies through [illegible]rth Royalton, Richfield, Bath, Copley, Loyal Oak, Barberton, Johnstown, Hametown, Easton, Doylestown, Marshallville, Orrville, Maysville, Mount Hope, Benton, Millersburg, Beck's Mills, Mound, Bloomfield, Keene, East Lewisville, Coshocton, Willis Creek, Adam's Mills, Marquand, Ferncliff, Adamsville and Sonora to Zanesville. A spur is to be built from Doylestown to Rittman.

The Schoepf lines reach Zanesville, and at this point the new company expects to make connections that will give a through service with Columbus, Dayton, Cincinnati and Western points reached by the Schoepf lines and connections.

It is expected that the Westinghouse single-phase alternating-current system will be used, while the road will be laid with 85-lb. steel rails. The maximum grade will not exceed 3 per cent and railroads will not be crossed at grade.

According to the plans, the Cleveland, Brooklyn & Elyria will be absorbed by a new company to be known as the Cleveland, Orrville, Coshocton, Zanesville & Elyria Railway Company, which will have a capital stock of $4,800,000, and a 30-year 5 per cent bond issue of the same amount. The officers of this company are as follows: President, W. E. Brooks, Elyria; vice-president, J. J. Breitinger, Cleveland; secretary, J. H. Knisely, Jr.; treasurer, B. E. Ottman, Cleveland.

OHIO INTERCHANGE BILL

Representative Wertz, author of the railroad commission law, has introduced a bill in the Ohio Legislature to compel the interchange of passenger and freight traffic between steam and electric roads when the equipment of the interurban roads will permit of such interchange. To some extent the passage of this bill would be a benefit to the electric railways, as they have in many cases insisted upon such an interchange of business where they had no other electric railway to co-operate with them. In a number of cases in the Central West the steam roads have objected to such an arrangement. Another bill introduced by Representative Tinker provides that electric railways be placed under the control of the State Railroad Commission and that they be subjected to the same rules as the steam roads.

OPEN LETTER ON INTERSTATE COMMERCE CLASSIFICATION

Gen. Geo. H. Harries and W. F. Ham, chairmen respectively of the committees on Interstate Commerce Commission Classification of the American and Accountants' associations, have sent a letter on this subject to the presidents of all of the electric railway companies of the United States urging the importance of the matter. The letter says:

"In view of the possibility that a large number of the street and interurban railway companies have not realized the great importance of the tentative classification of accounts set forth in Circular No. 20, recently distributed by the Interstate Commerce Commission, the Special Committees of this Association and of the Accountants' Association urge your active interest in this matter at this time.

"It should be clearly understood that the proposed classification will, when it becomes effective, govern the accounts of practically every electric railway in the country; directly where the roads do interstate business and indirectly where State Commissions follow the orders, ruling and methods of the Federal Commission—a condition which the Federal Commission expects soon to be. It is therefore imperative that all companies furnish the Interstate Commerce Commission (and this Association, in duplicate), with all of criticism or opinion as to the tentative classification.

"Conceding the difficulty of anything like complete dissection or discussion of the classification within the time limit, it is undoubtedly practicable for you to select and comment upon those features of the scheme of which you approve or disapprove. Should there be primary accounts which you deem unnecessary, or should the grouping be out of accord with practice which experience has shown to be valuable or essential, it is most desirable that the facts be now presented, to the end that the expressed desires of the Federal and State authorities harmonize, as nearly as may be, with the business needs of the electric carriers.

"In this work, whether it be much or little, and regardless of the size of your company, the Committees beg your earnest and prompt co-operation; without which nothing good can be accomplished. The information requested should be furnished promptly; the date set by the Interstate Commerce Commission being March 28. If you find it impossible or impracticable to digest the circular by that day we shall appreciate notification to that effect, together with a statement as to the probable date when your answers will be forwarded.

"It is suggested, in order to develop the practicability and application of the proposed classification to the electric railway industry, that each company subdivide its 1907 operating expenses among the proposed accounts, in as approximate an estimate as time and convenience will permit.

"Several companies represented upon your Committees have already made such approximate estimates in a short time, and the results appear to be of great practical value.

"To this end there is enclosed, in triplicate, Data Sheet No. 26, for this operating expense classification which also contains the form for answer of questions of the Commission. Please fill out and send one copy to Prof. Henry C. Adams, in Charge of Statistics and Accounts, Interstate Commerce Commission, Washington, D. C., and one copy to Mr. B. V. Swenson, Secretary of the American Street and Interurban Railway Association, No. 29 West Thirty-ninth Street, New York, N. Y."

The letter is accompanied by a copy of the list of accounts in the proposed classification, both for the amplified and the condensed form, and the questions asked by the Commission.

AFFAIRS IN NEW YORK

Rapid transit law amendments to provide quickly for additional subways in New York City which meet the approval of the New York City Public Service Commission were introduced at Albany, March 16, by Senator Travis and Assemblyman Beverly R. Robinson. The declared purpose of each of these bills is to carry out the recommendations made by the Public Service Commission for the first district in its annual report to the Legislature as to amendments it believed necessary in order to make subway building possible. It is understood that so many appeals were made to the Governor urging changes in the rapid transit law that he suggested that in view of the fact that all the organizations were working in the same direction they get together and unite on a bill satisfactory to all and yet likely to give the commission the additional powers it believed necessary. The new bill introduced contains features of both bills introduced earlier, but with some amendments which it was felt were not adequately covered.

The Public Service Commission held a public hearing Monday, March 16, on the application of the Interborough Rapid Transit Company for permission to issue $55,000,000 forty-five year mortgage bonds. The purpose of the issue is to retire gold notes issued by the company and for other indebtedness incurred by the company, including that for the construction of the Brooklyn subway. It was explained by E. F. J. Gaynor, the auditor of the company, that in order to get the contract for the Brooklyn extension the company had put in a low bid and that it had cost the company $10,066,205 more to build the tunnel than the city had paid. Counsel for the commission reminded the board that the new law provided that the permission asked for could not be granted without the consent of a majority of the stockholders and that these consents had not been furnished. George W. Wickersham, counsel for the Interborough, replied that there would be a meeting of the stockholders on March 26 at which the formal consents would be obtained, but in order not to delay matters he was able to file with the board the proxy of 96 per cent of the stock of the company. This he thought ought to be accepted as sufficient warranty. In order to determine the legality of this course the hearing was adjourned for a week with a view of making a recommendation to the commission at the next meeting.

The construction of the Broadway-Lexington Avenue subway has been unanimously approved by the Board of Estimate. As soon as the money can be secured the Public Service Commission may advertise for bids for construction. It has been estimated that the construction will cost about $60,000,000. The Board of Estimate has also approved construction of the Canal Street crosstown subway, which will run from the Manhattan Bridge to the Hudson River.

The receivers of the New York City Railway Company announce that 155 pay-as-you-enter cars will be placed in operation on the Fourth and Madison Avenue line the latter part of this month. The employees are now being regularly drilled in the operation of the cars and the formal instructions to the public as to their use will be issued within a few days, it is expected. Among the instructions to the public will be the following:

Go in at the rear; go out at either end, but preferably at the front.

Have the exact change ready when you step on the platform and hand it to the conductor when you go in.

If you do not have the exact fare, step to one side in the compartment, allowing the conductor to make change after others have passed in.

Pass quickly inside the car after paying your fare.

Get your transfer when you pay your fare, as the conductor does not go inside the car. His post is always on the rear platform.

To stop the car press once on the electric buttons between the windows.

If a car passes you while you are waiting on the street corner, don't scold. You may know the car is filled and another one will be seen very close behind.

Don't insist on boarding the car after the conductor tells you that no more passengers will be admitted. The conductor will place his arm across the entrance when no more passengers are to be taken.

When you step on the platform pass to the left of the iron pole, pay your fare and go inside. The words "Entrance" and "Exit" are printed above and below the compartments on the outside.

Another advantage claimed for the new cars is that of preventing women from getting off backward. This is done by placing the "grab handles" on the front side of the doors only. By means of this arrangement women will be obliged to face in the direction the car is going when they step down.

Each car at night will display a colored signal light indicating its destination.

Judge Ward in the United States Circuit Court has appointed Edward G. Benedict receiver of the Westchester Traction Company, which formerly operated an electric railway at Ossining, in a suit brought against that corporation by the Industrial Contracting Company of Delaware.

Another decision against the legality of the third, or express, track on the elevated road structure has just been handed down by Justice Davis of the Supreme Court, in the suit for damages which James Roosevelt Roosevelt and others, acting as trustees, began against the Manhattan Elevated Railroad Company nearly six years ago. This decision carries with it an award of $30,000 damages for the plaintiffs, and orders future rental damages of $1,800 a year. The action, which was begun on Aug. 21, 1902, was brought to restrain the defendant from operating and maintaining an elevated railroad in front of the plaintiff's premises, Nos. 29, 31, 33, and 35 Ninth Avenue, and to recover damages alleged to have been suffered by the plaintiffs by the trespassing upon and the appropriating of the easement appurtenant to the plaintiff's premises on Ninth Avenue, in the construction, maintaining, and operating of a three-track elevated railroad by defendant.

THE MASSACHUSETTS RAILROAD COMMISSION ON INCREASED FARE

It is practically settled that the Massachusetts Railroad Commission will decide against most of the communities that have recently brought protests against various increases of fares on Massachusetts street railways. The first case to be decided will be that of the Blue Hill Street Railway, the first company to increase to 6 cents. This company made out the clearest kind of a case, showing steady increase of deficit under the 5-cent condition and also making plain that any inauguration of reduced fares at stated periods for workingmen would cut off the revenue at practically the only time of day when the business was profitable. The commission cannot do less than allow this company to continue its 6-cent fares, at least for an experimental period long enough to determine the relative effect on the line's business. What will be the result in other cases is not yet so plain, but it can be stated that the commission appreciates the serious condition with which the companies outside of Boston are confronted, and that the tendency will be to allow the new rates to go on unchecked for the present, care being taken to see that inequalities in the application of the higher charges are so far as possible corrected immediately on becoming apparent. An example of this last phase is the Lexington & Boston, where fares remain at the 6-cent basis, but the company has been influenced to accept a single fare (by ticket) from town-center to town-center in place of exacting two units for such a ride and restricting the single fare to the limits of a single town.

OHIO ROAD IN RECEIVER'S HANDS

On the application of the Worcester Trust Company, of Worcester, Mass., C. J. Ferneding has been appointed receiver of the Dayton & Xenia Transit Company, of Dayton, by Judge Thompson, of the Federal Court at Cincinnati. The trust company alleges that interest on $300,000 second-mortgage bonds for October, 1906, and October, 1907, was defaulted and that the company owes other debts. The bond issue in question was made on Nov. 16, 1903, the bonds to run seventeen years. The interest was to be 1 per cent the first year and to increase at the rate of 1 per cent each year until it reached 5 per cent, which was to be the rate thereafter. The second mortgage was given March 12, 1904, to the Worcester Trust Company to secure this issue. It covers all the property of the company. A provision in the mortgage is to the effect that if the company default in the payment of interest for sixty days the whole amount becomes due and foreclosure proceedings may be instituted. The trust company alleges that interest amounting to $9,000 for 1906 and $12,000 for 1907 is due. In addition it is said that interest for the same periods on $500,000 first-mortgage bonds has not been paid. The mortgage is held by the Old Colony Trust Company, of Boston, and was given in April, 1901, with twenty years to run. The plaintiff asks that both mortgages be foreclosed and that the property be sold to satisfy the debts. The company operate 49.12 miles of road, connecting Dayton, Bellbrook, Harbines, Trebeine and Xenia.

THE CLEVELAND SITUATION

Action was taken last week by those interested in the street railway matter at Cleveland toward the formation of an organization to operate the local system after agreements have been reached between Mr. Goff and Mayor Johnson. Mr. Goff and Mayor Johnson act as a committee on organization and City Solicitor Baker, Mayor Johnson and Secretary Davies, of the Cleveland Electric, compose a committee on the security grants. Attorneys D. C. Westenhaver and H. J. Crawford were named as a committee on lease. Three plans of organization were considered. One is to have the Cleveland Electric and the Forest City consolidate and form a new company; another to have the Forest City take over the Cleveland Electric and the third to have the Cleveland Electric acquire the Forest City Company. Should the Cleveland Electric take over the new company the capital stock would perhaps be reduced to the value agreed upon and then increased to a larger sum, the surplus being used to retire bonds and floating debts and for the extension of the property. The Mayor and Mr. Goff are still something like $40 apart on the value of the stock of the Cleveland Electric, but this does not seem to have deterred those interested from discussing probable terms of operation.

At a later meeting Mayor Johnson agreed to the proposition of Mr. Goff that the Cleveland Electric retain its name in case an agreement is reached. This will necessitate action as outlined above on the leasing proposition, although it does not provide for handling the Forest City properties. At the same meeting terms of the proposed lease were discussed to some extent, but nothing definite was decided upon. Mr. Goff suggested that in the future organization matters be discussed by the committees appointed for that purpose in private and that the Mayor report the progress made at each subsequent public meeting at the city clerk's office. Mayor Johnson agreed to this with the provision that members of the City Council be present at these meetings. Some further discussion of the rate of growth on the various lines took place between Professor Bemis and Secretary Davies, but as full data had not yet been supplied little could be done. Professor Bemis said the loss on lines in competition with the new lines was 13.79 per cent during the past three months while other lines showed only 6.52 per cent, and attributed the loss as due to a large extent to business taken by the new roads from the old company. Secretary Davies said that some lines not subject to competition showed a greater loss than mentioned by Professor Bemis and mentioned the Union Street line, where the decrease has been 15.5 per cent.

The difference between the figures of E. W. Bemis and Secretary Davies on the increase in earnings for the next three and one-half years, the average agreed upon, is almost $1,000,000. Under the Mayor's offer of compromise this difference would still be about half that sum. According to Mr. Bemis 8 per cent annual growth compounded for three and a half years would mean an increase of $450,000. This is the rate which Mr. Davies claims should be used. On the other hand, Mr. Bemis says there has been a reduction in earnings of the Cleveland Electric of $500,000 and seeks to justify his figures by means of the competition to certain lines of the Cleveland Electric on which for the purpose of the investigation franchises were admitted to have expired. F. H. Goff, representing the Cleveland Electric, asserts that if the average life of the franchises, taken at three and a half years, works out this way he will insist upon giving separate valuations based upon the length of time the franchises run. Professor Bemis will then probably figure on the competition that the low-fare lines will furnish and the result will be little better than already reached. With a difference of $2,000,000 on overhead charges, there is now a total difference of $2,500,000 between Mayor Johnson and Mr. Goff on these two items alone.

Work has begun on the loop around the northwest corner of the public square. This square is divided into quarters by streets passing through it and the new track will relieve the congestion to some extent. When this is completed all four quarters of the park will have loops about them. The addition to the number of cars operated by the new companies subjects the lines to blockades and congestion more than ever and the Mayor is hurrying matters to help the company in this respect.

At the meeting between Mayor Johnson and Mr. Goff, Monday afternoon, discussion of the annual increase in traffic was taken up. Mr. Goff asserted that it is not fair to consider Willson Avenue, Broadway and Euclid in connection with the west side lines, which the Mayor and Professor Bemis claim are losing business through the competition of the low fare companies. On being asked by the Mayor if he had reached a figure representing the increase, Mr. Goff replied that 6 per cent would be proper under his way of looking at it. He said that he was willing to consider and had considered competition as it existed March 1, though that is two months later than the date on which the other figures were based. He said that if they were to look forward to competition they ought to have the real thing. With seven tickets for a quarter, 64 per cent operating expenses and 6 per cent interest, hundreds of thousands of dollars would be lost for several years and that rate of fare is not nearly so destructive as the three-cent fare, upon which the Mayor has been insisting. Mr. Goff gave figures to show that the Cleveland Electric made an increase in business in 1893, notwithstanding the panic and the competition from lines owned by Mr. Johnson and others at that time.

MEASURES IN THE OHIO LEGISLATURE

What is known as the Huffman bill was passed by the Ohio Senate a few days ago. It is intended to compel interurban railway companies to equip their passenger cars with toilet rooms and provides a fixed fine per day for cars operated in violation of the law. Another bill of interest to electric railway companies, passed by the Senate, is that of Senator Lamb which provides a means for both steam and electric railway companies to force crossings over existing tracks in municipalities by bringing action in the courts. Condemnation proceedings may be brought to accomplish this result.

It is said that the public utilities bill, by Representative Shuler, with many of the objectionable features omitted, may be recommended for passage to the house. The bill will not provide for a public utilities commission, but will extend the jurisdiction of the State Railroad Commission over all public utility corporations. The franchise law will not be changed by the passage of this bill, but that of Mr. Wertz will require a referendum vote on all franchises granted.

An attempt was made last week to force some of the franchise measures which are favored by Mayor Johnson through the Senate by holding up the general appropriation bill. The plan, however, did not meet with the approval of the majority of the committee and Senator Howe and others interested in it were forced to yield their point.

PEORIA ELECTROLYSIS SUIT AGAIN IN COURT

The suit in equity of the Peoria (Ill.) Water Company, controlled by the United Waters Company, of Boston, against the Peoria Railway Company involving damages to the plaintiffs' water pipes by electrolytic action of stray return current from the defendants' lines, which was begun about ten years ago, had another hearing before Special Master Frank L. Wean in Chicago last week. The suit is perhaps the most important one of its kind ever brought before the courts. Ten years ago a special master of the United States Circuit Court, sitting on the evidence presented, made a report in favor of the plaintiffs. No action was taken by the court on the master's report, and last October the Peoria Water Company again applied for argument on the case. The defendants agreed to another hearing before a special master, at which new evidence could be submitted, and their case was presented last week. On the conclusion of the hearing of the defendants' evidence the case was adjourned until April 7, when the plaintiffs will present their side of the case. No final decision of the court is expected before the next fall term. If the report of the master is favorable to the plaintiffs and the court approves the finding an injunction will issue against the defendants, enjoining them from using the single trolley, which will be the same in effect as the issuance of a writ of mandamus compelling the defendants to use the double trolley.

The case is important because it is the first which has been brought in the United States Circuit Court and because the United Waters Company, of Boston, which is back of the plaintiffs, owns a large number of water plants throughout the United States. The plaintiffs were represented at the hearing by D. C. Mauray, chief engineer of the Peoria Water Company, who is recognized as an authority on the effects of electrolysis. The defendants were represented by Judge I. C. Pinckney, attorney on record, and Edward E. Winters, consulting engineer of New York, who presented the technical arguments and evidence.

BOSTON & EASTERN HEARING IN APRIL

To settle the standing before it of the Boston & Eastern Electric Railroad Company the Massachusetts Railroad Commission will accord the company a public hearing on April 16. The question now unsettled with regard to this company grows out of the fact that in amending its plans to provide a direct entrance to the city of Boston, as suggested by the commission in its original interurban decision, the company left out of its route the city of Everett. As this was one of the municipalities named in the agreement of association, and the law says that the agreement shall contain the name of each county, city and town in which the line is to be located, the question was raised whether in thus failing to project the line through a city named in the agreement the company was not outside the law.

Now, however, the company has had its agreement of association redrafted and readvertised, and it has petitioned the board for a hearing. It holds that its proceedings are now on the basis of an amendment to the original plans. Whether the board will decide that it should, instead, institute proceedings over again from the beginning on account of the question regarding the agreement of association is one of the things which the coming hearing will determine. Meanwhile, the Boston & Providence Interurban Electric Railroad Company has sought new legislation to correct the very difficulty now encountered by the Boston & Eastern.

The Providence company has a petition pending for a location through Hyde Park and has just applied to the city authorities of Boston for a location in that city connecting with the Boston Elevated Railway just outside the Forest Hills Square, to which point the "L" will open an extension within the ensuing year. The hearing is set for March 30.

ACCIDENTS IN NEW YORK CITY

At the regular meeting of the Public Service Commission of the First District of New York, which includes the Boroughs of Greater New York, the report of accidents occurring during the month of February was submitted by the secretary. A noticeable feature was the falling off in the number of killed. Comparative figures for the first quarter of this year are:

	December.	January.	February.
Car collisions	216	170	203
Persons and vehicles struck by cars	947	934	945
Boarding	438	479	412
Alighting	435	416	286
Contact with electricity	22	34	36
Other accidents	1,935	1,888	2,069
Total	3,993	3,921	3,951
INJURIES.			
Passengers	1,113	1,444	1,219
Persons not passengers	461	570	462
Employees	363	486	476
Total	1,937	2,500	2,157
SERIOUS INJURIES INCLUDED IN ABOVE.			
Killed	51	44	26
Fractured skulls	14	15	15
Amputated limbs	5	6	5
Broken limbs	36	32	24
Other serious	94	91	61
Total	200	188	131

RAILWAY PAPERS AT THE MARSEILLES EXPOSITION

The management of the International Congress of the Applications of Electricity, to be held in Marseilles, Sept. 14-21, in connection with the Exposition in that city this year, has issued its program. There will be eight sections, as follows:

I. Regulation.
II. Construction and Protection of Electrical Systems.
III. Technical and Commercial Operation.
IV. Lighting and Domestic Applications.
V. Application to Industry, Mines, Traction and Agriculture.
VI. Electrochemistry and Electrometallurgy.
VII. Telegraphy and Telephony.
VIII. Teaching and Measures.
IX. Applications to Hygiene and Medicine.

Section V calls for five reports on electric traction, as follows: "Report on the comparison of the different systems of electric traction," "Report on the applications of electric traction to railroads." "Report on operating results of the different metropolitan railroad systems." "Report on the testing of electric traction material." "Report on signal and switching systems for railroads."

The Congress will have as honorary presidents Messrs. Mascart, member of the Institute, and president of the permanent committee of electricity; D'Arsonval, member of the Institute and professor at the Collège de France; Marcel Deprez, member of the Institute, and Hippolyte Fontaine, electrical engineer. The acting president of the Congress will be Maurice Levy, member of the Institute, inspector-general of bridges and ways, professor at the Collège de France and the Ecole Centrale, and vice-president of the permanent committee of electricity. The vice-president will be Paul Janet, professor at the Paris University and director of the Central Laboratory and the Ecole Supérieure d'Electricité.

Manuscripts may be sent to the general secretary of the Exposition, 63 Boulevard Haussmann, Paris, before July 15. The admission fee to the Congress will be 20 francs. The New York office of the Exposition is in the Park Row Building.

TRACTION AFFAIRS DISCUSSED BY THE CITY CLUB OF NEW YORK

A meeting of the City Club, of New York, was held Monday evening, March 16, to discuss traction affairs. The principal speaker was William M. Ivins, special counsel for the Public Service Commission of the First District. He outlined the capitalization of the New York City Railway Company, the Metropolitan Street Railway Company, and the Third Avenue Railway Company, and referred to the tremendous depreciation in all of the securities of these companies. He adopted a pessimistic tone in referring to the future, and stated that dividends on Metropolitan Street Railway stock had been continued only by economizing on the maintenance account. During the last five years the limit of revenue capacity had been reached, although transfer traffic and the operating expenses were steadily increasing. The replacement cost of the New York City system was estimated by him as follows:

Two hundred and fifty miles of conduit trolley road; 103 miles of overhead trolley, granite paved; 103 miles of overhead trolley, macadamized; 86 miles of horse road	$44,066,479
Power house machinery	1,662,500
Generating machinery, 66,500 kw	6,350,750
Substation buildings	1,330,000
Substation machinery, 133,000 kw	6,683,000
Rolling stock	15,000,000
Car barns and shops	13,000,000
Land	15,000,000
Horses, tools and incidentals	3,500,000
Total	$106,592,729

On this basis Mr. Ivins presented an analysis of the 1907 earnings, showing that with the allowance for taxes made by the company, and providing for depreciation, and possible increase in wages, but omitting from consideration the special franchise tax, the annual statement would be about as follows:

Gross income from all sources:		
Gross earnings		$21,355,012.87
Income from other sources		564,679.36
Total gross income		$21,919,692.23
Operating expenses:		
Transportation:		
Wages	$5,507,843.66	
Accidents	1,950,028.09	
Other items	1,995,785.14	
Total transporation expenses	$9,453,656.89	
Maintenance and reproduction	2,948,504.11	
General and other expenses	770,410.03	
		$13,172,571.03
Surplus available for additional maintenance, increase in wages, reserve for renewals and depreciation, taxes, interest and dividends		$8,747,121.20
Deduct:		
Additional amount required for adequate annual current maintenance, say 2½ per cent of gross income	$546,992.30	
Increase of wages, say 10 per cent	550,784.37	
		$1,097,776.67
Reducing surplus for reserve for depreciation and renewals, taxes, interest and dividends to		$7,649,344.53
Deduct reserve for deprec'n, as by the receivers' figures		3,000,000.00
Leaving as final fund for taxes, interest and dividends		4,649,344.53
Deduct taxes:		
Taxes, exclusive of special franchise tax		1,043,601.41

Leaving for interest and dividends, $3,605,743.12 on $106,500,000, or only 3.4 per cent interest on the actual reproduction value, and leaving a loss to the city of over $900,000 of special franchise taxes, for which no provision is made, and no possibility of any dividends on any stock.

Mr. Ivins stated that it would cost $25,000,000 to put the surface system in Manhattan and the Bronx in good physical condition, but frankly admitted he did not know where the money was to come from.

The conclusion derived from Mr. Ivins' discussion of the subject was that neither the city nor any private company could operate the system under the restrictions and limitations now imposed by law without a large annual loss.

MEETING OF THE CENTRAL ELECTRIC RAILWAY ASSOCIATION

The next regular meeting of the Central Electric Railway Association will be held at the Claypool Hotel, Indianapolis, on Thursday, March 26. This is the first regular meeting of the year and a large attendance is desired. The Central Electric Traffic Committee will make its report, and it is hoped that some definite action be taken relative to a permanent organization. Through the courtesy of A. A. Anderson, general manager of the Indianapolis & Louisville Traction Company, all members are invited to make a trip over that 1200-volt traction line. A special car will leave Indianapolis immediately after the adjournment of the meeting. The night will be passed at some convenient point and the journey will be resumed on the following morning. It is hoped that a large number of the members of the association will avail themselves of this opportunity. The program of the meeting follows:

10:30 a. m. Call to order.

11:00 a. m. "Standardization of Trolley Wheel, Harp and Pole," paper by Adam Cole, of the Vaile & Kimes Co., Dayton, Ohio.

12:30 p. m. Adjourn for lunch.

AFTERNOON SESSION.

2:00 p. m. "1200-Volt D. C. System of the Indianapolis & Louisville Traction Company," paper by H. D. Murdock, M. M. and E. E., Seymour, Ind.

3:00 p. m. "Electric Motor and Trailer Trucks," paper by A. C. Vauclain, of the Baldwin Locomotive Works, Philadelphia, Pa.

ARRANGEMENTS MADE FOR MAY MEETING OF SOUTHWESTERN ASSOCIATION

At the meeting of the executive committee of the Southwestern Electrical & Gas Association, on March 4, arrangements were made for the convention of the Association to be held at El Paso, Tex., May 7, 8 and 9.

The president stated that he had appointed Sam Hobson, Milton Mill, and C. E. Brown, all of St. Louis, a committee of three, with Mr. Hobson as chairman, to represent the association in St. Louis, in making all necessary arrangements for bringing the delegates to El Paso from St. Louis, and other Eastern points; and in addition thereto interest the supply houses of St. Louis in making exhibits.

The St. Regis Hotel in El Paso has been selected as the headquarters of the Association. The rates are as follows: For rooms without bath, $1.50 per day; for rooms with bath, $2 to $3 per day. (On the European plan.) The hotel has offered, free of charge, ample facilities to the supply men for exhibition purposes, and arrangements have also been made with the El Paso Electric Railway Company to furnish either single phase, or two phase, 104 or 208 volt current or 500 volt d.c. current at 5 cents per kw. hour.

The committee on programs and papers reported that they had made arrangements for the presentation of the following papers: "Wood Preserving," by Prof. E. P. Schoch, University of Texas; "Track Construction," by Mark Lowd, Dallas, Texas; "Gas Engines and Producers," by W. B. Tuttle, San Antonio, Texas; "Various Forms of Electric Illumination, and their Efficiency," by C. W. Kellog, Jr., El Paso, Texas; "Gas Meters," by A. J. Myler, Jr., Dallas, Texas.

It was decided that the question, "What Policy Should be Pursued by Public Service Corporations in Making Extensions?" should be discussed at the next convention, and the following persons were requested to take part in the discussion:

For the electric light companies—Edward T. Moore, Dallas, Texas; John A. Porter, Paris, Texas.

For the gas companies—J. A. Myler, Jr., Dallas, Texas; C. H. Dunbar, Houston, Texas.

For the street railway companies—H. S. Cooper, Galveston, Texas; Frank E. Scoville, Laredo, Texas.

For the telephone companies—J. E. Farnsworth, Dallas, Texas.

The committee will announce later the details of the different sessions and the entertainment program.

The executive committee has approved the applications of the following for membership:

ACTIVE.

Temple Electric Light Company, E. S. Fletcher, Manager, Temple, Texas; Amarillo Water, Light & Power Company, Frank A. White, Manager, Amarillo, Texas; El Paso Gas & Electric Company, T. J. Jones, Manager, El Paso, Texas; Palestine Light, Heat & Power Company, A. T. Knies, General Manager, Palestine, Texas; Citizens Railway & Light Company, A. J. Duncan, Jr., Manager, Fort Worth, Texas; Merkel Light & Power Company, Jno. C. Hamm, President, Markel, Texas; Union Central Ice & Light Company, W. A. Bass, President, Hubbard City, Texas.

ASSOCIATE.

Waco Electric Supply Company, J. J. Owen, Manager, Waco, Texas; Stone & Webster Engineering Corporation, Walter Goodenough, S. W. Manager.

NEW ENGLAND STREET RAILWAY CLUB MEETING

The nominating committee of the New England Street Railway Club, appointed by President Page to present a list of officers to be voted for at the annual meeting, Thursday, March 26, has made the following recommendations:

President, Matthew C. Brush, Newtonville, Mass.; vice-presidents, Rhode Island, W. D. Wright, Providence, R. I.; Massachusetts, C. H. Hile, Boston, Mass.; Connecticut, Charles E. Hubbard, Hartford, Conn.; New Hampshire, J. Brodie Smith, Manchester, N. H.; Vermont, E. H. Foote, St. Albans, Vt.; Maine, E. A. Newman, Portland, Me.; secretary, John J. Lane, Boston, Mass.; treasurer, N. L. Wood, Boston, Mass.; executive committee, Henry C. Page, Springfield, Mass.; M. H. Bronsdon, Providence, R. I.; A. H. Warren, Plymouth, Mass.; Geo. W. Palmer, Jr., Boston, Mass.; Franklin Woodman, Haverhill, Mass.; Geo. W. Knowlton, Boston, Mass.; H. R. Luther, Cambridgeport, Mass.; finance committee, Matthew C. Brush, Newtonville, Mass.; John F. McCabe, Boston, Mass.; E. P. Shaw, Jr., South Framingham, Mass.

The annual business meeting, as before mentioned in the STREET RAILWAY JOURNAL, will be held at 3 o'clock in the afternoon of March 26, at Hotel Somerset, Boston. The annual banquet will be held in the evening at Hotel Somerset. The reception will be at 6 and the banquet at 6.30 o'clock. This is a half hour earlier than on former occasions, and will give more time for the after-dinner speeches.

Tickets to the banquet are $2.50, and may be purchased by members for their guests, this privilege being allowed until the committee considers that it is being done to such an extent as to exclude members.

NOTES FROM MEXICO

The Torreon Electric Railway Company is preparing to build an electric railway between Torreon and Lerdo, to be 5 miles long as compared with the existing line of 7.5 miles, which runs between the two places, via Gomez Palacio.

A street railway is to be built in Ciudad Porfirio Diaz, state of Coahuila, by Dr. Lorenzo Cantu and associates, who have obtained a concession from the state government for the proposed railway.

Luis H. R. Von Ruecau, of Torron, who is said to represent a syndicate of American capitalists, has obtained a concession from the federal government to build and operate an electric railway between the old mining district of Cuale, state of Jalisco, to the port of Las Penas on the Pacific. The proposed line will be about fifty miles long.

Enrique Creel, Mexican ambassador to the United States and governor of the state of Chihuahua, is at the head of a new corporation, called Compañia Electrica y de Ferrocariles de Chihuahua, which has just been formed with a capital stock of $2,200,000 to take over the holdings of the Compañia de Tranvias de Chihuahua, the Ferrocarril Mineral de Chihuahua, and the Planta de Electrica de la Compañia Industrial, which have been merged into the new company and will be extended and improved. The improvements include the electrification of the Mineral Railroad which runs between Chihuahua and the mining camp of Santa Eulalia, a distance of fifteen miles, the building of several miles of new lines and also the electrification of the present system in Chihuahua. The latter system will be practically rebuilt. A large electric power plant will also be erected.

The Compañia Electrica de Aguascalientes will make important extensions to its electric street railway system in Aguascalientes. It is now erecting a power plant.

WORK BEGUN ON BOSTON TERMINAL

Ground was broken in preparation for the new terminal station for the Boston Elevated Railway Company's extension at Forest Hills Square, on the southerly outskirts of Boston, Monday, March 16. The main structure from the old terminal at Dudley Street is already completed and fitted with tracks as far as the northerly edge of Forest Hills Square; and all that remains is to add the station and a double-track stub reaching about 500 feet beyond.

A hearing was given by the Boston aldermen, Monday afternoon, on the relocation of surface tracks in the square in such a manner as to allow the surface lines to run in under the proposed station, with such curves as will allow its use as a terminal for surface lines running out to that point from the city, or by similar lines from the outlying districts of West Roxbury and Hyde Park running in to make an "L" transfer at that point and then returning.

On March 30 the changes now under way in transportation matters around Forest Hills Square will be still further complicated by the hearing on the proposed location for the Boston & Providence Interurban Electric Railroad, the Gaston-Shaw-Stone & Webster line. This company has petitioned for a location beginning practically at the proposed end of the Boston Elevated structure and running southerly through Washington street and a part of Hyde Park Avenue, and through and across other public and private ways and private land, into Hyde Park, the first of its long series of minor towns.

Within three weeks the Boston Elevated's engineering department expects to be able to begin the changes at Dudley Street that will eventually fit that station for "way" stops by trains that run through to the Forest Hills terminal. At present the platform arrangement is such that all trains must swing back toward the city in order to land or take passengers. First of the changes at this point will be the extension of the third track now incorporated in the structure between Guild and St. James Streets until it reaches all the way to Dudley Street.

The double tracks forming the first length of the Forest Hills extension now give access to the Guild Street car house from the service tracks at Dudley Street, and it has been the custom to keep an empty train standing on one of them, ready to be sent in on the service line whenever a blockade or breakdown down-town occasioned an unusual interval at the terminal. When regular service is opened on the extension, the lengthening of the third track will provide for these relays. A switch tower that stood near Bartlett Street, at the end of the existing third track, was recently moved about 300 feet southerly, to a point opposite St. James Street, in order to make way for the lengthening.

Meanwhile, the widening of the subway incline on the other side of the city center, near the North Station, has proceeded so well that the Elevated has this week begun work on the new East Cambridge "L" extension. The structure will rise out of the portal serving jointly for the old subway and the new Washington Street Tunnel, facing the North Station, and will run through the West End of Boston, across the Charles River on a new bridge for which the foundations are now nearing completion, adjoining the new Charles River Dam, to Lechmere Square in East Cambridge. It will bring the heavy type of surface cars from Cambridge and Somerville lines in town above the streets to a connection with the through tracks of the old subway, now used for "L" trains. The subway incline has been widened to take six tracks instead of four, and two of the six will still serve for surface lines running in over the Scollay Square loop of the old subway from Charlestown, Chelsea, and other points north.

The only station on the Forest Hills extension other than the new terminal will be the one at Eggleston Square, where Washington Street is crossed by Columbus Avenue. This will be an island station with all stairways converging in the middle of the traveled way at the surface, where surface lines pass on three sides, for transfer. The stairways and other steel work are now in place for this station, but the house and shelters at the upper level are not yet done.

A new departure in Boston subway construction is the decision to allow the big retail store of William Filene's Sons Company, Washington and Winter Streets, a special doorway communicating directly with the new Washington Street Tunnel station at that point. The stairways for the north-bound platform of this station come to the surface within the store.

NEW PUBLICATION

The Street Railway Traffic Needs of Berlin (Die Berliner Strassenbahn-Verkehrsnot). By W. Mattersdorf. Berlin: Julius Springer; 30 pages, 8 in. x 5 in.; illustrated, with three colored insert maps. Price, 2.4 marks.

The current agitation in Berlin for subways to increase the present street railway traffic facilities led Mr. Mattersdorf to make a detailed study of present conditions in that city. The author is well known for his work in traffic analyses, and one of his articles entitled "Influences Determining Street Railway Traffic in German Cities" was published in the Street Railway Journal for June 2, 1906. In the present instance the author discusses the probable changes in travel density on different surface lines which would result from the choice of certain alternative subway lines proposed by the Great Berlin Street Railway Company. He compares the estimated capacity of each tunnel for both two-track and four-track operation, and discusses also the effect of the block signal system and the location of stations. The whole problem necessarily is a local one, but the logical discussion and methods of illustration used by the writer should doubtless be of interest to other engineers engaged on similar problems.

STREET RAILWAY PATENTS

UNITED STATES PATENTS ISSUED MARCH 3, 1908.

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

880,536. Automatic Railway Switch; John A. Jackson, Ithaca, N. Y. App. filed July 25, 1907. Switch actuating plates are placed between the rails at each side of the entrance to a switch, and by means of a suitable operating lever upon the train a pivoted contact member is brought into engagement with the plates and the switch thus operated at the will of the engineer either before or after passing the switch.

880,584. Brake Shoe; James S. Sheafe, Chicago, Ill. App. filed Nov. 2, 1907. The brake shoe is composed of a back and face portion having countersunk cored holes therein and lugs on said shoe. Recesses are formed in the shoe to receive the lugs. Has a substantially elliptical strengthening rod.

880,655. Trolley Wire Finder; Ferdinand Gundorhp, Portland, Ore. App. filed May 29, 1907. A pair of arms jointed to the trolley harp which may be impelled by a cord into position to guide the wheel on the wire.

880,770. Signaling Circuit for Railways; Joseph A. Wilson, Westfield, N. J. App. filed Feb. 10, 1902. The track rails are divided into block sections and are energized by batteries. Makes use of what are termed neutralizing relays to secure the overlap or distant signals.

880,788. Means of Forming Electrically Bonded Rail-Joints; Horatio G. Gilmore, Bath, Maine. App. filed March 27, 1906. Includes a chair having upwardly extending arms, bonding plates and bars between the chair and the rails and wedges driven in between the arms of the chair and the bars.

880,789. Means of Forming Joints in Electrical Conductors; Horatio G. Gilmor, Bath, Maine. App. filed Feb. 4, 1907. Relates to modifications of the above.

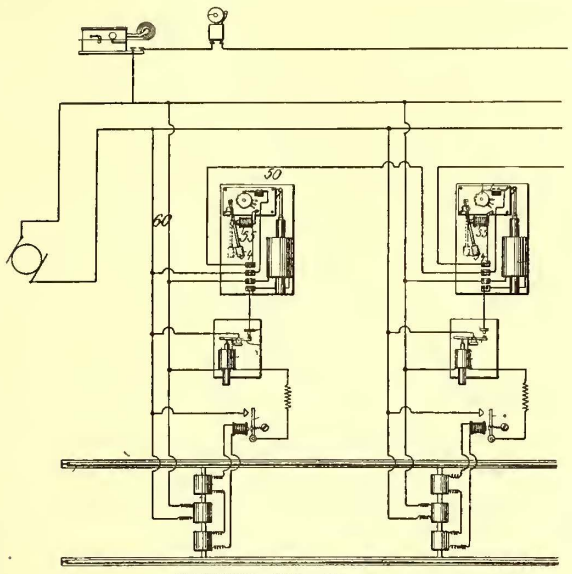
880,851. Railway Signaling System; Joseph A. Wilson, Westfield, N. J. App. filed Aug. 10, 1906. A system wherein one or more signals are controlled by electric circuits, including electromagnets, each of which has a plurality of coils and operating the signals by the reversal of the current through some of the coils of the magnets.

880,963. Trolley Pole; Henry Bouchard, Austin, Tex. App. filed April 16, 1907. The trolley pole comprises a number of telescoping sections and is pivoted to a bracket. Includes means for fixing the pole with respect to the bracket and means whereby the extension of the pole will release the retaining means. Has a spring acting normally to extend the pole.

880,976. Trolley Mechanism; William J. Craig, Pine Bluff, Ark. App. filed Sept. 6, 1907. The trolley pole is mounted on a swiveling table on the car roof and can be withdrawn by a link which depends into the body of the car.

881,005. Signaling System; Edward E. Kleinschmidt, New York, N. Y. App. filed Dec. 29, 1905. Comprises a plurality of signaling stations established at suitable points along the road,

each station having a designating number. Upon the passage of a car or train at a given station the dispatcher or home office is notified of that fact by the operation of an audible or



PATENT NO. 881,005.

visual signal which gives the number of the station. Makes use of a messenger cable principle.

881,043. Tongue Switch; Victor Angerer, Ridley Park, Pa. App. filed Nov. 27, 1907. The body portion of the switch structure has a cavity for the reception of an annular bearing, set screws for adjusting the bearing and a switch tongue mounted in the bearing.

881,095. Pleasure Wheel; Elton F. Chubbuck, Hornell, N. Y. App. filed Oct. 15, 1907. The peripheral rim of the wheel is formed in an irregular shape about the shaft and constitutes a rail. A car is adapted to be actuated upon the rotation of the wheel, the car having wheels rotatably journaled within a portion of and straddling the rim and freely rolling by gravity thereupon.

PERSONAL MENTION

MR. WILLIAM A. SUTHERLAND, recently appointed counsel to the Public Utilities Commission in the Second District, died, March 11.

MR. W. B. YEREANCE, who was formerly connected with the engineering force of Ford, Bacon & Davis, is now associated with Sanderson & Porter, of New York.

MR. HOWARD M. BOUGHER, of Philadelphia, has been elected president of the Burlington County Railway Company, of Mt. Holly, N. J., filling the vacancy caused by the recent death of his father, Mr. Josiah K. Bougher. Mr. Bougher as heir to his father's interests in the company is the controlling owner of the property.

MR. M. H. BRONDSON, chief engineer of the Rhode Island Company, of Providence, R. I., has been appointed a member of the committee on operating and storage car house design of the American Street & Interurban Railway Engineering Association, by President Simmons. Mr. Brondson takes the place made vacant by Mr. J. W. Harper, who found it impossible to serve.

MR. GEORGE B. THOMAS, who has been secretary and assistant treasurer of the Cleveland Construction Company, which built the electric railway from Mineola to Roslyn and Port Washington, has assumed the position of general manager of the New York & North Shore Traction Company, of Mineola, N. Y., succeeding Mr. Thomas Wood, of Cleveland, who was general manager since the opening of the road, Mr. Wood having resigned his position.

MR. HAROLD S. BUTTENHEIM has resigned as business manager of the STREET RAILWAY JOURNAL and as secretary of the McGraw Publishing Company, and has purchased a controlling interest in *Hardware*, a semi-monthly paper published in New York, and devoted to the interests of the hardware trade. Mr. Buttenheim has been actively associated with the STREET RAILWAY JOURNAL since 1893. In severing his connection with the McGraw Publishing Company, Mr. Buttenheim takes with him the good will of his former associates, and their best wishes for the success of his new enterprise.

MR. GEORGE E. HAMILTON has been elected president of the Capital Traction Company, of Washington, D. C., to succeed the late Mr. George T. Dunlop. Mr. Hamilton will continue as senior member of the law firm of Hamilton, Colbert, Yerkes & Hamilton. He has been a director of the Capital Traction Company for the last two years and he is legal representative in Washington city of the Baltimore & Ohio Railroad, and lecturer on wills and legal ethics in the Georgetown Law School, of which he was formerly dean. He is also president of the Georgetown Alumni Society. Mr. D. S. Carll has been chosen to fill the vacancy on the board of directors caused by the recent death of Mr. Dunlop. The office of second vice-president and general manager, to which he was elected, was created to take the place of chief engineer and general superintendent, which position Mr. Carll has filled for many years. Since the death of Mr. Dunlop, Henry Hurt, first vice-president of the company, has been acting president.

MR. ALBERT ANDERSON, president of the Albert & J. M. Anderson Manufacturing Company, of Boston, died at his home on March 11. Mr. Anderson was born near Christiania, Norway, in 1850, and at the age of sixteen left home to follow the sea for about five years. On one of his trips he visited Boston, and decided to make it his home. Since 1871, he resided continuously in that city. In 1877, Mr. Anderson started a small shop for general locksmithing, key and brass fitting, the machinist's trade having been learned by him not long after his arrival. The business grew rapidly and later a second shop was opened. The present factory site was occupied in 1888, when he began to devote his attention to the young but rapidly growing electrical field. Mr. Anderson furnished some of the equipment for the first section of the overhead trolley line installed in Allston, Mass., and to overcome the excessive wear of wheels invented the first side springs used on a trolley wheel. In the summer of 1906, Mr. Anderson received a very severe shock by coming in contact with a 6900 volt circuit to ground, and his health was never the same after this accident. Since the first of January, 1908, he was confined to his home by internal complications, probably resulting from the effects of the shock. Mr. Anderson was of a genial disposition, unassuming and well liked by every one who came in contact with him. He was a Mason, a member of the Boston Athletic Association, and of the New England Street Railway Club. The funeral was held on the afternoon of March 14. Mr. Anderson is survived by his brother, John M. Anderson, a daughter and two sons, Albert B. Anderson and Andrew Anderson, who will become partners in the company, succeeding their father.

MR. E. E. DOWNS has been appointed general manager of the Sterling, Dixon & Eastern Electric Railway Company, of Dixon, Ill., to succeed Mr. Edward B. Kirk, resigned, who has become general manager of the Atlantic Shore Line Railway. Mr. Downs was born in Boston and has been connected with street railway and electrical work for many years; in fact he entered street railroading about the time of the introduction of electricity, serving with the construction department of the Thomson-Houston Company. During his connection with this company he had charge of a number of important early installations, among them that of the Second Avenue Passenger Railway, of Pittsburg, the first electric railway to be built in that city; the Missouri Street Railway, of St. Louis; the City Electric Railway, of Little Rock; the Ft. Clark Street Railway, of Peoria, Ill.; and a number of others. Later he became general manager for the General Electric Company of the street railways in Kalamazoo and Battle Creek, and subsequently was associated with his brother and others in the management of the Michigan Traction Company and the Railways Company General. In 1897 he became interested with Mr. Geo. J. Kobusch, of the St. Louis Car Company, of St. Louis, in the management of the Winnebago Traction Company, of Oshkosh, with which company he remained seven years, acting in the capacity of general manager, vice-president and president. In October, 1904, he became representative in San Francisco of the banking firm of E. H. Rollins & Sons, of Boston, becoming general manager of the Petaluma & Santa Rosa Railway, operating an interurban railway and steamboat line. In March, 1906, Mr. Downs became connected with Beachwood Park in Philadelphia, Pa., on the line of the Philadelphia & Western Railway line, which was described in the STREET RAILWAY JOURNAL for May 15, 1907.

NEWS OF THE WEEK

CONSTRUCTION NOTES

Items in this department are classified geographically by States, with an alphabetical arrangement of cities under each State heading.

For the convenience of readers seeking information on particular subjects, the character of the individual item is indicated as follows:

* Proposed roads not previously reported.
o Additional information regarding new roads.
† Extensions and new equipment for operating roads.

Numerals preceding these signs indicate items referring to:

1. Track and roadway.
2. Cars, trucks and rolling stock equipment.
3. Power stations and substations.
4. Car houses and repair shops.
5. Parks and amusement attractions.

1†BIRMINGHAM, ALA.—The Birmingham Railway, Light & Power Company has been granted a year's prolongation of franchise on 67 streets for the building of car lines on said thoroughfares.

2†LOS ANGELES, CAL.—Fifty new cars, ordered some time ago by the Los Angeles Railway Company, have arrived from St. Louis and are being put into commission. They are of the standard type in use in Los Angeles on the city lines.

*LOS ANGELES, CAL.—It is reported that W. H. Carlson, of the Los Angeles Securities Company, is building an electric railway to connect his Ocean Beach Villa tract with his properties at Hermosa Beach.

1†LOS ANGELES, CAL.—It is announced that H. E. Huntington, president of the Pacific Electric Railway Company, has issued orders to prepare immediately for the double-tracking of all lines in Pasadena. It is expected to begin the work about April 1.

*OAKLAND, CAL.—The San Francisco, Oakland & San José Consolidated Railway has been organized for the purpose of consolidating the San Francisco, Oakland & San José Railway and the San Francisco & Bay Counties Railway, which was recently incorporated for the purpose of constructing an electric railway from San Francisco to San José. The company proposes to continue the operation of the three lines at present operated by the San Francisco, Oakland & San José Railway, to construct a railway line to San José, to build a branch road to Northbrae and another branch to Claremont, and to connect the mainland with Yerba Island by means of a tunnel. The capital stock is fixed at $7,750,000, and the directors are F. M. Smith, F. C. Havens, E. A. Heron, H. Wadsworth and Dennis Searles.

oREDDING, CAL.—The Board of Supervisors has revoked the franchise of the Redding & Red Bluff Railroad Company because the time for beginning construction had lapsed.

oVISALIA, CAL.—It is reported that F. S. Granger is planning to build an electric railway from Tulare to Porterville.

1-4 † DENVER, COL.—The Denver & Interurban Railway has begun work on its car house at the corner of Twenty-third and Market Streets, and is also building a new line to Eldorado Springs, in addition to its electric road to Boulder. In addition to this work the company is relaying its tracks on Sixteenth Street and improving its roadbed in various parts of the city. The car house will be 168 x 128 ft., and it is estimated that it will cost $20,000.

oPUEBLO, COLO.—The City Council has granted the Pueblo & Arkansas Valley Electric Railway an extension of time from April 1 to October 1, 1908, in which to begin construction work on its lines.

3†ATHENS, GA.—For earlier requirements of the Athens Electric Railway Company two hydro-electric developments, one about 6½ miles and the other 2½ miles from the city of Athens, furnished as much power as the system required, but with the extension of the street railway lines and the rapidly increasing power and lighting load it was found necessary to build a new power house in the town itself, where for some time past a steam turbine of the horizontal type has been in operation. Recently, however, the requirements of the service have increased to such an extent as to call for the installation of a second steam turbine of 1000-kw capacity, and this, with the generator designed for direct connection to it, is now being built by the Allis-Chalmers Company at its West Allis shops. The unit will deliver three-phase, 60-cycle current at a terminal pressure of 2300 volts, and excitation is to be obtained from a 40-kw induction motor generator set, also of Allis-Chalmers manufacture.

2†ATLANTA, GA.—It is understood that the Georgia Railway & Electric Company will build 25 new cars in 1908 for use on its lines. Necessary parts of the machinery have been ordered and the cars will be built in the plant of the company in Atlanta.

oJESUP, GA.—The Goose Creek Railway & Power Company has been granted a charter. The capital stock of the company is to be $250,000. Its headquarters are to be in Jesup. It is the intention of the company to construct an electric railway and also to erect a power plant. Among the incorporators of the company are H. W. Whaley, F. E. Bacon, S. E. Cohen, W. M. Boberson and others, of Jesup, and D. G. Zeigler, of Columbia, S. C.

5†BOISE, IDAHO.—It is announced that work on the Pierce Park, created by the Boise & Interurban Railway Company on its line about five miles from Boise, has been commenced, and it will be completed in about two months. A lake is to be made that will be equipped with electric launches and rowboats and the park in every way is to be an up-to-date summer resort. It is said that the company has set aside $100,000 for park purposes.

oLAPORTE, IND.—It is reported that work will be resumed on the extension of the South Bend & Northern Indiana Company's line between Laporte and South Bend in a short time. Engineer Cole has planned considerable work also between Laporte and Michigan City. An interurban bridge will be built over the stream at Waterford and the two channels turned into one.

1†WARSAW, IND.—The Winona Interurban Railroad Company has been granted a new franchise over Center and Market Streets, the old franchise having expired. The company proposes to construct a loop so that cars from Peru can be brought into Warsaw on Center Street and sent out to Winona Lake on Market Street. The work on the extension west will begin next week. Either a big fill or a bridge and trestle 100 ft. long will be required just west of the junction of Center and Market Streets.

1†ALBIA, IA.—The Albia Interurban Railway Company, according to W. E. Gant, purchasing agent, is in the market for rails, ties and trolley wire for a half-mile extension.

oDES MOINES, IOWA.—The business men of Des Moines have agreed to subscribe for sufficient stock of the Des Moines, Winterset & Creston Interurban Railway to insure the success of the enterprise. Among those who have agreed to assist are: N. E. Coffin, of the firm of Dudley & Coffin, attorneys; F. M. Hubbell, president of the Des Moines Union Railway Company, and Falker Younker. Since the meeting in Des Moines a similar meeting has been held in Winterset, and it is announced that business firms there have agreed to assist the enterprise.

1 † NEW ORLEANS, LA.—The New Orleans Railway & Light Company, it is reported, has started work on the Villere Street extension of its system.

oSHREVEPORT, LA.—The City Council has passed an ordinance granting John Lorenz a franchise to construct and operate an electric street railway. The line is to run by Centenary College.

*BALTIMORE, MD.—A bill has been introduced in the Senate incorporating the Baltimore & North Branch Railway & Power Company. The proposed electric railway will extend from Woodlawn to Randallstown and North Branch. It is intended to have the new road connect with the United Railways lines, which now extend to Woodlawn, thus establishing connections between Baltimore and North Branch. The authorized capital stock is $50,000, which may be increased to $500,000. The incorporators are as follows: B. John Vlack, Emory George, H. M. Benzinger, Isaac Price, Dr. James Bosley and George D. Lynch.

oBOSTON, MASS.—It is said that hearings will be resumed April 16 on the new petition of the Boston & Eastern Electric Railroad Company, which proposes to construct an interurban electric railway from Boston to Beverly. The new plans provide for a tunnel under Boston harbor from East Boston.

oKANSAS CITY, MO.—J. C. Herring, of Kansas City, Mo., chief engineer of the Kansas City & Southeastern Railroad Company, writes that surveys have been completed and the right of way secured for a railroad which for the present will be 30 miles in length. The line extends from Kansas City, Mo., in a southeasterly direction through the towns of Leeds, Raytown, Lees Summit, Cockrell and Lone Jack. It is planned to operate gasoline electric cars. An issue of 30-year 5-per-cent bonds to the amount of $600,000 is to be floated to build and equip the line. The following are the officers: Chas. A. S. Sims, president; H. W. Gibson, vice-president; B. F. Shouse, treasurer; Geo. P. Norton, general attorney. The officers are all of Kansas City, Mo.

2†KANSAS CITY, MO.—An order has been placed by the Metropolitan Street Railway for 25 new cars, the first to begin arriving April 1.

†RENO, NEV.—It is said that the Virginia & Truckee Railway Company is planning to electrify its systems. It is reported that the plans are all arranged and that work will be started soon. An overhead system will be used within the city limits and the third-rail system the remainder of the route to Carson.

1 † ALBION, N. Y.—According to the statement of the officials of the Buffalo, Lockport & Rochester Railway Company, the Rochester, Albion section of the line will be opened on May 1. The power for the new line will be furnished by the Niagara, Lockport & Ontario Power Com-