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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.

Through Routes in City Service

Every now and then as the trackage of city systems is extended and new routes are considered, the question comes up in regard to through as compared with looped runs. It is often hard to decide whether the new routes should extend from one side of the city to the other through the business district in the center, or whether cars from one section should be turned in the more crowded section, with

transfer privileges at the common passing point. Obviously there is no general solution of this problem, but if it is to be intelligently worked out in specific cases it must be handled in a thoroughly scientific way.

The first thing to find out is whether or not a definite and considerable volume of travel exists between the opposite sides of the city under the old conditions. The character of each district and the habits of the inhabitants must be ascertained as accurately as possible. The knowledge of division superintendents, inspectors, police officials, prominent men in social organizations and proprietors of business houses serving wide areas of population, all have a place in securing data of this kind. It ought to be an easy matter to secure a large number of intelligent opinions on the question through the personal connections of the company's officers and the regular operating organization. In addition, studies should be made of the volume of transfer traffic between opposite sections when facilities exist, and if there are any special attractions in one section or the other, the fact should be carefully noted in connection with extra car service, such as to theaters, concert halls, and out-of-door park resorts. If these investigations should indicate little interchange of travel between the districts—and in this connection the local telephone organization will sometimes furnish helpful data—the operating cost of through running should be very carefully figured before the service is begun. A comparison with the probable cost of turning the cars in the center of the city should be estimated as closely as is feasible.

No one can predict with absolute accuracy what the travel will be between two districts of a city previously unconnected by through service, but if the demand for such service is clear and insistent, backed up perhaps by the statistics of transfer traffic under the old regime and the concensus of representative opinions, it will not be a serious hazard to inaugurate a service of fairly long headway between the districts, provided the performance of those lines is closely watched day by day as the public grows to realize that means exist for transit without change between those two sides of the city. But it should be borne in mind that with the other scheme of turning cars in the business center the flexibility of the system in case of blockades and breakdowns is generally increased; the number of trips a given car can make in a day is augmented; the average ride per route is probably shortened, and the analysis of the traffic streams rendered easier. On the other hand, the establishment of a through route between districts desirous of inter-transportation avoids the ever-present annoyance of changing cars in all weathers in densely populated streets or under the roof of a crowded terminal, and doubtless this elimination of changes reduces congestion of traffic, except in cases where the through lines are overburdened by local

riders attracted by the more comfortable cars often placed on the longer routes. When such routes are established, it ought not to take long to find out whether there is enough through riding to pay for the longer round trips. In most cities there are enough points of general attraction to the public to warrant putting on some through crosstown routes, notably in connection with steam railroad stations. The whole subject deserves thorough study by progressive companies.

Uniformity in Signals

Electric interurban railways are just beginning to face some of the many problems in signaling which have puzzled the signal engineers and operating officers of steam roads for years. So far their troubles have been generally confined to switch targets, occasional interlockings at terminals or steam road crossings, and the comparatively few installations of automatic block signals. Usually they have adopted the practice of their neighboring steam roads in the matter of colors for night indications and other similar details, but wide differences exist. Green is used on one road for clear and white on another. Some of the automatic signal inventors have introduced still other variations with combinations of vari-colored lights.

More or less isolated as are the electric roads, these variations in signaling methods have not as yet resulted in anything worse than the establishment of precedents and practice, good or bad, as the case may be; but with the more general introduction of signal appliances of all kinds on these roads, there will be endless confusion and even danger unless certain fundamentals of good practice are laid down and followed in all future installations.

The steam roads are gradually working around to uniformity in the essential features of signaling, at least in the theory of the art, and electric roads might well take advantage of the experience of their competitors. Uniformity in signaling is just as important as uniformity in codes of operating rules. Violations of the generally accepted principles of the art should not be tolerated in considering any device or system. This might be a profitable field of investigation for a committee of the American Street and Interurban Railway Transportation and Traffic Association, in combination possibly with a committee of the Engineering Association.

The fundamentals which should be considered in such an investigation include the form, size and color of day and night signal indications, standards of visibility, location of signals with respect to the tracks over which they govern movements, the requirements of safety to be met by any automatic signal system and definitions of the general terms used in signal work. A report fully covering these points would be of great value to roads contemplating installing signals of any kind. We have no doubt that the signal manufacturers would be glad to assist in such a work with all the knowledge, experience and skill at their disposal, for they have always stood for sound principles in the art of signaling. They have been educating the railroads, steam and electric, up to a realization of the need of proper and adequate signal protection. There is no reason to believe that they would antagonize an attempt to define what adequate protection is in plain terms.

Six-Cent Fares

The address by President Sullivan, of the Boston & Northern Railway Company, printed last week, describes a condition which has become serious in many parts of New England and is recognized as such by the Railroad Commissioners of Massachusetts. It certainly forms a grim commentary upon the three-cent fare agitation elsewhere. The situation plainly stated is that many of the roads in Massachusetts, in spite of the conservative methods of financing in force there and the diversity of the population, can show just cause for raising the customary five-cent limit. Of course these hard pressed roads do not belong to the group of large urban properties, but they are nevertheless roads useful to the public and their abandonment would be a serious public inconvenience. The truth is that the liberal American policy of uniform five-cent fares has in many instances been too far extended. The rate is profitable only when the traffic is reasonably dense and is helped out by short distance riding. However economically a road may be operated, there are certain fixed charges that must be paid and when traffic is scant these become a heavy burden even when the road is very conservatively capitalized. If it has the misfortune to be staggering under a bonded indebtedness enhanced by unwise methods of promotion its case is so much the worse. There are to-day a good many suburban and rural roads scattered over the country which are barely earning operating expenses. They were built on the theory often justified that traffic follows the trolley, but for one reason or another have played in very hard luck. Of course some of them may get reorganized, but that does not increase their earnings or take care of depreciation.

And right here we should note that no road which for several years has merely paid operating expenses and fixed charges with a minute surplus is really solvent. It is carrying a concealed floating debt owed to its equipment which will eventually be collected without notice. Only lines with steadily increasing traffic in a growing country can trust to chance and a new bond issue for upkeep and necessary rehabilitation. If a line charging five-cent fares is merely paying its operating and fixed charges and taking no precautions against depreciation, the chances are remarkably good that it will come to grief unless it can increase either its business or its fares or both. Unhappily, the only way to increase business in most cases is to quicken the service and to improve the equipment, all of which takes ready money in considerable amounts. The road may find it temporarily necessary to increase the rate of fare merely to hold its head above water long enough for it to get breath and take a fresh start. Nobody can fairly be expected to carry on an actually losing business for long, and to the reasonable man six-cent fares are altogether better than no cars at all and no possibility of going from one town to another except by private conveyance or walking. This phase of the problem is entirely distinct from any question of the increased cost of operation, due to the higher prices of material and labor. Both of these items have gone up, as is clearly shown by Mr. Sullivan in his address. Independent of this fact, however, the main point at issue is this: Have not a good many roads embarked in the transportation business in a region of meager traffic and without a correct understanding of all of the expenses of operation,

the deferred as well as those which have to be met each month? In other words, have they not bitten off more than they can masticate? We think that an affirmative answer to these questions is borne out by the facts at hand.

What, then, is to be done about it? In some cases the managers are already facing the dilemma of getting in more earnings or going to the wall. The concrete situation shows at once whether there are any final chances worth taking in the way of increasing the service in the hope of bettering the traffic. It will also indicate whether the traffic will suffer materially in volume by an increase of a cent in fare. Ordinarily it will not and the conclusion is obvious that a six-cent fare is the only road to solvency and keeping the road running. Under these circumstances an increase is the fair and just thing and an increase should at once be resorted to if possible. In such case the only square deal is to lay one's hand fairly down upon the table and show cause for the increase, often a painfully easy process. A line which has been grossly overcapitalized will be in hard case when it comes to this, but in most cases we believe the public will grasp the situation, and while none too anxious to give up the extra cent will accept the situation as it is. Six, seven and eight-cent fares were common enough in the old horse car days and nobody grudged them, nor is there any reason why they should be grudged now in cases where the present fares are really inadequate to secure a fair return on the investment, and by that we mean the actual cash spent, together with a suitable allowance for maintaining the physical condition of the system. If more roads made deliberate provision for the inevitable depreciation there would be a fairer view taken of their rights to a reasonable profit.

The Motor Generator in Railway Service

The question of the relative merits of the motor generator and the rotary converter is not a new one, but the use of the former in one or two large railway systems which we have described recently calls renewed attention to the double machine. The adoption of motor-generator sets is often made necessary through local conditions such as high frequency, but advocates are not lacking for the employment of this machine, even in cases of 25-cycle systems, on account of its intrinsic advantages in the way of voltage regulation and flexibility of operation, in spite of its admitted higher cost of installation and lower electrical efficiency. As the number of cars dependent upon a sub-station increases, these advantages become more far reaching. It may not be out of place, therefore, to review some of the points offered in favor of the motor generator by its advocates, and consider the kind of service for which it is most suitable, even while we admit that the rotary converter has a very broad field, and will be used very extensively for all kinds of railway work.

Under the best conditions, allowing for the efficiency of transformers in connection with a rotary converter of a given capacity, a motor generator set without transformers is likely to fall about 10 or 12 per cent below the economy of the rotary outfit. The first cost of the motor generator may run from 25 to 50 per cent higher, unless transformers are used, when the disadvantage on the score of investment

will probably be still greater in the case of the motor generator. These facts are, of course, familiar to the majority of engineers, and there is no question that the purchaser of equipment often favors the rotary converter outfit on the basis of the above reasoning.

If a lighting service should be carried by the same alternators which supply the railway circuits the superior regulation of the motor generator as a rule demands its installation. Even on a straight railway proposition, however, the advocates of the motor generator claim that the value of the close voltage regulation obtained may be sufficient to offset the reduced cost of the rotary outfit, when the influence of even voltage on the schedule speed of the cars is considered. There is no question that a motor equipment can negotiate a given schedule with less heating and fewer chances of delay when the potential holds within 10 volts of 575 on the line than when it fluctuates through five or ten times that range. Higher average voltage is a certainty with proper motor generator regulation, and the variations of the direct current circuits influence the transmission system far less than in case of the rotary converter installation. Direct current voltage adjustments can be made at the motor generator with impunity, so long as the load does not exceed that required for a decent power factor on the alternating current. Rotary converters can readily be compounded for a flat voltage line or even a rising characteristic, but the effects of load fluctuations are felt farther back in the general regulation of the system. In general, motor speeds and acceleration rates are closely proportional to the impressed voltage, and when a hundred cars or more are dependent upon several motor generator sets the importance of maintaining an even schedule is of real financial value.

In a recent sub-station installation composed of three 500-kw motor generators wound for 600 volts on the direct current side, with 6600 volts, 60-cycle current on the synchronous motors of the sets, the direct current voltage at the sub-station busbars was seen to vary scarcely three points during the morning rush hour. On the feeder circuits supplied from this sub-station, extending upward of three miles in each direction, the line potential held so closely to normal that it was difficult to note the point where the feed changed by section insulation from another sub-station, judging by the voltage variation on an instrument carried in a car. As a result the maintenance of the schedules was comparatively easy, even during the times of heavy load; the car lighting was excellent and the whole electrical system was smoothly and harmoniously operated. There was no suspicion of hunting, and while in a similar case first class, reliable service might have been given by rotaries, it is certain that no such closeness of regulation would have been possible, and no such ease of manipulation, smoothness of operation and certainty of steady service would have been present.

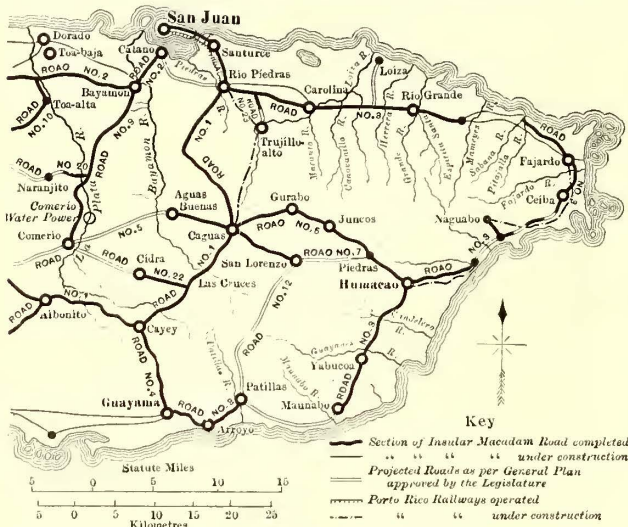
According to the theory of the engineers in charge of the station under consideration, every influence making for higher schedule speed tends to reduce the number of cars required for a given headway, hence acts directly to decrease the platform expense per ear mile. Whether this of itself is sufficient to overcome the effects of the added charges is another question, but the subject is one worthy of consideration in the field of electrical engineering.

TRAMWAY AND POWER DEVELOPMENTS IN PORTO RICO

A decade has elapsed since the termination of Spanish rule in Porto Rico. Nearly the whole of this period has witnessed administration by the United States under peaceful conditions and the progress of the island during the period in the two features upon which its prosperity most

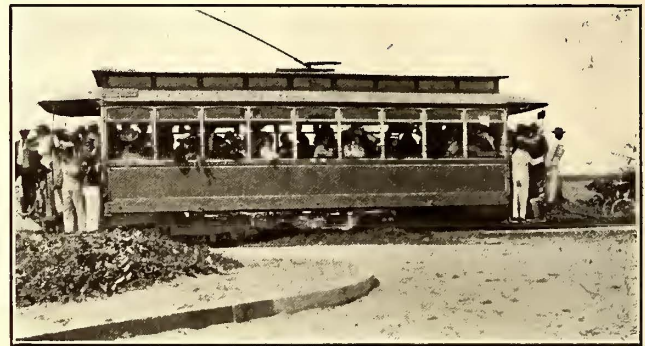
and passenger traffic between the two towns and a new water power plant to generate power to operate the road and supply light and power in San Juan and vicinity are the most important developments of recent date in Porto Rico. Caguas has not heretofore had railway connection with the seaboard. All transportation of tobacco and other produce has been by native ox carts at a heavy and increasing rate which has now reached \$14 per ton.

This San Juan-Caguas railway is the first to penetrate the interior of the island, and will be a part of the modern electric street railway system now serving San Juan and its suburbs. There is also the belt line steam railroad



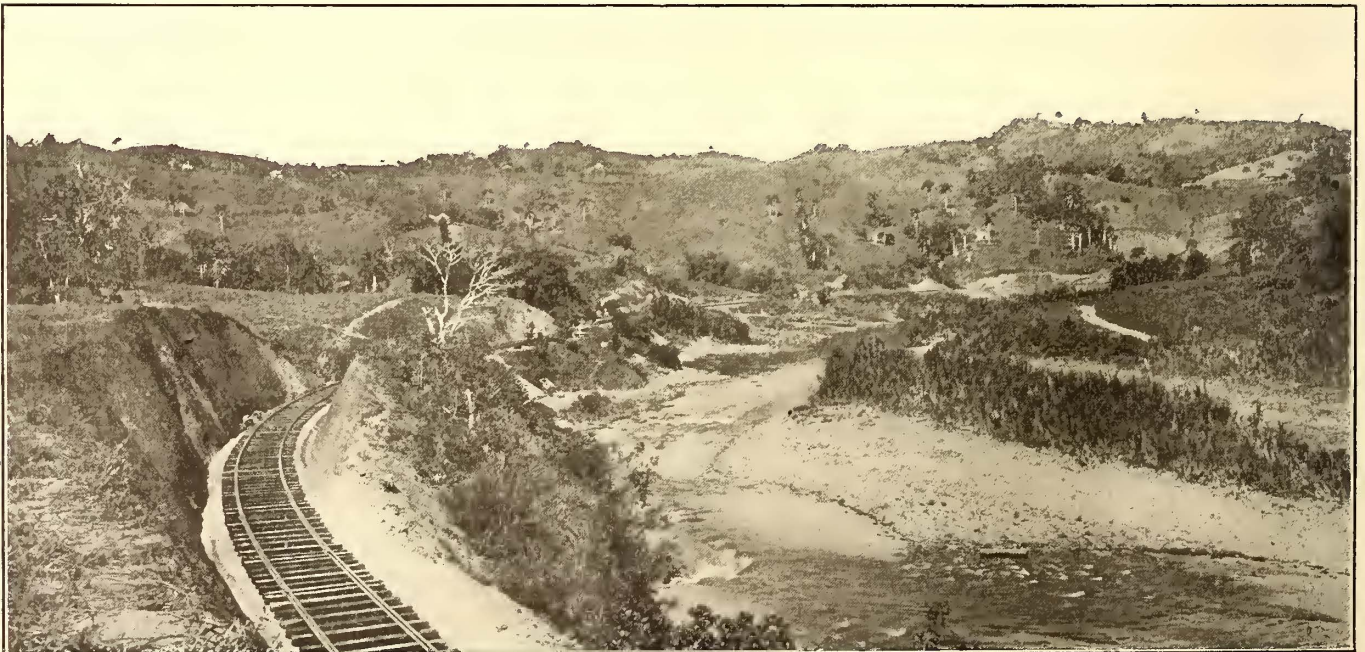
Street Railway Journal
ROAD AND RAILWAY MAP OF EASTERN PORTO RICO

depends, namely, agriculture and transportation, is practically without precedent in any comparable territory in the world. Millions of American capital have in recent years found employment in Porto Rico in tobacco and sugar growing and in railway development. The value of annual exports has tripled since the American occupation,



CONVINCING PROOF OF THE ELECTRIC RAILWAY'S POPULARITY IN PORTO RICO

operated by the American Railway Company, nearly completing the circuit of the coast, which meets the needs of transportation between coastwise points, but there have been no transverse lines until the present developments; the trans-island traffic, both passenger and freight, has been left entirely to coaches, wagons and ox-carts over



A VIEW FROM THE CAGUAS RAILROAD ALONG THE PIEDRAS RIVER.

due very largely to the increasing diversion of money and energy from coffee and sugar to tobacco cultivation. The area planted in tobacco has more than quadrupled and the tobacco exports now reach \$4,000,000 annually, though but a minor part of the total production. The tobacco producing country is the high land of the interior, and one of the chief centers is the town of Caguas, distant some 26 miles from San Juan.

The construction of an interurban railway for freight

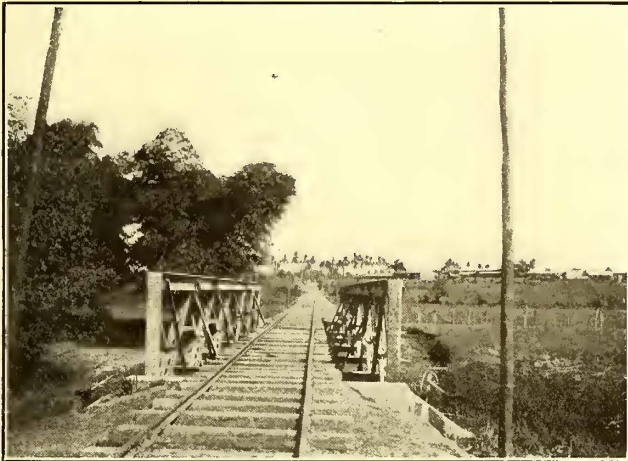
the famous system of military roads. A main wagon road extends from San Juan on the north to Ponce on the south coast. Caguas is on this road, but the passenger fare to San Juan is \$2 and the freight rate, as before mentioned, is heavy.

Tobacco is the most important freight moved over this route. With the increase of tobacco production in Porto Rico there has been more domestic manufacture. Formerly Porto Rican tobacco was largely shipped to Cuba

and thence exported as Cuban tobacco of the well known "Veulta Abajo" brand. Now this has ceased and nearly 90 per cent of the tobacco grown in Porto Rico is used by native tobacco manufactories, most of which are located in the San Juan district. There are three large and modern cigar factories in San Juan. Cheap labor, low rents and freedom from duty into the United States account for this development of domestic tobacco manufacture. The product is largely used locally. Still the value of the

At the same time two new subsidiaries, the Comerio Water Power Company and the Caguas Tramway Company, were formed.

The two established companies have for some time supplied all the railway, light, heat and power facilities in San Juan and vicinity, each operating a steam driven plant. The present undertaking of the Porto Rico Railways Com-



ALONG THE LINE OF THE PIEDRAS-CAGUAS RAILROAD



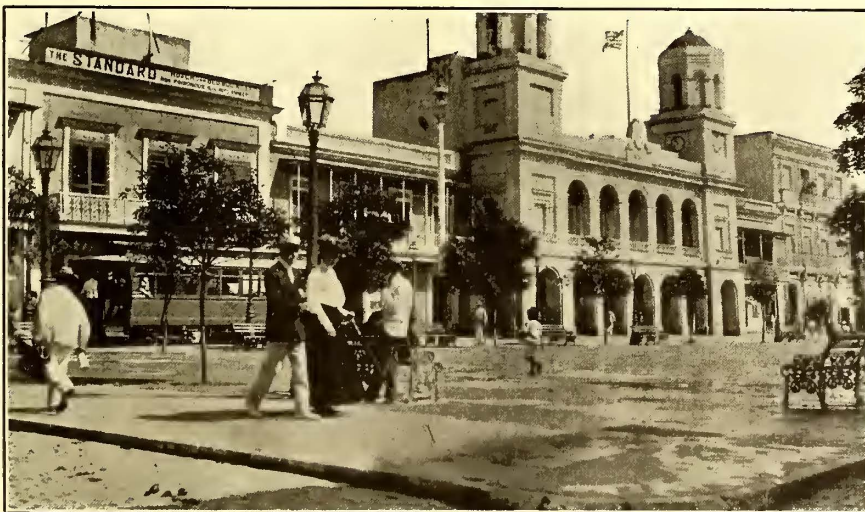
THE UPPER FALLS OF COMERIO, LA PLATA RIVER

cigars shipped to the United States is, as has been stated, nearly \$4,000,000 annually. These San Juan factories are supplied mostly from the Caguas district where numerous large sorting, drying, curing and packing warehouses are situated.

The heavy freight traffic in the face of seemingly prohibitive transportation charges and the fact that the people have the "traveling habit," as evidenced by the high per capita returns of the tramway lines in San Juan, have all

pany has included the installation of a new hydro-electric source of supply, besides the construction of the new railway to Caguas. The Comerio Water Power Company was formed to carry through the water power development, and the Caguas Tramway Company is the builder of the new railway.

The street railway of the San Juan Light & Transit Company, the most important electric railway in Porto Rico, was the key to the extension to Caguas. This system was built some years ago by the present engineers and is thoroughly modern in construction and equipment. It includes about 10 miles of standard gage track, laid with 70-lb. T-rails, excepting a small section in the city laid with girder rails. The line makes a circuit of important streets in San Juan and runs thence through San Turce to Rio Piedras. There is a short branch line extending to a recreation park, with a theater and other amusements, managed by the company, at an attractive site on the ocean front. The new line 18 miles long extends from Rio Piedras to Caguas.



A SCENE ON THE MAIN STREET OF SAN JUAN, PORTO RICO

argued for the construction of a railway from Caguas to San Juan.

In 1906 the construction of railway facilities was made possible by the organization of the Porto Rico Railways Company, Ltd., a corporation of Canadian interests with which J. G. White & Co., of New York, is associated as engineers and constructors. In the Porto Rico Railways Company, Ltd., were merged the San Juan Light & Transit Company and the Porto Rico Power & Light Company,

The rolling stock of the San Juan road consisted of seventeen Brill semi-convertible, double-truck passenger cars and an equipment of coal and work cars. This has been increased recently by the addition of eight semi-convertible teak-wood cars, fitted with double trucks and four 40-hp motors. An express car, also used as an electric locomotive fitted with four 75-hp motors has been added.

Power for both railway and lighting purposes is supplied by a steam plant located at San Turce on the road to Rio Piedras. This plant contains 1100 hp of Cahall and Babcock & Wilcox boilers. The generating apparatus

consists of two simple automatic engines connected to two 225-kw, 2200-volt, two-phase, 60-cycle Westinghouse alternators, and another engine connected to a 250-kw, 550-volt Bullock railway generator. There was until recently a 200-kw railway unit, but it has been replaced by a 500-kw, 2200-volt, two-phase Westinghouse-Parsons steam turbine.

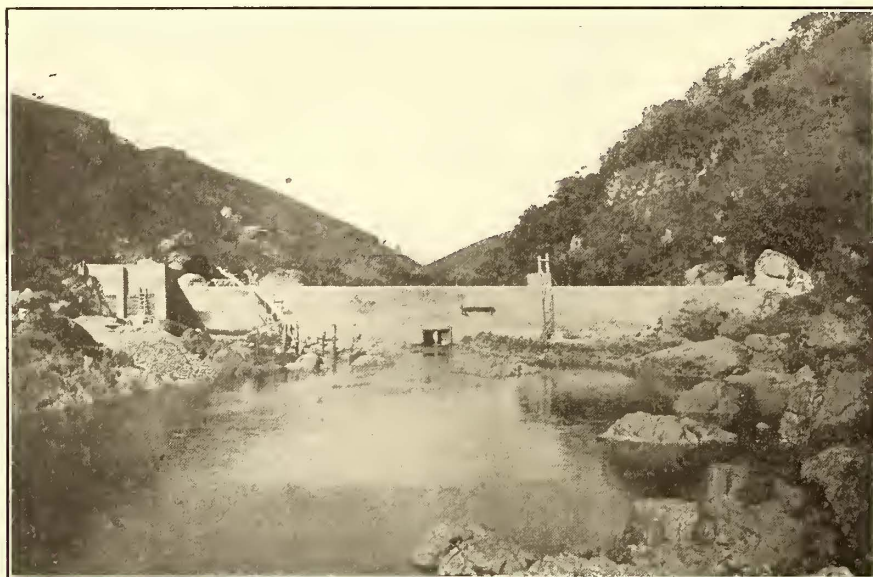
600 volts direct current. This sub-station is connected with the steam plant so that power can be supplied by steam in any emergency affecting the transmission line or the new water power plant.

The new hydro-electric plant of the Comerio Power Company, which will supply the bulk of the power for railway and lighting purposes in the remodelled system is very advantageously situated at Comerio Falls on La Plata River, one of the largest streams of the island, 20 miles from San Juan and about 12 miles from Caguas. The capacity of the water wheels is 3000 hp. The plant will operate under a head of 180 ft. The installation consists essentially of the dam located at the head of the falls, a long tunnel, two penstocks and the power house proper located in the gorge below the falls.

The dam is concrete and of the ogee type, approximately 40 ft. high and 300 ft. long. The entrance of the tunnel through steel head gates set in concrete is at the west end of the dam. The tunnel is of horseshoe shape, is concrete lined and has a sectional area of 30 sq. ft. and a length of 2600 ft. A petty reservoir

formed by a concrete dam 28 ft. high receives the water as it emerges from the tunnel.

The penstocks, of which there are two, emerge through the base of this dam and descend to the power house on a slope of one in two. They are 54 ins. in diameter and 500 ft. long, and are constructed of tank steel varying in thickness from $\frac{1}{4}$ in. to $\frac{3}{8}$ in., supported and anchored in con-



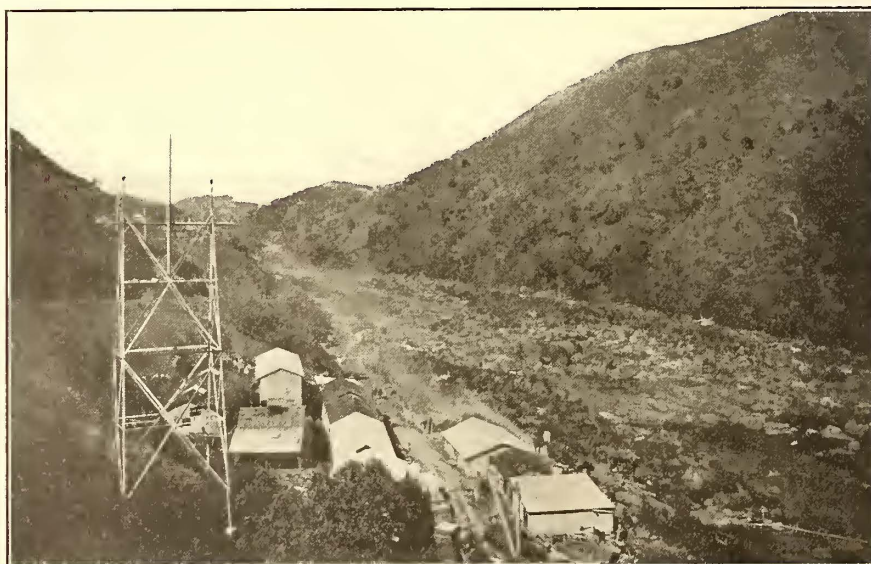
COMPLETING THE DAM AT COMERIO FALLS

The condensing apparatus consists of a Wheeler surface condenser for the older engines and a Worthington barometric for the turbine. The power for the operation of the San Juan railway system is furnished by the 250-kw engine driven unit and motor generators in the new sub-station. The alternators supply part of the electric light and power service in San Juan and vicinity, the remainder being furnished by the separate plant of the Porto Rico Power & Light Company.

The lighting and power system of the Porto Rico Power & Light Company supplies alternating current, single-phase at 2200 volts and three-wire direct current at 220/110 volts. The direct-current system supplies most of the customers. This company has the contract for the street lighting of San Juan, which consists of direct current multiple arc lamps. There are also a large number of commercial lamps in use, both direct and alternating.

The equipment of the power house of the Porto Rico Power & Light Company consists of 470-hp boilers, two tandem compound engines and one simple automatic engine, from which are driven by belts, four 45-kw, 125-volt Edison bi-polar generators, one 200-kw, 250-volt GE generator and one 75-kw, 2200-volt, 60-cycle General Electric a. c. generator.

The equipment of the sub-station at San Turce consists of nine 200-kw, 20,000/2300-volt, 60-cycle General Electric oil insulated, water-cooled transformers and two 300-kw railway motor generator sets. The motors are the 2300-volt synchronous type and the railway generators give



COMERIO PLANT UNDER CONSTRUCTION, SHOWING ALSO A TRANSMISSION TOWER AT THE LEFT

crete piers. The main gates at the upper ends of the penstocks are 60 ins. in diameter and are provided with bronze facings and seatings with ball-bearing stands.

The power house is constructed of rubble masonry, cement coated, and its sub-structure is built into solid rock. The main hydraulic equipment consists of four horizontal wheels of the Francis inflow type, built by the I. P. Morris

Company, each having a capacity of 750 hp and a speed of 450 r. p. m. under a 175-ft. head. Type Q Lombard governors are used. The turbines are arranged two on each penstock, and they discharge vertically into the tail pit through conical draught tubes.

The main electrical equipment consists of four 400-kw units, direct connected to the water wheels. The size of units was chosen to meet the varying demand in its several stages from operation of the railway and commercial power units during the day to the full lighting and railway operation at night. Current is generated at 2300 volts, three-phase, 60 cycles and is stepped up to the transmission pressure of 20,000 volts by six 300-kw oil-insulated, water-cooled transformers. There are two 40-kw exciters driven by Pelton type water wheels of 64 hp each and running at a speed of 450 r. p. m.

One of the most serious problems entering into the construction of this plant was that of transporting the heavier machinery to the site. The nearest government road is 4 miles away, and the hauling by cart over the steep grades and through fords was attended with difficulty.

The 20,000-volt transmission system to San Turce substation is perhaps one of the most interesting features of the entire work under description. It is a double line carried on structural steel transmission towers at a height of 40 ft. The wires are No. 4 copper and the spacing is 60 ins. There is a grounded conductor placed above the circuits for lightning protection and a private telephone line is installed on the towers. The towers are spaced twelve to the mile. They are constructed of structural steel mem-

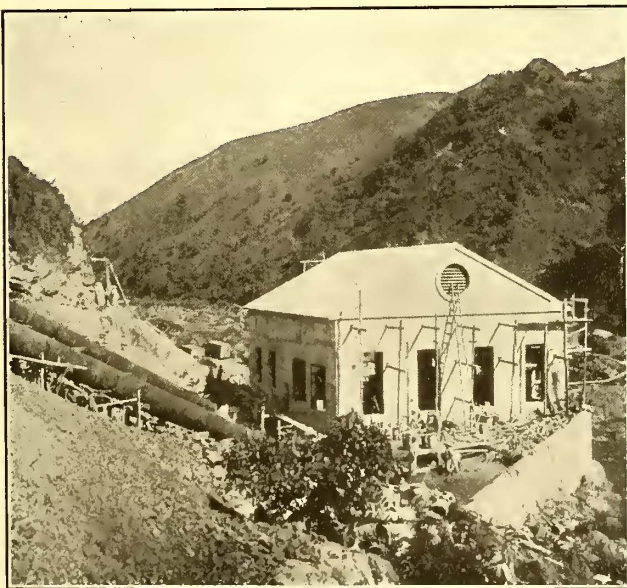
San Juan tramway is standard gage, so through passenger service between San Juan and Caguas demands standard gage. Eventually both gages will be maintained, but it has been decided to operate it for the present by steam as a meter gage road.

The route from Rio Piedras lies for the most part along



PLATFORM TRAILERS FOR SUNDAY TRAFFIC

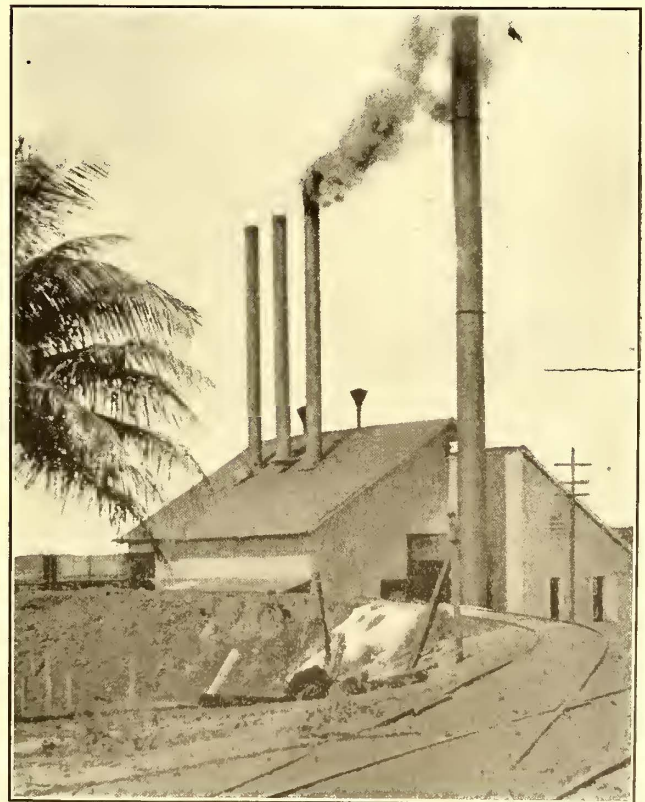
the Rio Grande River, and the country is broken so that a large amount of grading and bridging has been done to keep below a maximum of 3 per cent. The earth excavation averages approximately 8000 yds. per mile and the rock about 3500 yds. There are numerous steel bridge



COMERIO FALLS POWER PLANT NEARING COMPLETION

bers, very heavily galvanized, under the engineer's own specifications for tropical climates. The towers were made by the Riter-Conley Manufacturing Company, of Pittsburg.

In the construction of the Caguas railway it has been necessary to meet two binding requirements. Meter gage is necessary to permit through freight arrangements with the American Railway Company, the system of the latter company being built to that gage. At the same time the



SAN TURCE PLANT OF THE SAN JUAN LIGHT & TRANSIT CO.

spans varying in length from 70 to 100 ft. besides many smaller structures. All the piers and abutments are concrete. The line is laid with 66-lb. rails, with continuous joints on long leaf yellow pine and black gum ties, 6 ins. x 8 ins. x 8 ins., creosoted to withstand the effects of the climate. The ballast is rock and gravel.

The entire engineering and construction of the railway and power properties is in charge of J. G. White & Co.

THE NEW PLANT OF THE JACKSON ELECTRIC RAILWAY, LIGHT & POWER COMPANY

The electric railway service of Jackson, Miss., the capital of the State and a commercial center of about 30,000 in-



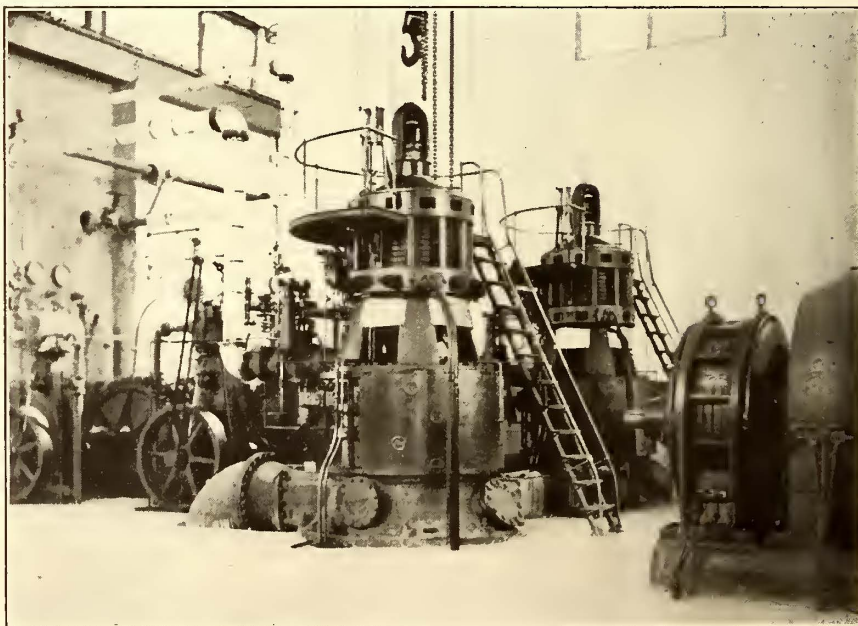
EXTERIOR OF LATEST POWER PLANT OF THE JACKSON RAILWAY, LIGHT & POWER COMPANY

habitants, is conducted on about fifteen miles of track by the Jackson Electric Railway, Light & Power Company. A new steam turbine power plant is rapidly approaching completion on the company's property on Tombigbee Street, and when all the machinery is installed the station will be one of the most modern steam plants in the South. For some months the plant has been carrying the company's load, but owing to changes in the turbine and condenser layout the completion of the plant is still a matter of some weeks.

The new plant is located about half a mile from the business center of the city and injection water for the condensing system is drawn from a well carried down into the old bed of the Pearl River. Coal is brought to the station in cars by a special spur track of the Illinois Central Railroad, and the cars are hauled up a grade of about 10 per cent to the level of a coal pocket distributing track adjoining the boiler house. A 20-hp, 220-volt GE induction motor hauls the cars up the incline by a windless and cable, and a 100,000-lb. car can be placed in position in about five minutes, the total distance hauled by motor being about 300 ft. The

present capacity of the plant is 1000 kilowatts, two 500-kw Curtis turbines being installed. Two more units of this size can be installed without alteration of the station walls.

As illustrated in the accompanying drawings the station consists of a coal shed about 34 ft. x 109 ft., a boiler room 52 ft. wide and a turbine room 78 ft. wide. The boiler room and coal pocket are of the same length. A bay of the turbine room 45 ft. long and 25 ft. wide cuts down the length of the room to 84 ft. This bay contains a lobby, office for the chief engineer, wire tower, white and colored lavatories. At the west end of the turbine room a bay 19 ft. 6 ins. wide is given up to a switchboard compartment. There is a basement beneath the turbine room and switchboard bay. The station is a brick and steel structure with concrete floors and tile roofs. The turbine room floor is of arched cinder concrete resting on 12-in. longitudinal I-beams and 9-in. cross beams. The 9-in. beams are carried on concrete piers 8 ft. 6 ins. high, 16 ins. square at the top and 24 ins. square at the bottom. The 12-in. beams are carried on 7-ft. 6-in. piers 16 ins. square at the top and 24 ins. at the bottom. A section of the turbine floor construction is illustrated. No floor is provided in the basement of the turbine room. Monitors are provided in the turbine and boiler room roof trusses, but the coal pocket, which is open at the ends, is not fitted with a monitor. The basement is 8 ft. high. A 17-in. wall separates the boiler and turbine rooms and a 22-in. wall is between the boiler room and coal pocket. The turbine room is served by a 15-ton hand operated crane of 52 ft. span carried on 50-lb. T-rails resting on 24-in. 80-lb. I-beams. On the east side of the room the beam is carried by 24-in. brick pilasters and on the west side by 9-in. steel columns. The turbine room is 36 ft. high from the floor to the bottom chord of the roof truss, and the boiler room is 28 ft. high. In the original design there were provided two coal tracks 11 ft. above the 5-in. concrete floor of the pocket, but only one track was installed. The capacity of the coal pocket is 1000 tons, and the pocket is divided into three bins with corrugated iron doors leading into the boiler room. Coal is discharged from

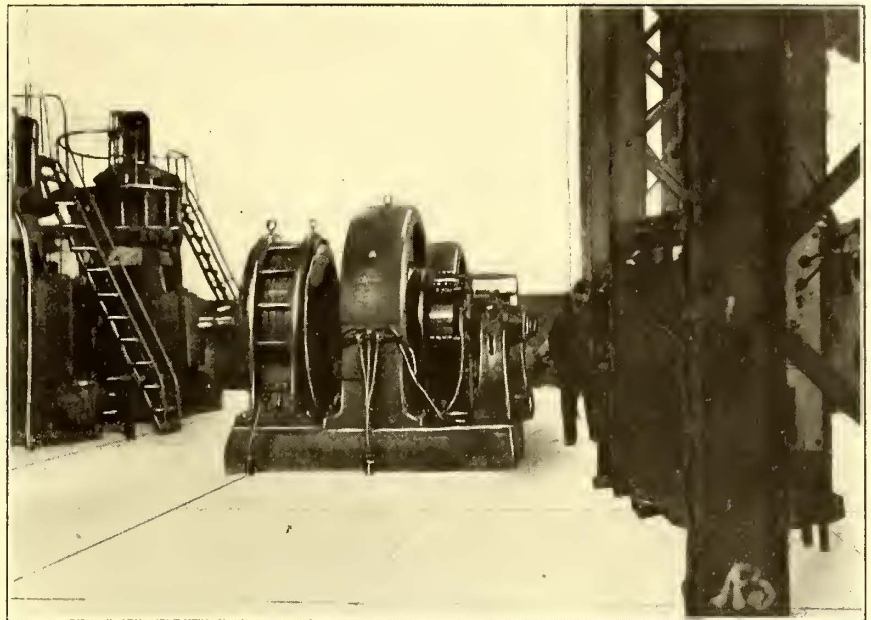


INTERIOR OF JACKSON STATION, SHOWING THE TURBINES

the cars directly into the pocket by gravity and is wheeled to the fronts of the furnaces by hand. Platform scales are installed in the floor of the boiler room and records of the

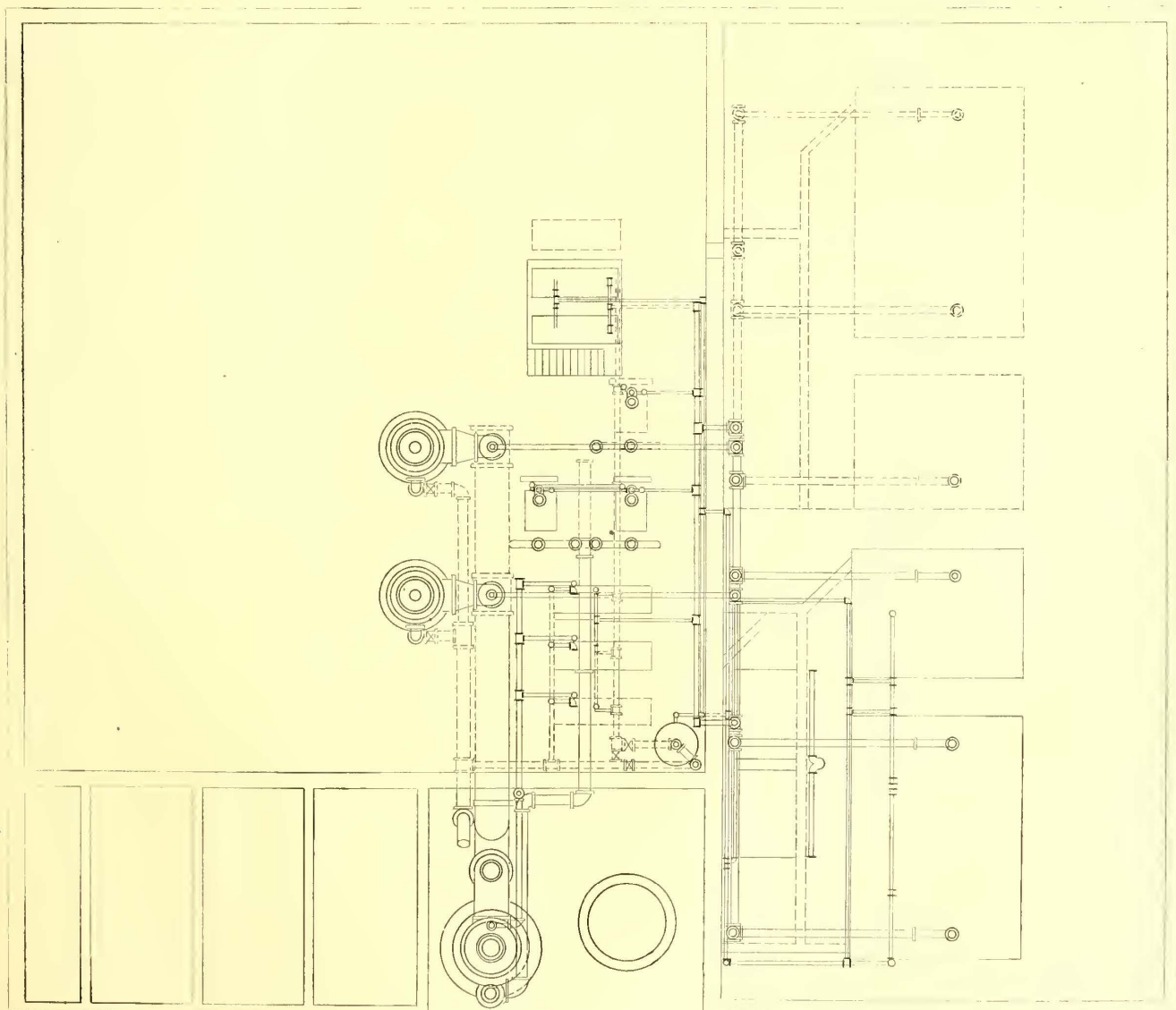
barrow loads, which are frequently weighed to secure an average, are checked by a cash register on the wall, operated by cords hanging in the middle of each doorway. The coal track is carried on two 30-in. plate girders $\frac{1}{2}$ in. thick. The switchboard bay is 15 ft. high.

Outside the coal pocket a concrete water reservoir serving as a storage for the condensing system is built up to a height of 11 ft. 6 ins. The reservoir is 109 ft. long and 30 ft. wide over all. It is 10 ft. deep on the inside, and the outside retaining wall is 18 ins. wide at the top and 7 ft. wide at the bottom. The inside wall is the outer wall of the coal pocket. The capacity of the reservoir is 235,000 gals. The condensing water from the well in the river bed is pumped into the concrete reservoir by two 25-hp motor-driven vertical centrifugal pumps supplied by the American Well Works. The motors are GE units. The discharge water from the



RAILWAY MOTOR-GENERATOR SET AT JACKSON PLANT

pump house through a wooden flume about 500 ft. long. A by-pass is provided connecting the circulating water dis- condensing outfit is delivered back to the well at the



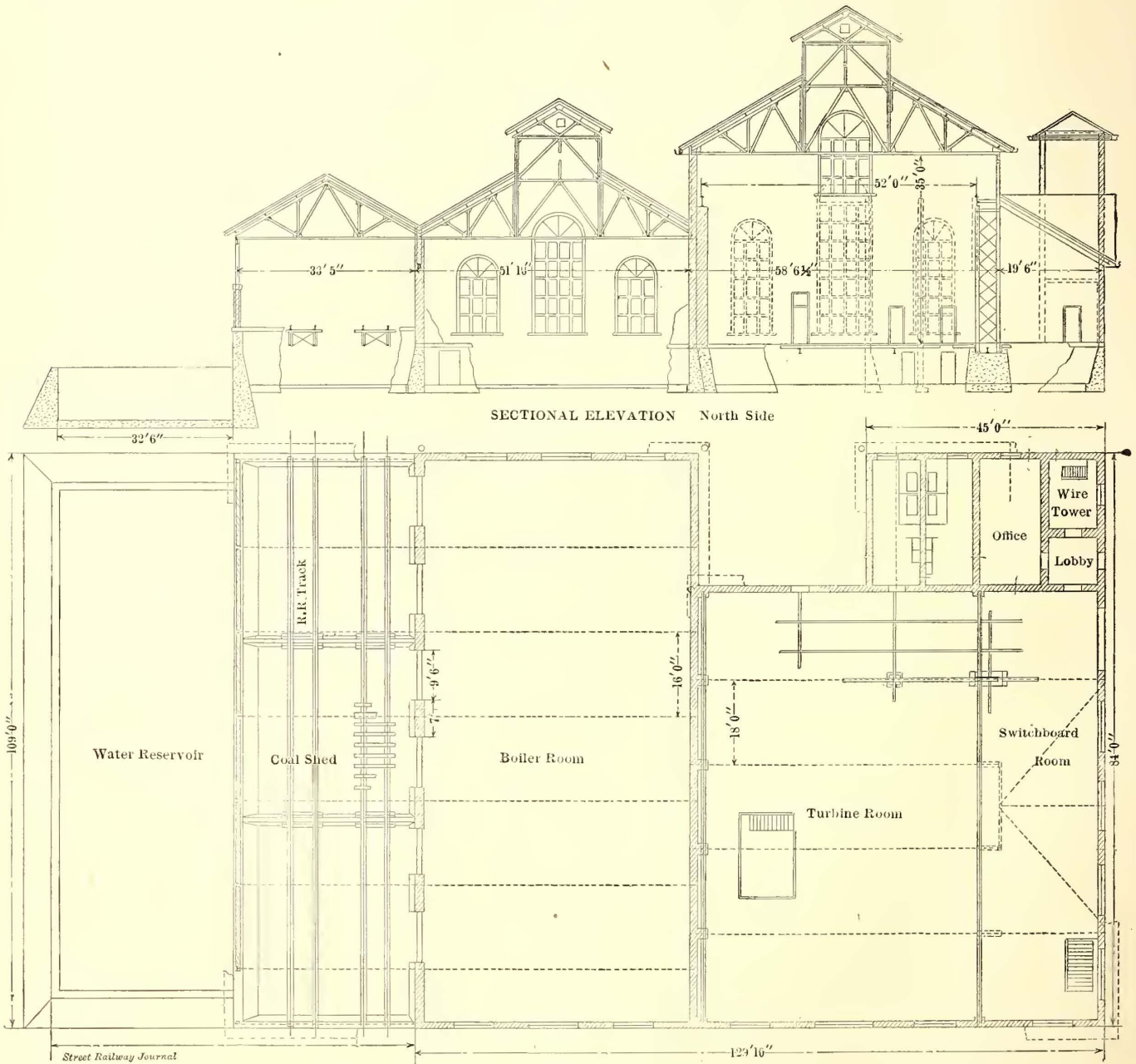
Street Railway Journal

PLAN OF LINE STEAM PIPING IN JACKSON (MISS.) POWER STATION

charge with the reservoir. Above the reservoir is a steel tank giving a head of about 30 ft. for boiler washing and other purposes in the plant.

Three 350-hp Stirling boilers are installed in the boiler room in two batteries. Each has 3541 sq. ft. of heating surface and 71.6 sq. ft. of grate surface. The flue gases are normally passed into the stack through a Green economizer of 3840 sq. ft. of heating surface built up in thirty-two sections of ten 4 9/16-in. tubes each. The stack is a Weber

through the wall and dropped down to the turbine inlet level in the turbine room. An auxiliary header 7 ins. in diameter is carried through the turbine room parallel to the boiler room wall, and this is cross connected at each end to the main header by a 6-in. line. The turbines are direct connected to three-phase, 2300-volt, 600-cycle generators making 1800 r. p. m. Each turbine exhausts into a 44-in. trunk line carried through the turbine room basement parallel to the boiler room wall and leading out of doors to



GENERAL PLAN AND SECTIONAL ELEVATION OF POWER HOUSE OF THE JACKSON RAILWAY, LIGHT & POWER COMPANY

reinforced concrete chimney 200 ft. high and 8 ft. inside diameter throughout its entire length. The boiler feed pumps are located in the basement of the turbine room, surrounded by a floor opening about 10 ft. x 15 ft. 6 ins. in dimensions. These are duplex 9 in. x 6 in. x 12 in. Blake pumps, steam driven. The feed water heater is of the National closed type, rated at 500-hp, and is located in a corner of the turbine room near the boiler room.

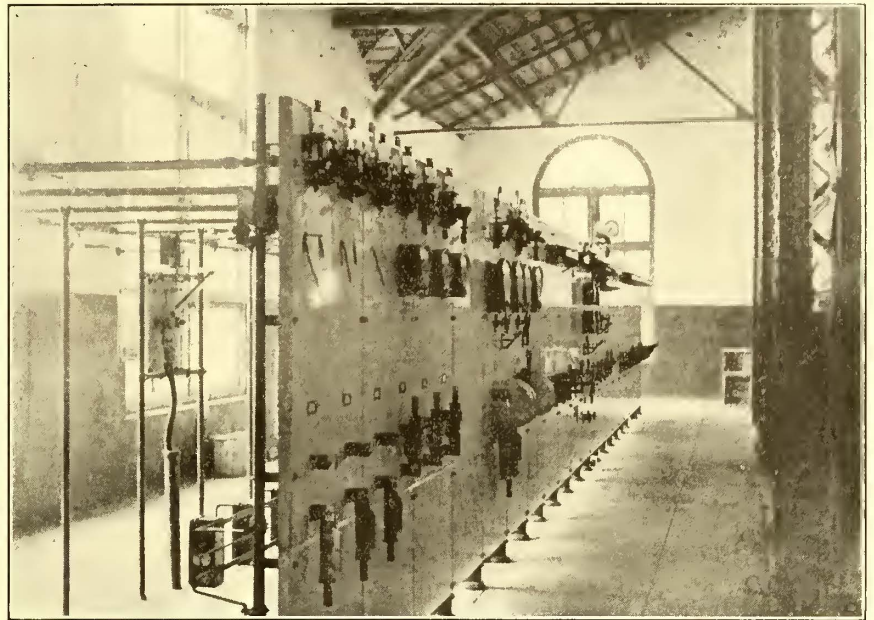
From each boiler a 7-in. steam pipe is carried to a 10-in. main header located on the inside of the boiler room wall. From this header a 6-in. pipe for each turbine is carried

an Alberger 2000-kw barometric jet condenser located close to the chimney. The individual turbine exhaust pipes are each 30 ins. in diameter. Each turbine is provided with a 12-in. atmospheric exhaust pipe discharging out of doors through an 18-in. outboard exhaust main terminating in the usual head above the roof. At the top of the main 44-in. exhaust riser, before it enters the condenser head 30 ft. 6 ins. above the hot well, a 24-in. relief valve is provided to take care of any pressure which might occur within the condensing system. Injection water is supplied to the condenser head through a 14-in. line connecting it with the

concrete storage reservoir outside the coal pocket. Large steam driven centrifugal pumps were supplied in the original installation of the plant for forcing injection water into the condenser head. These pumps did not prove satisfactory, however, and two motor-driven centrifugals will be installed. One turbine is at present carrying all the load of the plant, and condensing water is temporarily supplied by a 6-in. centrifugal pump belt driven by a 20-hp motor. The boilers are designed to supply steam if desired to the turbines at 250 lbs. pressure and 200 deg. superheat. The condenser is guaranteed to maintain a 28-in. vacuum with injection water at 70 deg. F. when condensing 25,000 lbs. of steam per hour.

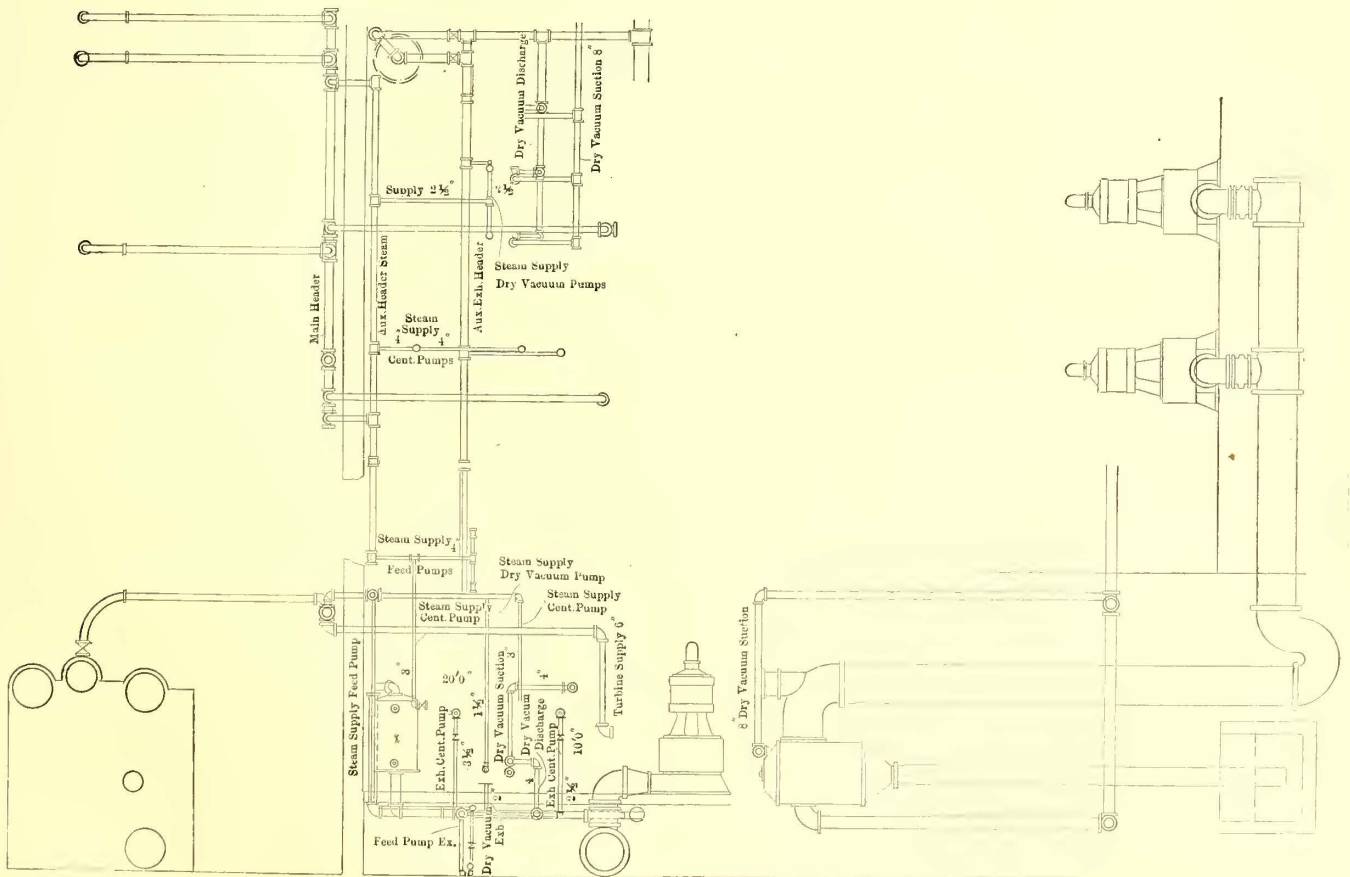
The hot well is at the bottom of the jet condenser and adjoining the stack, with connection to the reservoir and plank runway as described. Two Alberger 8 in. x 16 in. x 12 in. dry vacuum pumps are provided in the turbine room. They receive steam from a 2½-in. line leading from the auxiliary steam heater, each pump being served by a 1½-in. branch. The boiler feed pumps are supplied through a 4-in. line, and a steam driven exciter for the turbines is supplied by a 2-in. lead. The latter discharges into an auxili-

ary exhaust main running through the basement parallel to the other headers. The exhaust main leads to the feed water heater, which is provided with a by-pass for atmospheric exhaust, though normally all the exhaust from the auxilia-



VIEW ALONG THE FRONT OF THE SWITCHBOARD

tion water supply well at the river is 24 ft. in diameter and 20 ft. deep.



EXHAUST PIPING IN JACKSON (MISS.) POWER STATION

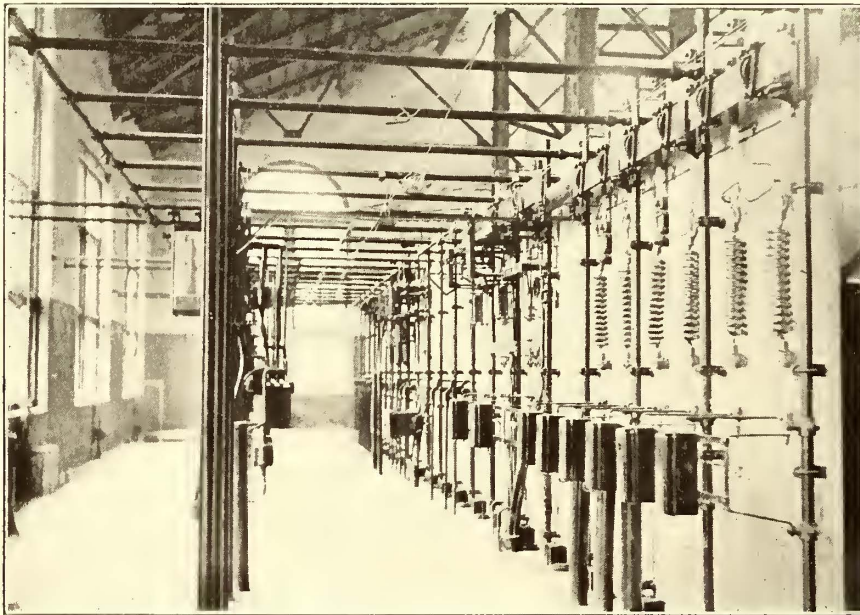
ary exhaust main running through the basement parallel to the other headers. The exhaust main leads to the feed water heater, which is provided with a by-pass for atmospheric exhaust, though normally all the exhaust from the auxilia-

The steam exciter is a 25-kw horizontal turbo set making 3600 r. p. m. and wound for 125 volts. In ordinary running a 25-kw exciter driven at 900 r. p. m. by a 35-hp, 220-volt induction motor is used. The turbo exciter is located near

PAPER ON SINGLE-PHASE RAILWAY SYSTEM

the auxiliary steam header and the motor-generator exciter near the switchboard, to save in piping and wiring. There are two 4 in. x 1 $\frac{5}{8}$ in. x 4 in. duplex Worthington oil step bearing pumps located in the basement. These are built for 500 lbs. pressure. The turbine valves are operated mechanically by the governors instead of electrically.

Railway current is obtained from two 250-kw motor generator sets located near the switchboard. Each consists of a 360-hp, three-phase, 2300-volt induction motor driving at 514 r. p. m. a 525 to 575-volt GE generator. There are three 7.5 ampere tub transformers, 71 kw each, installed in the turbine room for arc lighting service on the streets. The switchboard is built of twenty panels. Eight of these are blanks for future service, three are 2300-volt feeder panels, two for the turbines, two for exciters, one for the 360-hp motors of the railway sets, two for the railway generators and two for 550-volt feeders. Two sets of



VIEW, SHOWING LIBERAL SPACE BACK OF THE SWITCHBOARD

three-phase busbars are provided and any alternator or circuit can be thrown upon either bus. The output of the turbines is separately metered, as is also the railway output. The 2300-volt circuits are controlled by oil switches mounted on a frame at the rear of the switchboard. These switches are mechanically operated by bell cranks mounted on the fronts of the main switchboard panels, but are provided with overload trip coils. All cables are concealed in iron pipes and are rubber covered and tested for 20,000 volts. They are carried in diagonal runs from the machines to the switchboard and thence to the wire tower. The average 24-hour load on the plant is at present about 300 kw. The engineers for the work were Blomberg & Proutt, of Memphis, Tenn. The construction was in the hands of the Leonard-Martin Construction Company, of Chicago. F. G. Proutt was general manager of the Jackson company during the period in which the plant was built, and Abel Bente was electrical engineer.

A meeting was held at Cooper Union, Feb. 11, under the auspices of the American Museum of Safety Devices, at which Hon. Carroll D. Wright, Dr. Josiah Strong and other speakers described the work undertaken by the Museum. Bishop Potter presided. A letter was read from Governor Hughes approving the plan.

In a paper read before the Philadelphia branch of the American Institute of Electrical Engineers on Feb. 10, Wm. McClellan discussed the present status of the single-phase railway system. Among the improvements which he thought would probably be introduced in the present high-voltage trolley circuits are a reduction in the number of insulators at which breakdowns can occur and a greater amount of sectionalization on single-track and double-track roads. As an example of the former the speaker suggested a pull-off for curves which would combine in one insulator the two that are now required for pull-off and suspension. The present pantograph is also susceptible of improvement, especially to lessen its weight. The question of the effect of smoke on overhead insulation should be a temporary problem only. At present porcelain seems to be superior to any other kind of insulator for the overhead system, but is liable to breakage. There is no difficulty in arranging so that interference of a single-phase system with adjacent telegraph, telephone and signal systems can be avoided, although when an old system must be revamped on account of electrification it means a rather large expense.

Mr. McClellan continued: "It is perhaps too much to hope that there will never be a serious loss of life due to the high-potential system. Trolley wires have fallen before, and they will fall again. In using a catenary system with suspensions every 10 ft. we have done much to prevent accidents due to breaking trolley wires. So far as the high-potential on the car is concerned there is practically no danger. The car or locomotive usually has a metal roof, and the cable must be lead covered for other reasons, and should be brought through an iron conduit from the roof to the line switch beneath the car. This will preclude all possible danger from the high-potential car circuit. There is a remote source of danger in the auto transformer. Should it be entirely or partially disconnected from the ground, while connected to the high-potential circuit, a dangerously high potential might exist in the low-potential circuits. Considering the careful way in which the transformer is grounded, however, this combination of circumstances could only happen if the car were practically suspended in the air with the trolley still in contact with the wire. On pneumatically operated trolleys, the trolley is automatically pulled from the wire by the action of the line relay when the voltage on the transformer drops below a predetermined point. A prominent railroad official once said to the speaker when inspecting a high-potential train, 'But supposing that combination of circumstances did happen, ought one to expose passengers to such a possibility?' There was no room for argument, but the speaker asked, 'Have you ever thought what might happen some time as a train load of passengers are passing a steam locomotive under a high steam pressure at the station platform after it has been bumping along for 100 miles over the average roadbed?' So far as the employee is concerned he need only obey the orders given him and he will be safe."

DISCUSSION ON FUEL BEFORE THE NEW ENGLAND STREET RAILWAY CLUB

At the January meeting of the New England Street Railway Club the members listened to an interesting address on the subject of fuel by E. O. Bailey, chief of the coal testing department of A. D. Little's laboratory in Boston. Mr. Bailey referred to the regions from which coal is obtained, which run practically parallel to the coast line and also to the range of the Allegheny Mountains. As one goes west the coal gradually increases in volatile matter. That of anthracite is 3 to 6 per cent; that of the Reynoldsville, Westmoreland and Connellsville districts is from 28 to 30 per cent volatile matter. Further west it reaches 35 per cent or is regular gas coal.

After describing the system followed in coal mining, the speaker referred to methods of purchasing coal. A popular method at present is on the b. t. u. basis, but this has its faults as well as its good points. The fault lies mostly in having to pay a higher price for the coal. The coal dealer does not know whether his coal is going to run uniformly throughout the year, even from the same mine, and is obliged to set his price to cover the chances of its being bad. If he can afford to take the risk at, say, 25 cents a ton, why cannot the buyer? Another difficulty is in securing a fair sample of the coal delivered. A few shovelfuls here and there do not represent a fair average of a car load. A considerable quantity, say from 500 to 2000 lbs., in a large shipment should be taken. It should be selected in a miscellaneous manner, all of it broken up and thoroughly mixed so that a piece of slate left in the sample or thrown away will make practically no difference. A small sample may have a piece of slate in it that will be 5 per cent of the total. This is often found in samples taken, so one can readily see where the discrepancy comes in.

The method of determining the quality of coal by evaporative tests is what may be considered the really practical method, but there are certain difficulties even there. The boiler efficiency varies with so many things that it is practically impossible to maintain the same boiler conditions throughout two consecutive tests. The fireman has a great deal to do with it; the load on the boiler, the draft, the cleanliness of the heating surface, all these things are very irregular.

The method of determining heat units in a laboratory is a very practical one. A small amount of coal is taken, which is a representative sample if properly taken, and is burned in an atmosphere of oxygen in a steel bomb which is submerged in water. A very delicate thermometer gives the temperature of this water before the coal is burned, and by means of an electric spark the coal is ignited and entirely burned and every bit of the heat developed is absorbed by the water and the thermometer rises accordingly. From this rise in temperature the b. t. u. are determined. The result is practical, as a b. t. u. is the heat required to raise the temperature of 1 lb. of water 1 deg. F. It obviates all the errors which come in a practical boiler test.

Another point to consider is the moisture in the coal. As this must be evaporated it is of considerable importance if the coal runs high in moisture. Ash in coal is also a matter which affects the boiler efficiency. Its effect does not depend altogether upon the amount of ash, but upon its nature. In some coals ash has a very high fusing temperature and it is almost impossible to make a clinker of it. Where the ash contains considerable iron and other fluxes, clinkers will form, necessitating a frequent cleaning of the fire and

producing a lower boiler efficiency. Sulphur in coal is detrimental for two reasons. It is generally combined with iron, and the iron causes the clinker. The sulphur also, being liberated as the coal is burned, undoubtedly has some effect on the boiler tubes, the stack (if an iron stack is used) and the other iron work.

The boiler efficiency may often be greatly increased by the method of firing. The fireman has a great deal to do with the coal bill, especially as to keeping conditions uniform in the furnace. The mechanical stoker has done this in many cases to a great extent, but the man with the shovel can approach it, often times, a great deal closer than he does, especially with a high voltage coal. As soon as the coal is thrown on the red-hot bed of fuel, gases begin to be given off, and in a gas coal at the end of five minutes 33 per cent of the heat of that coal would be given off, whether there is any air present or not. With semi-bituminous coals the gas is given off more slowly. There is not so much of it, the carbon remains until the air comes in contact with it. Thus the fireman with the one-shovel method can save several per cent over the man who piles in fuel regardless of anything else except his own desire to hurry up and get through with it and sit down as long as he can. The air supply should at all times be proportioned to the requirements of the coal. This is very important, and the best way to approximate this result is by the use of the damper regulator. The losses which a fireman is accountable for are either unburned gases or excess air. With a thin fire, or a fire with holes and too much draft, the amount of air passing through the fire is very great, sometimes causing a loss of 20 to 30 per cent.

The gas analysis in the boiler room is of much importance and the CO₂ machines that are now on the market are undoubtedly well worth their cost, if they were only perfected beyond the point of being an instrument. They are oftentimes found to be so delicate that the least thing will put them out of operation, and in some of the larger plants it has been found necessary to have a man detailed to look after those instruments alone. Otherwise they will give erroneous results, and as quickly as the fireman has found that they can err he loses his confidence in them.

Another very important item is the question of cleanliness of the heating surface. The tubes are not blown sufficiently often in some plants; the scale is not kept out of the inside. An accumulation of scale will cause a high flue temperature and considerable loss.

THE PURCHASE OF COAL BY THE GOVERNMENT

The United States Geological Survey has recently made public, in a pamphlet by D. T. Randall, the method of purchasing coal by the government on the basis of the heating value of the coal. The government expends from its various departments nearly \$6,300,000 yearly for fuel, and the necessity for a more uniform standard in the purchase of coal became apparent some time ago. In connection with the abstract of the lecture by Mr. Bailey before the New England Street Railway Club, published above, some account of the methods of power users, contained in Mr. Randall's pamphlet, may be of interest.

Coal purchased by the government is paid for on a standard of b. t. u. contained in the dry coal, and the bidder is expected to name the number of b. t. u. in the coal delivered. The percentage of ash is also specified, as it is a factor in the successful burning of the coal on a grate and as it involves an expense for removal from the

premises. If the dealer is not fairly familiar with the value of his coal it may then be arranged to have him submit a properly selected sample with his bid, this sample to be analyzed by the government and the result used as a standard in the contract. It is preferable, however, that the bidder use his own values.

If the coal contains more or less b. t. u. than the established standard, the price is increased or decreased accordingly. For all coal which by analysis contains less ash than that established in this proposal a premium of 1 cent per ton for each whole per cent less ash will be paid. An increase in the ash content of 2 per cent over the standard established by contractor will be tolerated without exacting a penalty for the excess of ash. When such excess exceeds 2 per cent above the standard established, deductions will be made from price paid per ton in accordance with a table forming part of the form of bid used by the government.

On account of lack of information among the dealers in anthracite coal as to the heating value of the several sizes and kinds used by the government, a number of contracts were let on the basis of the ash in dry coal. For the city of Washington these were worded in the same way as the regular specification, except the section relating to price and payment, which was as follows:

PRICE AND PAYMENT

Payment will be made on the basis of the price named in the proposal for the coal specified, corrected for variations in ash as shown by analysis, above and below the standard established by the contractor.

For an increase or decrease up to 2 per cent in the ash content above or below the standard no correction will be made in the price. When the variation exceeds this allowance above or below the standard, corrections will be made in the price as follows:

For furnace, egg, stove and chestnut sizes of coal, variations from the standard percentage of ash exceeding 2 and less than 2.5 above and below will result in the deduction or addition of 15 cents per ton. For each additional one-half of 1 per cent, or fraction thereof, 3 cents more per ton will be deducted or added.

For pea coal, variations from the standard percentage of ash exceeding 2 and less than 2.5 above and below will result in the deduction or addition of 10 cents per ton. For each additional one-half of 1 per cent, or fraction thereof, 2½ cents more per ton will be deducted or added.

For buckwheat and screenings, variations from the standard percentage of ash exceeding 2 and less than 2.5 above and below will result in the deduction or addition of 8 cents per ton. For each additional one-half of 1 per cent, or fraction thereof, 2 cents more per ton will be deducted or added.

From a specification used by a few firms in Baltimore the following is taken:

Detail of Specifications.—Coal will be semi-bituminous and run-of-mine. It shall be dry, well picked and free from excessive amounts of slate, pyrites and dirt of any kind and shall have the following composition: Moisture, not over 1 per cent; volatile carbon, not over 20 per cent; ash, not over 7 per cent; sulphur, not over 1 per cent.

Additions.—If the coal has less than 1 per cent moisture, the deficit per cent less than 1 per cent will be added to the bill. If the coal has less than 20 per cent volatile carbon, the deficit per cent less than 20 per cent will be multiplied by 2 and added to the bill. If the coal has less than 7 per cent ash, the deficit per cent less than 7 per cent will be multiplied by 3 and added to the bill.

Deductions.—If the coal contains more than 1 per cent moisture, the excess per cent above 1 per cent will be deducted from the bill. If the coal contains more than 20 per cent volatile carbon, the excess per cent above 20 per cent will be multiplied by 2 and deducted from the bill. If the coal contains more than 7 per cent ash, the excess per cent above 7 per cent will be multiplied by 3 and deducted from the bill.

The following are the essential features of the speci-

cations used by the Interborough Rapid Transit Company of New York in purchasing about 30,000 tons of coal each month for use in its plants, which are among the largest in the United States:

PRELIMINARY SPECIFICATIONS FOR BITUMINOUS COAL FOR THE INTERBOROUGH RAPID TRANSIT COMPANY

Coal must be a good steam, caking, run-of-mine, bituminous coal free from all dirt and excessive dust, a dry sample of which will approximate the company's standard in heat value and analysis, as follows: Carbon, 71; volatile matter, 20; ash, 9; British thermal units, 14,100; sulphur, 1.50.

A small quantity of coal will be taken from each weighing hopper just before the hopper is dumped while the lighter is being unloaded. These quantities will be thrown into a receptacle provided for the purpose, and when the lighter is empty the contents of the receptacle will be thoroughly mixed, and a sample of this mixture will be taken for chemical analysis. This average sample of coal will be labeled and held for one week after the unloading of the lighter. The sample taken from the mixture for test will be analyzed as soon as possible after being taken. No other sample will be recognized.

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

Should there be no question raised by the contractor within the three days specified, as to the values of the first analysis, the average sample of coal will be destroyed at the end of seven days from date of discharge of coal from lighter. Should a second test be made of coal taken from any lighter as herein provided, then any penalties to be made as set forth in paragraph under "Penalties" will be based on the results as obtained from the second test.

The price to be paid by the company per ton per lighter of coal will be based on a table of heat values for excess or deficiency of its standard, but subject to deductions as given in the section under "Penalized coal," including excess of ash, volatile matter, sulphur, or dust, or less than the minimum amount required to be contained in any lighter, for coal which results less than the company's standard.

Premiums or deductions are based on a rate of 1 per cent per ton for a variation of 50 British thermal units per pound of coal, as indicated in a table a few items of which are given below:

TABLE FOR B. T. U. VALUES

For coal in any lighter which is found by test to contain, per pound of dry coal, from—

15,501 and above.....	28 cents per ton above standard
15,101, to 15,150, both inclusive..	20 cents per ton above standard
14,601 to 14,650, both inclusive..	10 cents per ton above standard
14,101 to 14,150, both inclusive..	Standard
13,601 to 13,650, both inclusive..	10 cents per ton below standard
13,101 to 13,150, both inclusive..	20 cents per ton below standard
12,101 to 12,150, both inclusive..	40 cents per ton below standard

No lighter of coal will be accepted which, by trial, in the judgment of the superintendent, contains an excessive amount of dry coal dust. The decision of the superintendent will be final in this respect. Coal taken from such lighter for trial will be subject to the special deduction set forth under "Penalized coal," but paid for in all other respects as herein provided.

Coal which is shown by analysis to contain less than 20 per cent of volatile matter, 9 per cent of ash, or 1.50 per cent of sulphur, will be accepted without a deduction from the bidder's price, plus or minus an amount for excess or deficiency of British thermal unit value, as herein provided. Where the

analysis gives amounts for any or all elements in excess of these quantities; deductions will be made from the bidder's price in accordance with the tables of values of volatile matter, ash and sulphur below given, plus or minus the amount for excess or deficiency of the standard British thermal unit value, in addition to any other deductions which may be made as herein provided.

TABLE OF DEDUCTIONS FOR VOLATILE MATTER

For coal in any lighter which is found by test to contain, per pound of dry coal—

Over 20 per cent and less than 21 per cent....	2 cents per ton.
* * * * *	* * * * *
Over 22.5 per cent and less than 23 per cent....	12 cents per ton.
* * * * *	* * * * *
24 per cent and over.....	18 cents per ton.

This table is made for a difference of each one-half of 1 per cent and the deductions are at the rate of 4 cents for each 1 per cent of volatile matter.

TABLE OF DEDUCTIONS FOR ASH

For coal in any lighter which is found by test to contain, per pound of dry coal—

Over 9 per cent and less than 9.5 per cent....	2 cents per ton.
* * * * *	* * * * *
Over 11.5 per cent and less than 12.....	12 cents per ton.
* * * * *	* * * * *
13.5 per cent and over.....	23 cents per ton.

This table is made for each difference of one-half of 1 per cent and at the rate of 4 cents for each 1 per cent increase in the ash.

TABLE OF DEDUCTIONS FOR SULPHUR

For coal in any lighter which is found by test to contain, per pound of dry coal—

Over 1.50 per cent and less than 1.75 per cent..	6 cents per ton.
* * * * *	* * * * *
Over 2 per cent and less than 2.25 per cent....	10 cents per ton.
* * * * *	* * * * *
2.50 and over.....	20 cents per ton.

This table is made out for each difference of one-fourth of 1 per cent and at a diminishing rate.

Should any lighter of coal delivered at the company's docks contain less than 700 tons, a deduction of 7 cents per ton will be made from the price as determined by the British thermal unit value and analysis, in addition to any other penalty provided for herein. Should any lighter of coal delivered at the company's docks be rejected by the superintendent on account of excessive amount of coal dust, then a deduction of 25 cents per ton will be made from the price as determined by the British thermal unit value and analysis, for the coal taken from said lighter, in addition to any other penalty which may be made as herein provided. Should any lighter of coal be delivered in other than self-trimming lighters as herein provided, a deduction of 7 cents per ton will be made from the price as determined by the British thermal unit value and analysis, exclusive of any other penalty which may be made as herein provided.

The contractor's bill of lading will be checked by the company's scales. Should there be a deficiency of 1 per cent or more between the bill of lading and the company's weights, then the company's weights will be taken as correct.

When the contractor has been notified by the company to deliver coal under this contract, a further notice may be given requiring the contractor to make delivery of the coal so ordered within twelve hours after the receipt of said second notice. Should the contractor, for any reason, fail to deliver the coal so ordered within twelve hours after the receipt of said second notice and in accordance with the requirements therein as to place of delivery, the company shall be at liberty to buy coal in the open market, and the contractor will make good to the company any difference there may be between the price paid by the company for said coal in open market and the price the company would have paid to the contractor had the coal been delivered by it in accordance with the requirements of said notices from the company, or said difference may be deducted from any money then due or thereafter to become due to the contractor under the contract to be entered into.

The publication also contains an account of methods of sampling and testing coals and the results of a number of analyses of anthracite and bituminous coal delivered to government buildings in Washington.

SHOP KINKS AT THE ANDERSON SHOPS OF THE INDIANA UNION TRACTION COMPANY

Some interesting operations have been devised at the new shops of the Indiana Union Traction Company at Anderson, Ind., to utilize worn out material which is usually scrapped. All heavy repairs to both interurban and city cars are made here. The interurban cars are equipped with steel-tired wheels and after a few turnings the tires wear down to what is considered a safe limit of thickness for high-speed work, about 1½ ins. Instead of scrapping these worn tires they are removed and mounted on centers made from worn out or broken chilled cast iron wheels taken from city cars and are then replaced in service under the city cars where it is safe to wear them down to about ¾ in. thickness. The chilled cast iron wheels are not removed from their axle, but are put in a wheel lathe and undercut from the back below the chill with a heavy cutting-off tool. As the tool works in, the hard chill is broken off all around with a light sledge. The tool cuts clear across the tread under the chill and after the hard metal is broken away the finishing cuts are made with an ordinary round nose tool. The retaining ring groove is cut in the back and the old tire is mounted on the new center before turning. The centers can be made for about \$1 each.

Some of the interurban cars owned by the company are equipped with Westinghouse No. 85 motors, and others with 56 motors. The pinions for the No. 85 motors are much larger in diameter than the No. 56 motor pinions. When one of these large pinions is worn out and removed it is put in a lathe and the teeth are stripped, forming a blank large enough to cut out a new pinion for the No. 56 motors. These are cut on a milling machine in the shop.

The seats in the limited cars are upholstered in dark green plush. In spite of requests painted in the cars for passengers not to put their feet on the seats, this upholstering gets very dirty and discolored. When a car comes in for a general overhauling the seat cushions are taken out and thoroughly cleaned and renovated. Covers badly discolored but not much worn are re-dyed and used again.

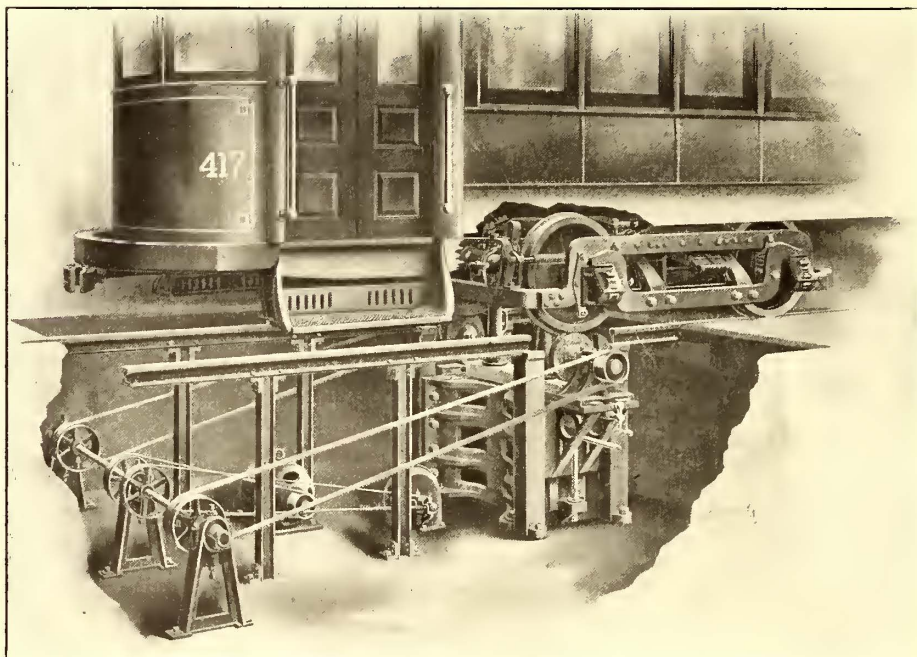
The sand drier used in the shops is a simple home-made affair which serves for a variety of purposes. From the scrap pile of the power house a 10-ft. section of 24-in. cast iron water pipe and a reducing Tee of the same size having a small branch outlet about 10 ins. in diameter were secured without cost. The 24-in. pipe was supported horizontally on brick supports at each end about 12 ins. from the floor. The tee was fitted at one end with the small outlet turned up. This was connected to the brass foundry flue by sheet iron piping and the open end of the tee was bricked up. Wet sand is piled around the large horizontal pipe in which all of the shop sweepings, shavings and other refuse is burned as in a marine type boiler. No grate is required and by opening a window just back of the end of the pipe a strong draft is created which makes a hot fire and allows almost any kind of refuse to be burned. Scrap insulated wire is put in the fire and the insulation burned off quickly and easily. All armature coils and other insulated parts are baked by laying them on top of the pipe which is exposed above the sand pile. The sand, as it is dried out, is screened and piled in a bin nearby.

The Takapuna Tramways & Ferry Company is being formed to establish a ferry service to O'Neill's Point, across the bay from Auckland, New Zealand, and a tramway from that point to and around Lake Takapuna, a distance of 10 miles. Propositions for the construction of the lines are being received.

CAR WHEEL GRINDER OF THE PUBLIC SERVICE RAILWAY COMPANY'S SYSTEM

In a description of the Plank Road shops of the Public Service Corporation of New Jersey, by Martin Schreiber, which appeared in the *STREET RAILWAY JOURNAL* for Sept. 2, 1905, the author described a number of special shop tools there in use. Among them was a car-wheel grinder designed by Charles Remelius, superintendent of rolling stock of the Public Service Railway Company, and arranged to grind the wheels without requiring their removal from the trucks. At that time the drawings only had been completed. Soon after a machine was built and it has proved so successful that the device has been placed on the market by the Quincy, Manchester, Sargent Company, of Plainfield, N. J.

The illustration gives an excellent idea of the completed



CAR WHEEL GRINDER IN USE BY PUBLIC SERVICE RAILWAY COMPANY

machine. As will be seen, a cast iron frame affords a firm bearing for the longitudinal and vertical slides, which regulate the movement of the emery wheels on each side. This cast iron frame also supports the ends of the rails which form the track, between which is the space that is traversed by the cutting wheels of the grinder. The 2-in. x 14-in. carborundum wheels are driven at a peripheral speed of 5000 ft. per minute by an electric motor. In ordinary practice it is only necessary to take a G. E. 1200 or 800 old car motor and rearrange the fields with shunt winding, which answers very nicely for driving purposes.

When a flat is to be taken out of a pair of wheels the car is run over a pit and jacked up. The axle of the wheels is driven by its own motor, the current first being introduced through a water rheostat to regulate the speed. The wheels of the car turn in the opposite direction than those of the emery wheels. On two-motor equipment, if the pair of wheels to be trued are on the idle axle, the latter is turned by bolting on to the axle a split sprocket gear, which in turn is connected with a sprocket to a pinion on an old car motor, which is also placed in the bottom of the wheel grinder pit.

The cast iron columns that are connected to the frame of the machine are hollow and contain a galvanized iron ex-

haust pipe the mouth of which is close to the edge of the emery wheels. The bottom end of the column is attached to a 14-in. exhaust fan, so the emery dust and grindings are discharged into any convenient place. The dust generally is taken to a barrel of water placed nearby.

The Public Service Railway Company now has seven of the grinders in operation, some of them having been installed over two years. They are distributed one each, in the following shops: Auxiliary shop at South Orange, auxiliary shop at Montgomery Street, Jersey City; auxiliary shop at Dunnellen; auxiliary shop at West Hoboken; auxiliary shop at Paterson; Plank Road shops at Newark and the main shops at Camden.

In any device of this kind the question of cost of operation is important. This is really made up in a wheel grinder of two items, the actual cost in labor and materials of grinding the wheels and the indirect cost to the company

of the loss in use of the car while it is in the shop. Both should therefore be considered. A report of last month from the South Orange grinder of the Public Service Railway Company shows that 372 pairs of wheels were ground down by the grinder there. The average length of time that was consumed in the operation was 17 minutes and the direct cost of the work averaged 59 cents per pair of wheels. This cost was made up as follows:

Carborundum stones.....	\$0.42
Labor15
Belting, oil, etc.....	.02

One pair of carborundum wheels on the grinder was good for approximately 50 jobs at the South Orange shop, while at the Plank Road shop it is claimed that one set of grinding wheels answered for 90 pairs of flats. At the latter place the average

cost of truing a pair of wheels was only 47 cents.

The engineers of the Public Service Railway Company believe that there is considerable advantage in this method, as compared with other plans in vogue for truing wheels. Thus when the wheels and axle are taken from cars and placed in a wheel grinding machine, it is necessary to remove the axle and wheels, center them in the machine and expend upon a pair of wheels a considerable amount of labor. The Public Service Railway Company estimates that it costs \$4 to \$5 a pair to take out a flat when the wheels and axle are removed from a car, exclusive of the cost and inconvenience of taking the car out of service, when extra axles and wheels are not in stock. The dead mileage of cars is figured in the cost given. The company also believes the method cheaper and more desirable than that of grinding out the flats by special brake shoes.

The Santiago Electric Railway, of Santiago, Cuba, was opened on Feb. 8. The celebration included breakfast, at which prominent officials and citizens were present. Fourteen decorated guest cars traversed the entire system. All the important business houses were closed. There was a banquet in the evening followed by a ball.

FLANGED TEETH ICE LEVELERS

The Gifford-Wood Company, of Arlington, Mass., manufactures for street railway service a street ice leveler which has met with success, and is in use on such systems as those of the International Railway of Buffalo, Worcester Consolidated Street Railway and the Halifax Electric Tramway Company's lines. It consists of a system of flanged teeth for attaching to snow plows for the purpose of cutting down the level of the ice surface between the tracks to a point that will clear the motors and by sav-



ICE LEVELER DRAWN BY HORSES

ing wear and tear on the car also saves power. These teeth are made from the finest tool steel, and are tempered with great care to stand the severe usage. Each tooth is complete in itself—needing no auxiliary wedges or holders of any kind—and the patented flanges are sufficient to hold the tooth firmly with the use of two tent-head bolts. The points are $1\frac{3}{4}$ in. apart when bolted into place. Among others, the Boston & Northern Street Railway Company and the Old Colony Street Railway Company are large users of the flanged teeth. They bolt the teeth to an iron

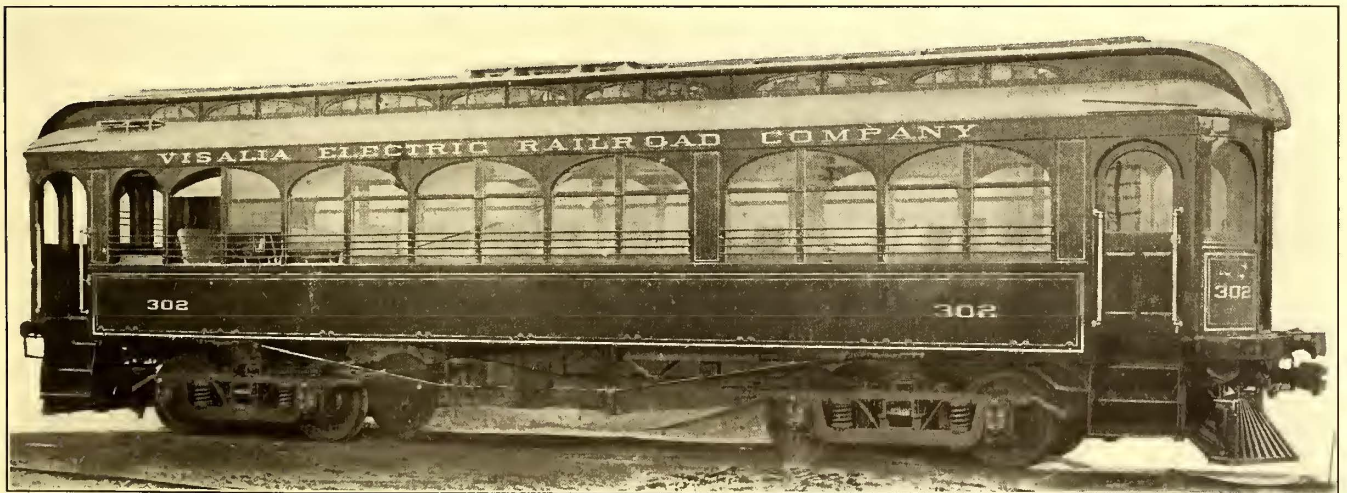
SEMI-CONVERTIBLE CARS FOR VISALIA, CAL.

The American Car Company has shipped to the Visalia Electric Railroad Company two 42-ft. 2-in. Brill semi-convertible combination passenger, smoking and baggage cars; two 37-ft. 8-in. passenger and smoking cars, and two 37-ft. 8-in. Brill semi-convertible straight passenger trail cars, all three types generally similar in appearance. The interiors are handsomely finished in mahogany with the paneling richly inlaid. Ceilings of the full empire type, 3-ply birch



INTERIOR OF VISALIA CAR

vener, tinted and striped. Opalescent glass is furnished with the arched ventilators which are operated in pairs. The cars are equipped throughout with every convenience, including basket racks. The floor of the toilet room in each of the cars is covered with metal and the side walls to the height of the window rail are lined with white enameled zinc. The flooring is made double with the $2\frac{1}{2}$ -in. interspace filled with mineral wool to deaden the sound. The motorman's compartment at right-hand side of vestibule is partitioned from the rest of the platform by



EXTERIOR OF VISALIA TRAIL CAR

bar $\frac{1}{2}$ in. thick and bolt the bar to the under side of the snow plow beam.

The Gifford-Wood Company carries tent-head bolts for bars $\frac{1}{2}$ in. thick and for bars $\frac{3}{4}$ in. thick, the $\frac{3}{4}$ in. thickness x 6 in. in width being necessary in an unsupported knife-bar, 3 ft. 6 in. long, such as is used on its street ice leveler. A $\frac{1}{2}$ -in. bar is thick enough when bolted to a scraper beam.

an extension sash and swinging door. Following are the chief dimensions of the three types: The combination passenger, smoking and baggage cars measure 42 ft. 4 ins. over the end panels; over crown pieces, 46 ft. 8 ins.; width over sills, 9 ft.; centers of posts, 2 ft. 8 ins.; height from floor to ceiling, 8 ft. $6\frac{1}{4}$ ins.; from under side of sills over roof, 9 ft. $4\frac{1}{2}$ ins. The side sills are $4\frac{3}{4}$ ins. x $7\frac{3}{4}$ ins. plated $\frac{3}{8}$ in. x 15 ins. steel.

LEGAL DEPARTMENT*

INDEPENDENT CONTRACTORS

There is an exception to the ordinary rule that a master or employer is responsible for the negligence of his servant or agent, to the effect that when a person intrusts the doing of work to an "independent contractor" the latter, and not the employer, is liable for damages that may be caused. It is essential for the existence of such exception that it shall be understood between the parties that the work is not to be performed under the continuing direction and approval of the owner, but that the contractor, having undertaken to produce a specified result, assumes entire responsibility for ways and means.

The "independent contractor" rule itself has been limited, as, for example, by holding that when a special statutory duty is imposed for the protection of the public, an owner who contracts for improvements of the property may not by employing an independent contractor divest himself of his statutory liability. There is no logical reason for this distinction; it merely tends to show that the courts are jealous of inroads upon the *respondiat superior* doctrine and therefore insist that where the Legislature prescribes definite precautions the obligation to observe them shall not be evaded.

A recent decision by the Supreme Court of Pennsylvania (*Beckman vs. Meadville & C. S. St. Ry. Co.*, 67 Atl. 983) illustrates the "independent contractor" principle in the relation between two street railway companies, it being held that one company may be employed as an independent contractor by another to clean and repair its cars. It was specifically decided that where a traction company agreed with defendant company to clean and repair its cars, the traction company was an independent contractor, and it, and not the defendant, was liable to a passenger on one of defendant company's cars for the negligence of the servants of the traction company. It appeared that the tracks of a street railway company at the place of an accident were the property of a traction company, but in joint use by it and defendant street railroad, under a traffic agreement, which provided, among other things, that the cars of defendant were to be cleaned and repaired by the traction company. Two cars of defendant had been delivered to the traction company, which dismantled one of them, attached it by chains to the other and started it toward the car barns for repairs. The coupling chains broke and the dismantled car ran down a grade until it collided with a car of defendant, in which deceased was a passenger. The workmen who were to repair and clean the cars were employed and controlled by the traction company and defendant paid on the basis of an account kept of their wages. It was held that such workmen were not co-employees of defendant and that the defendant was not liable, because the injuries had been sustained through the negligence of the independent contractor. The court said in part:

"Cleaning and repairing cars was no part of the defendant's franchise which could not be delegated. It was the ordinary case of an independent mechanic receiving an article for repair and while in custody of it so using it as to injure another person. If the traction company had hauled the car out to the other end of its road for the repairs, and the accident had taken place there, where defendant's cars did not run, no question would have arisen as to defendant's liability. Yet the case is no different. Neither the ownership of the colliding car nor the place of the accident has any relevancy at all to the question of defendant's liability. The negligence, if any, from which the accident

resulted, was, so far as the evidence showed, that of the workmen who attached the dismantled car to the one drawing it. They were the employees of the traction company."

LIABILITY FOR NEGLIGENCE.

GEORGIA.—Carriers—Transportation of Passengers—Personal Injuries—Acts of Carrier's Employes—Trial—Instructions—Necessity—Duty of Judge.

While the conductor of a common carrier is clothed with police power, that fact affords no immunity to the carrier for damage resulting from his wrongful or illegal discharge of his duty, either as servant of the company or under color of the police power delegated to him by law. Consequently it was not error for the court to refuse a request to charge that the defendant was not liable for its conductor's acts in carrying out the law requiring the separation of white and colored passengers; the request being only a partially correct statement of the law.

It is error for the court to omit to charge the principles of law applicable to proper contentions of either party to a cause, where such contentions are authorized by the pleadings, and are sustained by testimony, and thus become issues in the case.—(*Georgia Ry. & Electric Co. vs. Baker*, 58 S. E. Rep., 88.)

GEORGIA.—Carriers—Carriage of Passengers—Duty of Carrier—Protection from Insults—Separation of Races—Liability for Mistake—Evidence—Judicial Notice.

A common carrier is responsible for the proper treatment of its passengers, and is bound to protect them from insult as well as from physical injury. Where the insult is offered by one of the carrier's servants, the duty of protection is even stronger and more binding than where the offending party is a fellow passenger, and for humiliation of wounded feelings caused by such insult a passenger is entitled to recover.

It is immaterial whether the insult is caused by malice or is the result of negligence on the part of the carrier's servant. Injury caused by omission to protect is none the less actionable than that caused by commission.

In enforcing section 527, Pen. Code 1895, requiring the separation of races, the conductor is still the agent and servant of the corporation, and the liability of the corporation for his acts as such is not diminished by the delegation of police power. The police power is granted to better enable the corporation to discharge its duty of protecting its passengers, but the burden of exercising extraordinary diligence in the protection of the passenger is not lightened. If an honest mistake be made after extraordinary diligence has been exercised, the carrier would not be liable.

Good faith, unaccompanied by freedom from fault (that degree of freedom from fault recognized by law as applicable between carrier and passenger) is no excuse for an insult offered by a servant of the carrier to a passenger who suffers injury. The good faith of the transaction can only be considered in mitigation of the damages.

To call a white man a negro, or to intimate that a white man is of African descent, under certain circumstances, may be an insult, and, dependent upon the circumstances, may be actionable.

An insult does not necessarily consist in the use of language imputing a crime. It more generally consists in the use of language affecting the social status and personal feelings or the business relations of the person insulted.

The courts can take judicial notice of social status, and of the superiority and inferiority of races, without affecting the civil rights of the citizen. An existent fact, which is per se neither the subject of legislation nor adjudication, can be judicially known and recognized as a fact.—(*Wolfe vs. Georgia Ry. & Electric Co.*, 58 S. E. Rep., 899.)

GEORGIA.—Carriers—Carriage of Passengers—Action for Injuries—Instructions—Evidence—Sufficiency.

If, under the undisputed facts, the relation of passenger and carrier did exist at the time of the alleged injury, the only rule of care applicable to such case, imposed upon the carrier, was the duty of extraordinary diligence, and the court did not err in restricting the charge on this subject to such degree of diligence.

The evidence fully warranted the verdict, and the general grounds of the motion for a new trial are not meritorious.—(*Georgia Ry. & Electric Co. vs. Cole*, 57 S. E. Rep., 1026.)

*Conducted by Wilbur Larremore, of the New York Bar, 22 Nassau Street, New York, to whom all correspondence concerning this department should be addressed.

ILLINOIS.—Evidence—Opinion Evidence—Atmospheric Conditions—Instructions Correcting Previous Erroneous Instructions—Review—Harmless Error—Refused Instructions Contained in Others Given.

In an action for injuries caused by a collision between a wagon and a street car, evidence of witnesses as to how far they could see at the time of the accident was competent, as tending to show the atmospheric condition and the kind and character of the light at the time.

An instruction enumerating the proper elements entering into the damages was not erroneous because not requiring the jury to award the damages upon the evidence, where it was supplemented by other instructions advising the jury that the case must be decided upon the evidence.

Where instructions were given which cast the burden of proof upon plaintiff and informed the jury what he was required to prove in order to recover, it was not prejudicial error to refuse an instruction that, if the jury found from the evidence that the plaintiff was not entitled to recover, they would not have occasion to consider the question of damages or the character of his injuries.—(Chicago City Ry. Co. vs. Hagenback, 81 N. E. Rep., 1014).

ILLINOIS.—Street Railroads—Injuries to Person on Track—Evidence—Witnesses—Cross-Examination—Scope—Appeal—Review—Harmless Error—Remarks of Counsel—Discretion of Court.

Evidence in an action for the death of plaintiff's intestate, a boy six years old, who was killed by a street car, held not to warrant a peremptory instruction for defendant.

In an action for the death of plaintiff's intestate, a boy six years old, who was killed by being run over by a street car, plaintiff, who had not been asked any question, on his direct examination, in regard to the accident, stated on cross-examination that he had heard there were other boys on the street at the time and had learned the name of one. Held, that an objection was properly sustained to a further question as to that boy's name.

In an action for the death of plaintiff's intestate by being run over by a street car, previous to the amendment of 1903 raising the limit of recovery, plaintiff's counsel in his argument stated this change to the jury, and on objection made a colloquy between counsel occurred, wherein plaintiff's counsel stated that that law, like every other law, was expanding and being made more sensible. Held that, though the allusion to the change of law was improper, counsel's remarks were not of such a prejudicial character as to require a reversal.

In an action for the death of plaintiff's intestate, who was killed by being run over by a street car, plaintiff's counsel, in his argument, in referring to certain evidence, said: "Some of this is made for you, Mr. R. You are a motorman. A whole lot of this stuff is for you." Defendant's counsel objected to the addressing of a juror by name, which objection was sustained. Held, that counsel's remarks were not of such a prejudicial character as to require a reversal.

Reliance must be placed in the sound judgment and discretion of the trial court in controlling the conduct of counsel and the scope and character of their argument, and, unless it satisfactorily appears that there has been an abuse of this discretion, a court of review will not interfere.—(Chicago City Ry. Co. vs. Strong, 82 N. E. Rep., 335.)

ILLINOIS.—Negligence—Care Required by One Intoxicated—Careless—Injury to Passenger—Declarations—Sufficiency—Proximate Cause of Injury.

Where plaintiff's intestate was killed by falling from a bridge while in a state of intoxication, the fact that he was intoxicated did not excuse him from exercising such care as may reasonably be expected from one who is sober.

A declaration alleged that defendant's servants, after accepting intestate on its car as a passenger, put him off at a station five miles from his destination on a stormy night and where he could obtain no shelter, knowing that he was intoxicated and unable to care for himself, and that in attempting to walk home along defendant's track he fell from its bridge and received injuries from which he died. Held insufficient, since it fails to establish a connection between the alleged wrongful act of ejection and the injury received by falling from the bridge.

It is not necessary, to the liability of a common carrier for an injury resulting from an act of its servants, that they should be able to anticipate the particular injury which might result;

but it cannot be held liable for failing to provide against a possible injury which could not have been reasonably anticipated.—(Keeshan vs. Elgin, A. & S. Traction Co., 82 N. E. Rep., 360.)

ILLINOIS.—Carriers—Injuries to Passenger—Pleading—Instruction—Preponderance of Evidence.

Where the complaint in an action against a street railway for injuries to a passenger alleged that he was thrown from defendant's car and injured by the car colliding with a wagon, and the uncontradicted evidence was that he stepped or was pushed from the car before the collision occurred, there was a clear variance.

An instruction upon the preponderance of evidence which enumerated various matters to be considered, and then concluded that from all these circumstances the jury were to determine upon which side the preponderance of evidence was, but which omitted any reference to the number of witnesses testifying pro and con, was erroneous.—(Chicago Union Traction Co. vs. Hampe, 81 N. E. Rep., 1027.)

ILLINOIS.—Carriers—Injuries to Passenger—Action—Pleading—Variance—Evidence—Expert Opinions—Ground of Admission—Medical Opinions—Form of Answer—Basis—Review—Objections Not Reserved.

In a personal injury action against a street railway company, evidence that the car jerked, and threw plaintiff against the seat and out, and that he struck something on the way to the ground, he thought the upright post of the end of the seat, was no variance from the declaration's allegation that he was thrown against the seats and other parts of the car.

Expert witnesses may not be called upon to decide questions of fact; their opinions being admitted to enable juries to draw inferences which their want of knowledge would otherwise prevent.

Where, in a personal injury action, there was an issue whether plaintiff's condition was due to traumatism or other causes, a hypothetical question asked a physician, assuming that plaintiff was healthy and normal before the accident, that he received the injuries the physician saw, and that he was in the condition the physician saw from that time on, and asking for an opinion as to whether plaintiff's present condition was due to traumatism or other causes, was not objectionable as invading the jury's province.

Where, in a personal injury action, there was an issue whether plaintiff's condition was due to traumatism, or other causes, it was immaterial whether an expert testified that the injury caused the condition, or that it might have caused it, since in any event the testimony was merely an opinion; it remaining for the jury to determine the fact.

An expert witness may answer a hypothetical question partly based upon testimony he has heard.

An objection that the basis of a hypothetical question is improper cannot be urged on appeal, where no special objection was made below, but only a general objection that it called for incompetent testimony.—(Chicago Union Traction Co. et al vs. Roberts, 82 N. E. Rep., 401.)

ILLINOIS.—Master and Servant—Injury to Servant—Vice Principals—Contributory Negligence—Question for Jury—Negligence—Question for Jury—Statutory Regulations—Hearsay Evidence—Amendment—Allowance—New Cause of Action—Photographs—Admissibility.

A car dispatcher, having not only control of the motormen and conductors of an interurban electric railway, but also control of the cars and their operation, is not a fellow servant of the motormen and conductors, but is a vice principal.

An employé intrusted with the performance of the employer's personal duties is, in regard to those duties, a vice principal, and the employer is liable for injuries to a co-employee resulting from the negligence of the employé.

A dispatcher of an interurban electric railway company was a vice principal, and not a fellow servant, of the conductors and motormen.

In an action against an electric railway company for injuries to a motorman jumping from his car to avoid injury in a collision with another car, held, that the question of his contributory negligence was for the jury.

In an action against an electric railway company for injuries to a motorman jumping from his car to avoid injury in a collision with another car, held, that the question of the negligence of the company in bringing about a collision was for the jury.

The fellow servant act of 1897 applies to a company operating

an electric railway about 35 miles in length, passing through 12 or 15 towns, with but little trackage in cities.

In an action against an electric railway company for injuries to a motorman jumping from a car to avoid injury in a collision with another car, the conductor of the car testified that he called up the car dispatcher by telephone for instructions and received instructions which he repeated to the car dispatcher. One of the questions in issue was as to what the instructions were. Held, that witnesses were properly permitted to testify in corroboration of what the conductor stated over the telephone to the car dispatcher, as against the objection that the same was hearsay.

Where the original petition in an action against an electric railway company for injuries to a motorman alleged that he was injured by the collision of his car with another car, the court properly allowed an amendment alleging that he jumped from the car on seeing that a collision was inevitable.

In an action against an electric railway company for injuries to a motorman jumping from a car to avoid injury in a collision with another car, photographs of the cars and surroundings taken on the day of the accident were properly received in evidence to show the physical conditions existing at the time of the accident and to throw light on the rate of the speed of the cars at the time of the collision.—(Edge vs. Southwest Missouri Electric Ry. Co., 104 S. W. Rep., 90.)

MISSOURI.—Street Railroads—Collision with Vehicles—Question for Jury—Contributory Negligence—Reliance on Care of Motorman—Rate of Speed.

In a suit by a person injured by a street car while driving over a crossing, evidence examined, and held sufficient to take the case to the jury.

A person about to cross a street car track has a right to presume that an approaching car is moving at a lawful rate of speed, unless he can ascertain to the contrary.—(Hauck-Hoerr Bakery Co. vs. United Rys. Co., 104 S. W. Rep., 1137.)

MISSOURI.—Damages—Personal Injuries—Future Consequences—Evidence—Matters of Common Knowledge—Injury to Nervous System—Future Injuries—Nervousness.

A recovery cannot be had for future consequences of a personal injury negligently inflicted, unless plaintiff produces evidence from which the inference may reasonably be drawn that injurious consequences are reasonably certain to follow.

Where plaintiff received a permanent injury to the brain, it was a matter of common knowledge that the nervous system would probably be deranged, evidenced by manifestations of nervousness and extreme irritability, from which a jury was authorized to come to find probable future disability without the aid of expert opinion.

Where a child two or three years old was seriously injured about the head in a collision with a street car, from which she suffered spasms, convulsions, and unconsciousness for some time, and thereafter appeared nervous and extremely irritable, the court was justified in permitting the jury to award damages for future consequences of the nervous shock, though at the time of the trial she appeared to have substantially recovered in other respects from her injury.—(Wilkerson vs. Metropolitan St. Ry. Co., 105 S. W. Rep., 24.)

MISSOURI.—Carriers—Setting Down Passengers—Carrying Passengers by Destination—Damages—Specific Injuries.

Where a passenger on an elevated street railway informs the conductor of her destination, the place thus designated being a regular stop, it is his duty to call such destination or otherwise notify her, and to stop the car a reasonably sufficient time for her to alight.

The rule that where a passenger, knowing that he has been carried beyond his destination, voluntarily leaves the conveyance, he thereby terminates his relation as a passenger, and the carrier cannot be held liable for injuries afterwards sustained in traveling to his destination, does not obtain where the carrier's servants coerce or persuade the passenger to alight.

A passenger on a street railway, who, having informed the conductor of her destination, is carried by owing to the conductor's failure to announce her destination, and on discovery is induced to alight by the representation of the conductor that she can reach her destination in safety by following his directions, remains constructively a passenger until she reaches her destination, and may recover for any injuries sustained from following negligent directions, but she is not entitled to recover if she does not notify the conductor and remains in the car

when her destination is announced, and the car stopped and passengers afforded a sufficient opportunity to alight.

Where in a personal injury action by a passenger specific injuries are alleged, recovery cannot be had for injuries not so specified.—(Stevens vs. Kansas City Elevated Ry. Co., 105 S. W. Rep., 26.)

NEW JERSEY.—Master and Servant—Negligence—Question for Jury.

In an action by a motorman for damages arising from an injury alleged to have been caused by the negligence of the defendant in failing to supply efficient brakes, controller, and sand box for its car, the trial judge charged that there could be no recovery on the ground that there was negligence of the defendant respecting the sand box, and left to the jury only the question of its negligence respecting the brakes and controller.

It appearing that there was no evidence to support the judgment against the defendant upon the questions submitted to the jury, this court will not consider on this writ of error the correctness of the ruling respecting the sand box, because, if that ruling were erroneous, the defendant is entitled to have the question of its negligence in regard to the sand box passed upon by a jury.—(Brady vs. North Jersey St. Ry. Co., 67 Atl. Rep., 754.)

NEW HAMPSHIRE.—Street Railroads—Collision with Boy—Negligence—Evidence.

Evidence in an action for death of a boy, seven years old, who, having been sitting with other boys at a place where boys usually congregated, at that time of the day, on a street fence, watching a steam engine just outside the street, alighted and stepped in front of or against a street car, on a track six feet from the fence, held sufficient to go to the jury on the questions of negligence and contributory negligence; there being evidence of fast driving of the car, of omission to give warning of its approach, and that the motorman looked away from the track as the car approached the place.—(Madigan vs. Berlin St. Ry., 67 Atl. Rep., 404.)

NEW YORK.—Evidence—Presumptions—Exclusive Possession.

The allegation that defendant had an electric railroad through a certain street for the carriage of passengers having been admitted, it will be presumed that a car running on such track, which injured plaintiff, belonged to defendant.

Where defendant admitted that it had an electric railroad on a certain street, it will be presumed that its exclusive use of the tracks on such street continued.—(Jennings vs. Brooklyn Heights R. Co., 106 N. Y. Sup., 279.)

OKLAHOMA.—Street Railroads—Injury to Traveler—Contributory Negligence—Directing Verdict.

A driver of a vehicle who suddenly turns his team to cross a street railway track without looking and listening for an approaching car, and without taking the ordinary care and precautions imperatively required of all who place themselves in a similar position of danger, is guilty of contributory negligence as a matter of law.

While questions of negligence and contributory negligence are, ordinarily, questions of fact to be passed upon by the jury, yet, when the undisputed evidence is so conclusive that the court ought to set aside a verdict returned in opposition to it, it is the duty of the court to withdraw the case from the consideration of the jury and direct a verdict.—(Metropolitan Ry. Co. vs. Fonville, 91 Pac. Rep., 902.)

OREGON.—Street Railroads—Injury to Persons on Track—Actions—Evidence—Sufficiency—Contributory Negligence of Person Injured—Question for Jury—Care Required in Operation—Evidence—Sufficiency—Excessive Verdict—Question of Fact.

In an action for the death of plaintiff's intestate, caused by his being struck by a street car, evidence examined, and that of a certain witness for plaintiff held not so opposed to all reasonable probabilities as to require its exclusion, as a matter of law, from the jury.

A person about to cross a street at a crossing is not bound to wait because a car is in sight; but if the car is at such a distance that he has time to cross, if it is run at the usual speed, it is not negligence, as a matter of law, to attempt to do so.

Whether a speed of 26 of 29 miles an hour by a street car at a much-used crossing is reasonable is for the jury.

It is the duty of a street railway company, in operating its cars at street crossings, to use ordinary care to avoid injury, regardless of whether the rate of speed has been limited by statute or ordinance, or not.

That at the time a pedestrian was struck by a street car there were seven persons at or near the crossing authorized a finding that the street was much used.

Principles of law governing the management of trains propelled by steam power and those propelled by electricity are not identical.

The refusal to set aside a verdict as excessive cannot be reviewed on appeal: the question being one of fact, and not of law.—(Wolf vs. City Ry. Co., 91 Pac. Rep., 460.)

RHODE ISLAND.—Evidence—Similar Transactions—Carriers—Carriage of Passengers—Personal Injuries—Management of Conveyances.

In an action by one whose hand was crushed between the guard rail on which it was laid and some part of a car being passed on another track, evidence that at various times before the accident cars similar to those involved therein had been heard and felt to scrape together when passing each other at or near the place of the accident was admissible.

A street railroad company is liable for injuries resulting from such a condition of its tracks as permits passing cars to come in contact with each other.—(Staples vs. Rhode Island Suburban Ry. Co., 67 Atl. Rep., 431.)

RHODE ISLAND.—Carriers—Injuries to Passenger—Starting of Car—Negligence—Evidence.

A finding that the starting of a street car, throwing a passenger, who had entered with both hands filled with articles and was standing without holding onto anything to steady herself, was with extraordinary violence, so as to constitute negligence, is not authorized; she alone testifying to that effect, and that only when recalled after the defense was developed, and all the other witnesses either testifying that there was no such violence or that they did not notice any.—(Randall vs. Providence & D. Ry. Co., 67 Atl. Rep., 419.)

RHODE ISLAND.—Carriers—Suburban Railways—Duty to Passenger—Protection from Cold.

Plaintiff was a passenger on one of defendant's suburban electric cars, which became stalled in a snowstorm, so that plaintiff was obliged with her infant child to remain in the car for 11½ hours, during which she suffered from cold, at the end of which time the conductor obtained shelter for plaintiff and her child in a nearby house. Held, that defendant's contract duty to carry plaintiff safely to her destination and so conduct the operation of its cars as not to injure her protected plaintiff only against any willful act of negligence on the part of defendant's employees, and that the conductor was under no legal obligation to take steps before he did to find comfortable shelter for plaintiff outside the car.—(Prosper vs. Rhode Island Suburban Ry. Co., 67 Atl. Rep., 522.)

RHODE ISLAND.—Damages—Personal Injury—Life Tables—Pleading—Special Damages.

Life tables are not admissible in an action for injury to a person who is abnormal or has an incurable disease.

The declaration for personal injuries having alleged no heart injury, and the evidence showing that any affection of the heart was not a necessary consequence of the injuries alleged in the declaration, defendant was entitled to an instruction that specific trouble of the heart could not be considered as an element of damages, though evidence relating to the heart trouble had been admitted without seasonable objection.—(Colbert vs. Rhode Island Co., 67 Atl. Rep., 446.)

RHODE ISLAND.—Carriers—Injury to Passengers—Negligence—Evidence.

A passenger, suing a carrier for injury on the ground of a defective running board on the car, is properly nonsuited; all that appears being that plaintiff caught her heel and tripped and fell, and the occurrence being as consistent with the supposition that she carelessly put down her foot, without noticing where it was going, as that there was a hole in the board.—(Wilbour vs. Rhode Island Co., 67 Atl. Rep., 445.)

TEXAS.—Carriers—Injury to Passenger—Assault—Question for jury—Right of Self-Defense—Assault—Self-Defense—Sufficiency of Evidence—Carriers—Acts of Employees—Assault by Conductor—Instructions.

Where the conductor of a street car assaulted a passenger, but claimed that he acted in self-defense, evidence held to require submission of such issue to the jury.

The employment in which a street car conductor was engaged at the time he was charged to have assaulted a passenger did not deprive him of the right of self-defense; he being entitled if assaulted to repel the assault and prevent injury to himself, provided his defense did not become offensive and exceed the bounds of prevention.

It is not necessary to the right of self-defense to repel an assault that danger should, in fact, exist, but it is sufficient if the party claiming to have acted in self-defense honestly believed he was in immediate danger, and had reasonable ground for such belief.

Where plaintiff alleged that defendant's conductor assaulted, slapped, and struck plaintiff, greatly humiliating and embarrassing him, and causing plaintiff to suffer great physical and mental pain, but the testimony only showed that the conductor slapped plaintiff on the jaw and knocked his hat off, and there was no evidence of a wound, bruise, or cut, or that the blow caused pain, it was error to authorize the jury to award plaintiff damages for physical pain from the alleged assault.

A carrier's conductor having claimed that his assault was in self-defense, a request to charge that if plaintiff struck the conductor or jerked his arm violently, or both, and the conductor in slapping plaintiff was only resisting the force used by plaintiff, and was acting in self-defense and used no more force than was necessary, defendant was entitled to a verdict, though objectionable, was sufficient to require the court to give a proper charge on such subject.—(Dallas Consol. Electric St. Ry. Co. vs. Pettit, 105 S. W. Rep., 42.)

WASHINGTON.—Street Railroads—Injury to Persons Driving Across Track—Contributory Negligence.

Where the driver of a wagon saw electric cars approaching a block away on the street he was about to cross, and did not wait until they passed, nor pay the slightest attention to their movement, he was guilty of contributory negligence, barring recovery for injury received in collision with the cars.—(Davis vs. Coeur D'Alene & S. Ry. Co., 91 Pac. Rep., 839.)

WASHINGTON.—Street Railroads—Injury to Pedestrian—Contributory Negligence.

Plaintiff held guilty of contributory negligence barring recovery from injuries received by being struck from behind by a street car while he was walking along the street between the track and building material piled in the street.—(Mey vs. Seattle Electric Co., 92 Pac. Rep., 283.)

WASHINGTON.—Instruction Covered by Those Given—Injuries to Passenger—Presumptions—Damages—Personal Injuries—Excessive Damages.

An instruction, in an action for injuries to a passenger, that defendant was bound to exercise the highest degree of care consistent with the operation of the railway and taking into consideration the existing conditions to prevent the injury, and that defendant was liable for the slightest negligence, covered all the substantial features of a refused instruction that defendant was not required to exercise the highest degree of care possible to avoid the accident, but only the highest degree reasonably practicable under the circumstances, and that by "highest degree of care" was meant that degree which would be exercised under like circumstances by careful and experienced conductors and motormen.

A complaint, in an action for injuries to a passenger on an electric railway, alleging that defendant so negligently operated the car on which plaintiff was a passenger and other cars that plaintiff's car was struck by another car, and that defendant could by care, have prevented the collision, does not rely on any particular act of negligence, and hence the rule that, where the complaint does not rely on the general presumption of negligence arising from the happening of the collision, but charges specific acts, such presumption does not arise, is without application.

Where a passenger on an electric railway was knocked down by a collision and rendered unconscious, received a slight cut in the hand, a sprained wrist, and a bruised leg and knee, and was confined to his home for a considerable period of time, a verdict for \$500, considering the physical injuries alone, was not so excessive as to indicate that the jury was influenced by either passion or prejudice.—(Jordan vs. Seattle R. & S. Ry. Co., 92 Pac. Rep., 284.)

WISCONSIN.—Carriers of Passengers—Invitation to Passengers—Who are Passengers—Commencement of Relation—Contributory Negligence—Question for Jury—Negligence—Question for Jury.

An electric railway company maintained between its parallel tracks a night signal device, with directions to passengers to hold up the handle thereof, and thereby cause a light to appear until a car came in sight. Passengers only boarded the cars from the outside rail of each track. Held, that the device was an invitation to passengers to cross the track to give the signal, and to recross to board the car.

One who in good faith signals in the recognized manner an interurban car, with a view to board it, which signal is responded to by the motorman by whistling or setting his brake, is a passenger.

A passenger, who is invited by the carrier to cross a track in going to or leaving his train, is chargeable only with reasonable care, and is not necessarily guilty of contributory negligence in failing to look and listen for an approaching train before crossing; he having the right to believe that trains would be so regulated as to permit his crossing in safety.

Whether a passenger struck by a car while crossing a track, after having given a signal for the car to stop by operating a device maintained between that track and a parallel track, was guilty of contributory negligence, held for the jury.

Whether an electric railway company was guilty of negligence in maintaining a signal device between its parallel tracks and in operating a car, injuring a passenger who had signaled it to stop by operating the device, held for the jury.—(Karr vs. Milwaukee Light, Heat & Traction Co., 113 Pac. Rep., 62.)

WISCONSIN.—Master and Servant—Injuries to Third Persons—Evidence—Sufficiency—Injuries to Minor—Evidence—Sufficiency.

Evidence in an action by a minor, who at the time he was alleged to have been kicked from a street car was eight years old, to recover for injuries received, held to sustain finding that plaintiff was kicked by a servant of defendant while acting within the scope of his employment.

In an action for injuries alleged to have been sustained in being kicked from a street car, evidence of a physician who attended plaintiff held to sustain a finding that the alleged kick was the proximate cause of plaintiff's injuries.

In an action for personal injuries by one who, when injured, was but eight years old, recovery cannot be had for loss of earnings before becoming of age, the same belonging to his father.

In an action by a minor, who at the time he was alleged to have been kicked from a street car was eight years old, to recover for injuries thereby sustained, a verdict for \$3,266.66 held not excessive, notwithstanding the evidence failed to show with certainty any serious permanent injury.—(Schultz vs. La Crosse City Ry. Co., 113 N. W. Rep., 658.)

CHARTERS, FRANCHISES AND ORDINANCES.

CALIFORNIA.—Street Railways—Franchise—Construction.

Though the rights of a street railway company and a city are governed by the contract contained in a franchise granting a right of way, the provision of Civ. Code, § 502, relating to such franchises enters into the contract, and must be considered in construing it.

A city in granting a street railway franchise is only an agency of the State, and, if there is any conflict between the granting ordinance and the general laws of the State, the State laws will govern.

Civ. Code, § 502, authorizes the governing body of a municipal corporation to fix the time for completion of work on a street railway to which a franchise is granted, and provides that failure to comply with the provisions of the ordinance "works a forfeiture" of the right of way and franchise. Held, that the words quoted make the statute self-executing. Hence, where a city ordinance granting a franchise to a street railway company fixed the time for completing the work, and provided that, if it was not completed by the time set, the franchise should be forfeited as to the portion uncompleted, failure to complete the work within the time prescribed works an ipso facto forfeiture of the uncompleted portion.

When failure to complete a street railway within the time prescribed in the franchise ordinance works an ipso facto forfeiture of the uncompleted portion of the right of way, the city cannot be restrained from interfering with laying of tracks thereon or from removing tracks unlawfully laid; the railroad

not being in possession and having no right to lay tracks thereon.—(Los Angeles Ry. Co. vs. City of Los Angeles, 92 Pac. Rep., 490.)

CALIFORNIA.—Courts—Federal Courts—Construction of State Statutes.

The construction of a statute of a State by its highest court will be followed by the federal courts; but, where such highest court is composed of a number of judges, a construction placed upon a statute by the opinion of one judge which is not concurred in by a majority is not so binding, but leaves the question to be determined independently by a federal court.

Civ. Code Cal. § 499, provides that "two lines of street railway, operated under different managements, may be permitted to use the same street, each paying an equal portion for the construction of the tracks and appurtenances used by said railways jointly; but in no case must two lines of street railway, operated under different managements, occupy and use the same street or tracks for a distance of more than five blocks consecutively." Held, that such provision does not deprive the municipal authorities of a city of power to grant to two railways, having tracks of different width, the right to operate their cars on the same street for a distance not exceeding five blocks, each occupying the middle of the street, and each paying an equal portion of the cost of paving between and beside the tracks as required by section 498.—(San Jose-Los Gatos Interurban Ry. Co. vs. San Jose Ry. Co., 156 Fed. Rep., 455.)

GEORGIA.—Injunction—Restraining Criminal Proceedings—Enforcement of Ordinance.

The general rule is that a court of equity has no jurisdiction to enjoin criminal prosecutions; and this rule is applicable to proceedings to punish for violations of municipal ordinances, which are quasi criminal in their nature. The cases in which proceedings to enforce such ordinances will be enjoined are exceptional in character.

Where a municipal corporation passed an ordinance requiring street cars on a public street extending through the town to be stopped at three designated points for the reception of passengers, in addition to those where the company itself was accustomed to stop its cars for that purpose (except one), and fixing a penalty for disobedience thereof, injunction will not be granted to restrain the enforcement of the ordinance by prosecution, or to determine the question of its validity or its reasonableness or unreasonableness.

The case arose and was decided before the passage of the act of August 23, 1907 (Acts 1907, p. 72), enlarging the powers of the Railroad Commission of the State; and the present decision is made without reference to that act.—(Georgia Ry. & Electric Co. vs. Town of Oakland City et al., 59 S. E. Rep., 296.)

INDIANA.—Street Railroads—Highways—Right to Cross Other Railroads.

A railroad constructing its track across a highway acquires only the privilege of crossing in transportation of freight and passengers, subject to all private uses to which the highway may be devoted under the law, including the right of an interurban railroad to locate on the highway and cross the track, pursuant to the authority of the board of county commissioners.

The owner of a steam railroad is not entitled to compensation for the crossing of its track at a public highway intersection by an electric interurban road built on the highway with the consent of the board of county commissioners.

Acts 1901, p. 461, c. 207, and Acts 1903, pp. 92, 125, cc. 34, 59, providing for proceedings and compensation for the crossing of steam railroad tracks by the tracks of electric interurban roads at places not within the limits of any highway, and declaring that the acts shall not abridge the right, under existing laws, of an interurban road to locate its road on a public highway crossing the tracks of any steam railroad at a highway intersection without special proceedings, relate wholly to crossings of interurban railroads with other railroads at other places than highway intersections, and do not grant an interurban road the right to cross a steam railroad at a highway crossing, and the court on determining the right of an interurban road to cross a steam railroad at a highway crossing will not determine the constitutionality of the acts.

The title of Acts 1905, p. 521, c. 167, entitled "An act concerning highways," is broad enough to cover a provision authorizing an interurban electric railroad to build its road on any public highway on procuring the consent of the board of county commissioners; the right of an interurban electric rail-

road to cross a steam railroad track at a highway crossing being incident to the franchise granted to operate an electric road on a public highway.

Where, in an action by a steam railroad to enjoin an interurban electric railroad company from crossing its track without acquiring the right by condemnation proceedings, both the complaint and answer allege that the electric railroad "is a corporation organized under the laws of the State" and engaged in the construction of a line from one city to another, the objection of the steam railroad, raised for the first time on appeal, that there is no statute under which a railroad such as that described in the answer can be incorporated, is untenable.—(South East & St. L. Ry. Co. et al. vs. Evansville & Mt. V. E. Ry. Co., 82 N. E. Rep., 765.)

ILLINOIS.—Eminent Domain—Statutory Provisions—Interurban Railroads—Weight of Evidence—Evidence as to Compensation.

The general railroad act authorizes any number of persons, not less than five, to incorporate, to construct and operate a railroad. The act of 1889 authorizes any corporation to enlarge or change the purpose for which the corporation was formed. The articles of a corporation organized under the general railroad act recited that it was its purpose to construct and operate a street railroad on and through the streets of cities therein named and an interurban railroad through and between such cities. Subsequently its articles were amended by changing the words "street railway" to "railway" wherever they appeared therein. Held that, though the same corporation could not be both a street railroad and a commercial railroad corporation, yet the corporation had the power, under the act of 1889, to amend its charter as it did, and should thereafter be deemed as organized under the general railroad act solely for the purpose of operating a commercial railroad, having as such the power of eminent domain.

A corporation organized under the general railroad act should be deemed a commercial railroad, notwithstanding its articles of incorporation called its line of railroad, to run through and between cities named, a street railroad, as the statute under which it was organized would control as to its charter powers rather than the statements found in its charter as to the objects of its organization.

An instruction that if the strip sought to be taken was a part of an entire tract, which the owner used for manufacturing purposes, and for such purposes the strip had a greater value than the bare land as part of the entire tract, the owner was entitled to such special value of the strip considered in connection with the entire tract, sufficiently presented to the jury the owner's contention that its property should be considered as a unit.

An instruction that, if the jury believed that any witness had magnified the value of the land taken or the damages to land not taken, then the jury had the right, and it was their duty, to disregard the evidence of such witness in so far as the same was unjustly magnified, either as to the value of the land taken or the damages to property not taken, did not constitute error.

Where it was contended by the owner that the premises had a special value, in that they were needed for the future growth of its business, and witnesses testified that plans had been drafted for new buildings on the vacant land on the opposite side of the strip proposed to be taken from its then improvements, cross-examination wherein it was made to appear that the plans had been made several years prior to the commencement of the proceeding, and that the owner had been financially embarrassed for some months, was proper.—(David Bradley Mfg. Co. vs. Chicago & Southern Traction Co., 82 N. E. Rep., 210.)

ILLINOIS.—Appeal—Decisions Reviewable—Validity of Ordinances.

The Supreme Court has jurisdiction of the question as to whether a city ordinance attempts to interfere with a constitutional right, but not of a controversy as to the power of a city, under the statutes, to pass the ordinance, or to question whether the ordinance is invalid as an unreasonable and oppressive exercise of that power.

Municipal Code City of Chicago, § 1974, requires street railway companies to issue transfer tickets. Rev. Municipal Code City of Chicago, § 1500A, prohibits any person from selling or giving away any street railway transfer ticket or from receiving and using any transfer so sold or given away and

provides penalties for its violation. Held, that the latter ordinance is not in violation of the constitutional provision that no person shall be deprived of property without due process of law; it being merely a regulation of the use of property.

Rev. Municipal Code City of Chicago, § 1500A, prohibiting any person from selling or giving away a street-car transfer, is not open to the objection that it may subject innocent parties to punishment, as it forbids the disposal of a transfer at any time or place, since under Municipal Code, § 1974, the life of a transfer is limited to a certain time, after the expiration of which it ceases to be a transfer and, the ordinance being penal, it will be made applicable by the courts only to the case of persons or the kind of acts clearly contemplated within its scope.

A city ordinance not introduced in evidence and not contained in the abstract or record cannot be considered on appeal.—(City of Chicago vs. Openheim et al.; Same vs. Siegel; Same vs. Miller, 82 N. E. Rep., 294.)

ILLINOIS.—Eminent Domain—Elevated Railroad—Effect of Franchise.

The provision of an elevated railway company's franchise forbidding the company, in passing over the tracks of existing steam railroads, to use any space less than 20 feet above the upper surface of the steam railroad rails, is a limitation upon the elevated railway company's right to exercise the power of eminent domain conferred by statute.

An elevated railway franchise regulating the height of the superstructure over the "tracks of all existing steam railroads" includes all tracks over which ordinary cars or trains used in operating a steam railroad are propelled in transporting freight and passengers, and applies to private switch tracks connected with the main line of a railroad.

The provision of an elevated railway franchise regulating the height of the superstructure over the "right of way" and tracks of existing steam railroads is not inapplicable to private switch tracks because the title to the tracks and the ground over which they pass are in the same owner, and the boundary of the strip used for railroad purposes has not been fixed; "right of way" in the ordinance meaning the way occupied and used for the track and operation of trains, and its width in this case being determined by necessity, and being no greater than the space needed for the safe and convenient operation of trains.

Under the provision of an elevated railway franchise regulating the height of the superstructure over steam railroad tracks and rights of way, any person having property interest in a track or right of way to be crossed may object to a violation of the provision, and hence, where the elevated road attempts to cross private switch tracks connecting with a railroad, an objection by the owner of the switch tracks is proper.

Where an elevated railway company petitioned to condemn land for a right of way, by filing a cross-petition, the owner of the land did not waive the right to a dismissal of the proceeding because the company purposed violating a provision of its franchise regulating the height of its superstructure over steam railroad tracks, where the owner was not apprised of such purpose until after filing the cross-petition and the motion was promptly made upon the purpose appearing.

A petition for rehearing will be stricken, where it elaborately reargues questions disposed of in the opinion, under the Supreme Court rule providing that such petition shall state concisely the points supposed to have been overlooked or misapprehended by the court and that no argument will be permitted in support of the petition.

Where a petition for a rehearing is stricken for violation of the Supreme Court rule, leave to file another petition will be denied.—(Peabody Coal Co. et al. vs. Northwestern Elevated R. Co., 82 N. E. Rep., 573.)

INDIANA.—Towns—Taxation—Aid to Railroads—Injunction—Parties—Statutory Rules of Construction—Contradictory Interpretations—Declaratory Statutes—Extension of Statutes.

In a suit to enjoin the levy of a tax by a township in aid of an interurban railway company on the ground that the act authorizing it was unconstitutional, the railway company and the township were proper, if not necessary, parties.

The word "amend" is synonymous with correct, reform, and rectify. It means a correction of errors, an improvement or rectification, and necessarily implies something on which the correction, alteration and improvement can operate. It indicates a change or modification for the better.

The term "supplement" signifies something additional, some-

thing added to supply what is wanting. It is that which supplies a deficiency, adds to or completes, or extends, that which is already in existence, without changing or modifying the original.

Act May 12, 1869, is entitled "An act to authorize aid to the construction of railroads by counties and townships taking stock in and making donations to railroad companies"; and it and subsequent amendatory acts authorizes the granting of such aid. Held, that Acts 1903, p. 233, c. 134, declaring that wherever the word "railroad" occurs in either section of the act of May 12, 1869, or in any section of any subsequent act amendatory or supplemental thereto, the same shall include street railroads, suburban street railroads or interurban street railroads, is a supplemental and not an amendatory act, and is therefore not void for failure to set forth in full any part of the act of 1869, as required in case of amendments by Const. art. 4, § 21.

Supplemental legislation, though not expressly authorized by the Constitution, having been long acquiesced in, will be sustained, under the rule that in matters of legislation a court will grant weight to the Assembly's own interpretation of such power as manifested by continued and repeated exercise.

Where a subsequent act was passed supplementing a prior act, the supplemental matter must be germane to the subject as expressed in the title of the original act, so that, if the supplemental matter was contained in the original act, it would be clearly embraced within the title.

Where a statute is objected to because the subject-matter is not within the title, the court will give the title the broadest meaning to uphold the law, and, if the language is susceptible of two constructions, one inimical and the other in support of the act, the latter will be adopted.

Technically a railroad is a way or road on which rails are laid for wheels to run on for the conveyance of heavy loads and vehicles. The term is generic, and embraces all species of road constructed by corporations of a quasi public character. Whether a road is a railroad depends on the mode of construction and chartered use and not on the motive power; it being declared in the original act for the incorporation of railroads that they should have power to convey persons and property by steam, animal or any mechanical power or any combination of them.

Act May 12, 1869 (Laws 1869, p. 92, c. 44), was entitled an act to authorize aid to the construction of "railroads" by counties and towns, etc. Act March 9, 1903 (Acts 1903, p. 233, c. 134), provided that wherever the word "railroad" occurred in either section of the act of 1869 or any section of any subsequent act amendatory or supplemental to the act of 1869 the same should extend to every kind of street railroad, suburban street railroad or interurban street railroad by whatever power its vehicles were transported. Held, that the word "railroad" in the act of 1869 was not limited to steam railroads, so that the act of 1903 was not objectionable as not germane to the title of the act of 1869.

When a statute provides a rule of construction for prior statutes, and is not in terms amendatory thereof, but is covered by the title of the original act, it is not within Const. art. 4, § 21, providing that in case of an amendment the amendatory act shall set forth the section or act amended in full.

While it is not ordinarily the function of the Legislature to interpret statutes, and such interpretation is not binding on the courts as to past transactions, it will be followed by all departments of the government as to future transactions.

Where a legislative construction of a prior statute is contradictory to the terms of the act construed, the construing statute must be taken as a new enactment changing the prior law.

A statute declaratory of a former one has the same effect on the construction of such former act in the absence of intervening rights as if the declaratory act had been embodied in the original act at the time of its passage.

Where a statute deals with a genus, and the thing which afterward comes into existence is a species thereof, the language of the statute will generally be extended to a new species, though it was not known and could not have been contemplated by the Legislature when the act was passed.—(McCleary et al. vs. Babeock et al., 82 N. E. Rep., 453.)

IOWA.—Street Railroads—Use of Street—Moving Buildings—Appeal—Review—Prejudice.

Code, § 767, provides that cities and towns may authorize or forbid the construction of street railroads within their lim-

its, and authorize or forbid the location thereof on all streets, alleys and public places, but that no railway track shall be laid until the injury to property abutting on the street, etc., has been ascertained and compensated for, etc. Held that, where a street railroad has been authorized to construct a line on a city street and has made compensation for any injury resulting to abutting property, it is entitled to restrain the moving of a house lengthwise on the street, which cannot be done without occupying the company's track, destroying its trolley wire and interrupting for a considerable time the operation of its cars, as the rule that citizens may use the streets to the same extent as a railway company does not authorize the unreasonable occupation of the streets to the exclusion of others, or in such manner as to unreasonably prevent passage of cars.

Where a suit by a street railroad company to restrain defendants from moving a house along a street on which the street railway was located, and from interfering with complainant's trolley wires, poles and overhead construction, etc., was dismissed, defendants, to recover on the injunction bond, having no right to move the house along the track, must prove that they had not threatened to tear down the railway company's overhead construction or to use the company's track as alleged.

Where defendants in an action for an injunction were not entitled to recover on the injunction bond in any event on the issues as found, they were not prejudiced by an alleged error in the court's submission of the measure of damages.

Under Code, § 3764, providing that an action may be dismissed, and such dismissal shall be without prejudice to a future action if made by the plaintiff before final submission of the case, plaintiff's voluntary dismissal of a suit for injunction did not constitute an adjudication of the issues in favor of defendants, which would sustain a recovery by them on the injunction bond.—(Ft. Madison St. Ry. Co. vs. Hughes et al., 114 N. W. Rep., 10.)

KANSAS.—Street Railroads—Ordinance Granting Franchise—Power to Repeal.

A reservation in an ordinance granting a franchise to a street railroad company, which by its acceptance by the company created a contract, of the power to repeal said ordinance in case of a breach of its conditions by the company, does not authorize the city to repeal the ordinances at its pleasure without assigning any breach, and when there has, in fact, been none.

A suit to restrain the passage of a municipal ordinance repealing a prior ordinance granting a franchise to a street railroad company, which had been accepted by the company, is one involving the question of the impairment of the obligation of a contract in violation of the constitutional rights of the company, and is within the jurisdiction of a federal court, regardless of the citizenship of the parties.

While a court of equity of the United States may properly enjoin the enforcement of a municipal ordinance which impairs the obligation of a contract in violation of the federal constitution, it has no power to enjoin the passage of such an ordinance, which involves the exercise of legislative discretion.—(Missouri & K. I. Ry. Co. vs. City of Olathe, 156 Fed. Rep., 624.)

LOUISIANA.—Municipal Corporations—Power to Grant Use of Streets.

City authorities have no legal power to create corporations or to grant franchises. This can be done by the State alone; but the city can concede the right of way through her streets. Such right is not a franchise in law. The privileges conceded are "secondary franchises," instrumentalities by means of which the corporate owners granted by the charter may be exercised.

In determining what the character of the corporation is, reference must be had to its charter, and not to the relation which may have been established between itself and the city by permit or license, or by contract. If by its charter it is a railroad corporation, its rights as such are not waived, or forfeited, or abandoned, by entering into relations with the city for operating lines of street cars inside the city limits. Between the city and the company the relations entered into may control the situation as to the operation of its cars; but, when the company extends its line beyond the city under its right to do so reserved in the charter, the city has no control over it. Quoad its extension the character of the company is to be held to be a railroad company, entitled to its privileges as such, and bound by its obligations to the general public.

Where defendant does not pretend that the route of the

plaintiff corporation outside of the city limits is parallel with and competes with its own, or that its business is affected by the fact that the plaintiff is a corporation resulting from the consolidation of two corporations operating lines of street cars in the city of Shreveport, defendant has no interest in contesting the consolidation of the two companies on the ground that the lines of the two companies in the city were to some extent parallel and competing with each other.

The term "railroad" is a broader term than the term "street railway"; but it does not exclude under it "street railways." "Railroad" is a generic term, under which "street railways" fall as a species, unless by the text of a law, in which the former term is used, it appears that the intention of the lawmaker was not to include in it the latter kind of railroads. Such could not have been the interest of the General Assembly in using the word "railroad" in sections 683 and 698 of the Revised Statutes. It is expressly provided in the fourth section of Act No. 100, p. 125, of 1898, that under a consolidation of two companies the consolidated company has the right to do all acts and other things which said companies so consolidated, or either of them, might have done previous to the consolidation. The right of the consolidated company in this instance did not result from the consolidation, but went into the consolidation as a pre-existing right.

The plaintiff in this suit does not seek to obtain the ownership of any property of the defendant. It only prays to have decreed to it a right of way or crossing over its tracks at a particular point at occasional periods; an easement which, in view of the fact that defendant is itself operating a road for public use, is subject to be altered or modified to conform to future exigencies and contingencies. The demand of the plaintiff is granted, and the verdict of the jury affirmed as to existing conditions, under reservation of defendants' rights which may arise under future changing conditions.

The power of a railway to cross highways and other railroads is necessarily implied from the law authorizing its construction. In this particular railroads for the local transportation of passengers, such as street and electric lines, cannot be justly differentiated from commercial railroads.

A street railway and an electric railroad designed to run beyond the municipal limits may be incorporated under the same charter.

Even if the plaintiff consolidated railroad had been irregularly organized, its incorporation was validated by Act. No. 120, p. 281, of 1904.

In the absence of legislation, the courts cannot annex to the expropriation of a grade crossing the condition that the plaintiff shall, in the present or future, cross by means of an overhead bridge.—(Shreveport Traction Co. vs. Kansas City, S. & G. Ry. Co., 44 S. Rep., 457.)

MASSACHUSETTS.—Corporations—Conditions of Incorporation—General Reference to Existing Laws.

A street railway company whose charter subjects it to "all the duties, liabilities and restrictions set forth in all general laws now or hereafter in force, relating to street railway companies," is bound by the requirement of a statute previously enacted, that street railway companies shall transport school children at a reduced rate, although such statute may be unconstitutional as to already existing corporations.—(Interstate Consolidated St. Ry. Co., Plff. in Err., vs. Commonwealth of Massachusetts, 28 S. C. Rep., 26.)

MASSACHUSETTS.—Carriers—Street Railroads—Fare—School Children—"Public Schools."

The schools referred to in Rev. Laws, c. 42, §§ 1, 2, requiring cities and towns to maintain certain schools, are open under proper regulations to all children of the city or town, as provided by chapter 44, § 3; and all children between the ages of 7 and 14 are obliged to attend such schools, unless they receive equivalent instruction outside of them, as provided by chapter 44, §§ 1, 2. Held, that Rev. Laws, c. 112, § 72, providing that street railway companies shall transport pupils of the "public schools" at half fare, while traveling to and from the schoolhouses in which they attend school, referred to those schools mentioned in chapter 42, §§ 1, 2, which are a part of the system of compulsory education for children, and did not include other schools maintained at public expense, such as industrial schools, nautical schools, evening schools, etc., authorized by sections 10, 11, 12, 15 and 16.

Attendance on any one of the schools required to be maintained by Rev. Laws, c. 42, §§ 10, 11, 12, 15 and 16, cannot take the place of the compulsory attendance on public schools established under sections 1 and 2.

The word "pupils," as used in Rev. Laws, c. 112, § 72, requiring street railroads to transport the pupils of public schools at half rates, means children and youths attending the public schools, and does not include students in colleges and professional schools, nor young men or boys attending nautical or industrial schools, nor adults attending evening schools or evening high schools, nor children attending vacation schools.

Rev. Laws, c. 112, § 72, requiring street railroads to transport "pupils of the public schools" at half rates, was amended by St. 1906, c. 479, by the insertion of the word "or private" after the word "public." Held, that the word "private," as so used, included only such schools as were ejusdem generis with the public schools previously mentioned, namely, in which instruction was permitted to take the place of the compulsory instruction required in the public schools designated by Rev. Laws, c. 42, §§ 1, 2, and hence did not include education in a private business college.—(Commonwealth vs. Connecticut Valley St. Ry. Co., 82 N. E. Rep., 19.)

MICHIGAN.—Statutes—Implied Repeal.

Acts 1905, p. 148, No. 101, approved May 10, 1905, and given immediate effect, authorized street railroad companies, with the consent of the proper authorities, to construct their lines in, on, above, or under the streets and ways of a city and village, but not to construct and operate elevated railroads, so called, and only to authorize the operation of street railroads above the streets and highways and over railroads by means of trestles. The act approved May 18, 1905, conferred on street railroads the right of eminent domain, but did not refer to the limitations prescribed in the former act. Held, that the latter act did not repeal the former, so as to authorize a street railroad to condemn land for an overhead "embankment," crossing certain streets and another railroad.—(Detroit United Ry. vs. Barnes Paper Co., 113 N. W. Rep., 285.)

MISSOURI.—Evidence—Burden of Proof—Negative Averments.

Const. art. 12, § 20, provides that the Legislature shall not grant the right to construct a street railway in a public highway without first acquiring the consent of the local authorities. Rev. St. 1899, § 1035 provides that nothing therein shall be construed to authorize the construction of a railroad upon any street or road without the assent of the corporate authorities. Held, that, in an action to enjoin the operation of a street railway in a highway, plaintiff need not prove the negative averment that the county court having control of the street had not consented to the construction of the railway, but such consent must be shown by the defendant, as without such consent it was a mere trespasser.

The assent of the county court to the use of a highway by a street railway company is in the nature of a license, and must be shown by one claiming its protection.

Though ordinarily the burden is upon plaintiff to make out his case, where negative averments are required in stating his case, and their proof lies peculiarly within the knowledge of defendant, the averments will be taken as true, unless defendant disproves them.

Where the manner of construction of a street railway and the use to which it is put destroys the practical usefulness of the street to abutting owners, they have no adequate remedy at law and may obtain relief by injunction, especially where the occupation of the street is unlawful.

Estoppel in pais is an affirmative defense and must be pleaded; but, where the case is tried as if the plea of estoppel was in the case, the question of pleading cannot be raised on appeal.

The mere fact that abutting owners remain silent for two years while a street railway company unlawfully constructs and operates a railroad in a street does not estop them from disturbing the company's possession.

Where a street railway company was enjoined from operating a railroad in a street because the necessary consent of the county court had not been obtained, it was not error to refuse to modify the decree so as to allow the company permission to use one side of the street, instead of the center, since such modification would be granting them a right which they could obtain only from the county court.—(Swinhart et al. vs. St. Louis & S. Ry. Co., 105 S. W. Rep., 1043.)

MISSOURI.—Easements—Construction.

The owner of land granted a city a right of way for a sewer through a strip of the land; the deed providing that it should not be construed to prevent the free use by the grantor

of the ground about and adjoining the sewer, except in such manner as would interfere with the free and unrestrained use of the sewer by the public. Held, that the owner's grantee, a street railway company, had no right to so erect poles and supports for electric wires as to obstruct the building of the sewer to an extent resulting in pecuniary loss to the contractor building the same.

The owner of land granted a city an easement for the construction of a sewer. Thereafter the grantee of the owner, a street railway company, erected poles for the support of electric wires, placing braces to support the poles across the right of way. Held, that the grantee was not liable to a contractor constructing the sewer because of placing such poles and their supports on the right of way, where the same did not interfere with the construction of the sewer by a lateral excavation.

The presumption of an incidental grant cannot be entertained where the thing expressly granted contains within itself adequate means by which it reasonably may be enjoyed.

The owner of land granted to a city a right of way for the construction of a sewer over a strip of the land. It appeared that there were reasonable facilities for building the sewer without encroaching on the adjoining land by placing materials, etc., thereon; the strip granted being accessible from the ends, and it appearing that these means of access permitted the work to be accomplished in a practical manner. Held, that there was no implied grant of a right to use the adjoining land.

Where an owner of land granted to a city a right of way for a sewer, a grantee of the landowner, in removing bricks placed on the land adjoining the right of way by a contractor constructing the sewer, was required to handle them with reasonable care.—(Mullins vs. Metropolitan St. Ry. Co., 104 S. W. Rep., 890.)

MISSOURI.—Street Railroads—Use of Tracks of Other Roads—Agreements—Construction.

A grant to a street railway company possessing a franchise to operate cars by horse, cable, or electric power of the right to use the tracks of another company under an agreement fixing the annual compensation therefor, and stipulating that, if the latter company changes its power to a cable, it will haul the cars of the former company and receive therefor an additional annual compensation, gives to the former the right to employ horse power over the tracks of the latter by paying the annual consideration until the latter company changes its motive power to cable, in which case the latter must haul the cars of the former company by cable for the increased compensation, and equity will not give to the former company the right to use a trolley system on the tracks of the latter company.

The owner of a dominant estate can neither increase the servitude imposed on the servient tenement or change, without consent of the owner thereof, the character of the servitude, though the proposed change will be beneficial to the servient estate.—(Kavanaugh vs. St. Louis Traction Co., 105 S. W. Rep., 278.)

NEBRASKA.—Municipal Corporations—Street Railroads—Right to Use Streets—Vote of Electors—Validity—License—Transfer.

Where the electors of a city are invested with the power of extending to a street car company the right or privilege of entering on the streets of the city, an irregular exercise of such power will not, under all circumstances, be held void. Where the company, under the belief that it is authorized so to do under the vote of the electors, expends money in the construction of its line, considerations of public policy may require the court to protect it in the possession and use of its road so far as constructed and in operation, when its right to the use of the streets of the city is brought in question.

The right of a street car company to occupy the streets of a city with a line of street railway, granted by a vote of the electors, is, if nothing more, a license coupled with an interest, and such license is transferable.—(State ex rel. Caldwell, Co. Atty. vs. Citizens' St. Ry. Co., 114 N. W. Rep. 429.)

NEW JERSEY.—Street Railroads—Sale of Franchises—Liability of Purchaser.

A traction company acquiring the road and franchises of another company at a mortgage foreclosure sale thereof is bound by the restrictions and conditions contained in an ordinance granting such other company a location for its tracks, though the company so purchasing did not expressly assume them.

A street railway company incorporated under P. L. 1886, p. 185, providing for the incorporation of street railway com-

panies and their regulation, and which on application, pursuant to P. L. 1889, p. 100, providing for a petition to a township by a company incorporated under such laws for a location of its tracks, has been granted permission to lay its tracks along a certain route through the township, derives its right to be a railway company and to occupy streets with its tracks from the Legislature, and the only authority given to the township is to grant or refuse a "location" for the tracks, which, when once granted, exhausts its power, and the township cannot thereafter interfere with any rights conferred by the Legislature.

Where a street railway company incorporated under P. L. 1886, p. 185, providing for the incorporation of street railway companies and the regulation of the same, made application to a township to lay its tracks, along a certain route, pursuant to P. L. 1889, p. 100, and an ordinance was passed granting such location, subject to certain conditions, on acceptance of such ordinance by the company, it constituted a valid contract, and its provisions could not be impaired by either party without the consent of the other, and hence it was not competent for the township to revoke such ordinance without consent of the company and remove its tracks.

Where a street railway company incorporated under P. L. 1886, p. 185, providing for the incorporation of street railway companies and their regulation, on application pursuant to P. L. 1889, p. 100, has been granted permission to lay its tracks along a certain route on condition that it pay annually a certain per cent of its gross receipts to the township, and under such provision has laid its tracks, the repeal of the ordinance granting such permission and consequent removal of the company's tracks, on the ground that it has failed to perform its agreement as to payment, may be enjoined on condition that the company account to the township for the compensation provided for.

A bill having been filed to enjoin a township from repealing an ordinance granting a street railway company a location for its tracks and their removal, a cross-bill was filed by the township, demanding that the company account as to compensation required by the ordinance granting such location to be made annually to the township. Held, that the cross-bill was not subject to the objection that it sought a legal remedy only, since, though a cross-bill filed against a codefendant must rest on considerations of equity, a more liberal rule applies as to a cross-bill filed against complainant.

A cross-bill in a suit to restrain the repeal of an ordinance granting a street railway company a location for its tracks and their removal, demanding an accounting as to compensation required by the ordinance to be made by the company for such location, is not subject to the objection that it introduces matters not within the scope of the original suit.

A cross-bill by a township to recover of a street railway company compensation required of it for a location for its tracks by the ordinance granting such location is barred as to compensation accruing more than six years before the date of the filing of the bill.

A street railway company was granted a location for its tracks through a township, the route being $2\frac{23}{100}$ miles in length, on condition that it pay to the township annually 5 per cent of its gross receipts. At that time the township claimed jurisdiction over the whole distance, but thereafter, when an accounting was sought as to such compensation, only $\frac{42}{100}$ of a mile of the railway lay within the township's boundaries. Before accounting, the company, desiring to lay a double-track through two boroughs, which at the time of the grant were embraced in such township, agreed to pay to each of them annually certain amounts, and at the time of accounting and previous thereto, the $2\frac{23}{100}$ miles of track of such company had been operated in connection with another road, their total mileage being $\frac{690}{100}$ miles, but the receipts of the two roads were not kept separate. Held, on an accounting for such compensation, that the township should be compensated on the basis of the entire $2\frac{23}{100}$ miles, and that the amount on which the township's percentage should be calculated, was that amount which bore the same proportion to the total receipts as $\frac{223}{100}$ miles to $\frac{690}{100}$ miles, or $\frac{223}{690}$ of the total receipts, from which should be deducted payments theretofore made to the township and payments made to the boroughs.—(Asbury Park & S. G. Ry. Co. et al. vs. Township Committee of Neptune Tp. et al., 67 Atl. Rep., 790.)

NEW JERSEY.—Injunction—Infringement of Corporate Rights.

The decision of the board of street and water commis-

sioners, even though made after notice and hearing, not being conclusive on the question as to whether certain curved rail connections of street railway tracks on different streets constitute a nuisance and are maintained without right, the street railway company may, without waiting for such hearing or attacking the validity of the resolution, apply for an injunction to restrain the removal of the connections pending the trial of the right to remove, either in the chancery court or at law.

The B. Street Railroad Company Charter, § 6, expressly authorized that company to construct a railway through B. street, "and branches from B. Street to the railroad depots of the N. Railroad," one of whose depots was the M. Street station, on condition that the consent of the Common Council should be first obtained. No consent was expressly given by the Council to the B. Company before its consolidation in 1863 with the O. Company. The O. Company had, however, previously constructed a line on M. Street from the depot up M. Street to South O. Avenue, under authority of its charter, and an ordinance passed in 1859 giving the city's consent and in an amendment of such ordinance passed in 1861, the O. Company was authorized to construct a track on B. Street, "commencing at M. Street and running up B. to O. Street," etc. By the consolidation of the two companies, the O. Company became vested with the rights and franchises of the B. Company (P. L. 1863, p. 462, § 2; MacL. p. 13). The M. Street track was connected with the B. Street track by curved rails, commencing at the center of M. Street, by the O. Company, but whether the connection was made before or after the consolidation did not appear, but it was made at least as early as 1867, and probably in 1862. Held, that complainant street railway company as succeeding to the rights of the O. Company showed such a right to maintain the curved rail connections as entitled it, pending final determination of its right, to enjoin their removal.

A connection of the tracks of the same street railway company lying on two different streets is not within an ordinance prohibiting any connection of one railroad with another without consent of the Council.

A provision of a street railway charter authorizing the company thereby incorporated to construct a railway through the streets of a city on condition that the company should not lay its rails in or along any street without first obtaining the permission of the Common Council is a privilege given to the city, as having authority over the location and construction of the tracks in public streets, which it may waive, or to which an implied assent may be given by acquiescence, and the failure to obtain such consent does not alone render the construction of the track altogether illegal.

P. L. 1867, p. 36, chartering the N. Horse Car Company, authorized it to "connect with and run over any horse-car railroad or railroads running through N. to the M. Street station." By an amendment of its charter the N. Company was authorized to construct its railroad on any street within the city of N. on obtaining the consent of the Common Council, and subsequently this consent was given by an ordinance which provided that the tracks to be built might be connected at B. Street with the lines of the O. Railroad Company, "as provided by its charter." The O. Company had previously constructed a line on M. Street for the station up M. Street to South O. Avenue, under authority of its charter, and an ordinance giving the city's consent, and in an amendment of such ordinance the O. Company had been authorized to construct a track on B. Street, "commencing at M. Street and running up B. to O. Street," etc., and the M. Street track had been connected with the B. Street track by curved rail connections commencing at the center of M. Street by the O. Company. Held, to show a sufficient right in complainant street railway company, as succeeding to the rights of the N. Company, to maintain the curved rail connections.

The charter of the O. Street Railway Company, § 12, provided that, if the company after its road was completed should abandon the same or fail to keep it in repair for one year, the charter should be annulled, and that the City Council might remove the road. General Ordinance, § 22, subsequently passed, provided that the Common Council reserved the power at any time to order the removal of, or to remove, railway tracks and to sell the materials, and, after paying expenses, to pay the balance to the company. Held, that the ordinance (section 22) referred to a removal of the entire road contemplated by section 12 of the charter, and that the removal of a curved rail connection uniting the line of road on two streets because illegally laid or for any other reason could not be required

thereunder.—North Jersey St. Ry. Co. vs. Board of Street & Water Commissioners of City of Newark et al., 67 Atl. Rep., 691.)

NEW JERSEY.—Municipal Corporations—Ordinances—Presumptions.

Where the subject-matter of an ordinance is within the police power of a municipality, and the ordinance is adopted by the proper legislative body in the municipality, the presumption is, until the contrary be shown, that the ordinance is reasonable.

The question of the reasonableness of an ordinance is a question of fact, and the burden of proof is upon those who attack it.

The court will not interfere unless it is clearly shown that the ordinance, either upon the face of its provisions or by reason of its operation in the circumstances under which it is to take effect, is unreasonable or oppressive.

If an ordinance may operate reasonably in some instances or circumstances, and unreasonably in others, it is not wholly void, and should not be set aside in toto, but should be permitted to stand, to the end that it may be enforced except in particular cases, where it may be made to appear that the circumstances render the operation of its provisions unreasonable or oppressive.

The ordinance in review regulates the running of trolley cars in Jersey City from the terminals at the Pennsylvania and Erie stations during the evening "rush" hours. The ordinance not appearing to be at all unreasonable in its application to the Erie terminal, and not under all circumstances unreasonable in its application to the Pennsylvania terminal, it will not be set aside in toto.—(North Jersey St. Ry. Co. vs. Jersey City, 67 Atl. Rep., 1072.)

NEW YORK.—Street Railroads—Right of Way—Grant of Use of Highways—Termination of Right—Construction of Franchise.

Where a grant to a street railway company of a right of way over certain roads of a town by the highway commissioners thereof was upon condition that at least one track should be completed within two years, otherwise the right should cease, except in case of delay by injunction, legal proceedings, or any cause beyond the control of the company, the last clause of the provisions was to provide for interference of the courts, or other acts of interference over which the company had no control, and which were not then known, and the company was not entitled to any extension because it failed to obtain consent of property owners or the right of way through private property where it had the legal right to force its way.

Where the company accepted the franchise, but took no other action until after the expiration of the two years, the franchise ceased to exist, and, if the company subsequently desired to build the road, all of the steps for obtaining an original franchise would have to be repeated.

The fact that the franchise provided for giving bond, and that the highway commissioners attempted to waive the time for filing it on application of the company made after the expiration of the two years, could have no effect so far as extending the franchise was concerned.

Where a street railway company does not begin to construct its road until after its franchise therefor has expired, a taxpayer and owner of property abutting on the line of the proposed road under process of construction is entitled to a continuance of a temporary injunction during the pendency of an action to perpetually enjoin the construction of the road.—(Manton vs. South Shore Traction Co., 106 N. Y. Sup., 82.)

NEW YORK.—Street Railroads—License Fee—Computation.

The charter granted to the predecessor of the New York City Railway Company in 1860 provided for payment to the city of New York of the same license fee annually for each car run thereon as was paid by other city railroads. In an action to recover car license fees, it appeared that a city ordinance in 1860 provided for the payment of \$50 annually for every railroad car running in the city of New York below 125th Street, and that the city railroads paid at that time and thereafter license fees only on the greatest number of cars in daily use during their busiest season, and not on every car during the year. Held that, where defendant had paid license fees since that year on that basis, it was in accordance with the practical construction placed on the charter of its predecessor by the various administrations of the city, and it was not liable for any other fee.—(City of New York vs. New York City Ry. Co., 106 N. Y. Sup., 293.)

FINANCIAL INTELLIGENCE

WALL STREET, Feb. 19, 1908.

Stock and Money Markets

There have been a number of developments in financial and railroad circles during the past week which ordinarily would have created more or less optimism with respect to the general security market, but which in the present circumstances failed to arouse speculation from the lethargy into which it has been plunged, mainly by the attacks that have been made upon Wall Street interests by several people high in political places. The action of the Union Pacific and Southern Pacific Railroads in declaring their usual dividends, whereas reductions had been expected in both cases, was an agreeable surprise to the speculative community, while the great success of the New York City \$50,000,000 bond issue, as reflected in the subscriptions amounting to six times the tenders, and the high average price secured—over 104—denoted fully the present temper of investors, as well as the fact that enormous sums of money are now seeking employment in stable securities. However, neither of these very encouraging factors, nor the exceedingly healthy condition of our foreign trade, as shown in the figures for January, had anything more than a passing influence on the stock market, which continues in a rut of dullness, with the trend of values unmistakably in a downward direction. The January foreign trade statistics reflected an excess of exports over imports of \$120,513,131, or \$62,710,010 greater than the trade balance in favor of this country in January, 1907. The figures also showed that a new record had been made for three consecutive months, the excess of exports over imports for November, December and January being \$328,000,000. This prompted one prominent banker to remark that "the country is getting richer when it considers itself poor," and likewise proved conclusively that we are in no immediate danger of being called upon to part with even a portion of the \$100,000,000 gold brought over from Europe toward the close of last year.

As offsets to these matters, however, the labor situation throughout the country is causing no little uneasiness, while the closing down of certain important manufacturing plants, the continued declining tendency in the copper metal markets here and in London, with reported sales locally of 4,000,000 pounds as low as 12½ cents, the fears of Governmental prosecution of some of the railroads for rebating, and the monetary necessities of some of the transportation interests, have all served to chill bullish ardor and to reduce the demand for stocks practically to a minimum. The money market, which displays signs of hardening somewhat in the time loan division, has not played a particularly important part in regulating the course of values. There has been an absence of violent declines in the stock market resulting from this combination of unsettling elements and no particular group of stocks has suffered to any greater extent than the general run. Instead, the downward movement has been steady and gradual, as well as pretty general, and if prevailing sentiment is any index of what may be looked for, the future holds out very little hope of any pronounced recovery in prices for some time to come.

What with the prospective opening to regular traffic of the North River tunnel and the various rumors afloat concerning impending changes in control and important connections between certain lines on Long Island, the local traction situation is developing more and more interest each day and very naturally a great deal of attention is being diverted to the securities of this class, more especially as they are not likely to be affected by political upheavals. Thus far this interest has not manifested itself in any appreciable increase in buying by speculators or investors, but it is only reasonable to expect that as the season for big earnings by these companies draws nearer, the prospect for largely augmented revenues by these corporations will be reflected in more or less extensive purchases of their securities. Just now some capital is being made out of the fact that earnings of the Brooklyn Rapid Transit have been cut into in a measure through the running of Interborough trains into Brooklyn, but careful judges of the situation agree

that eventually the opening up of the East River tunnel will prove of inestimable and lasting benefit to the former system. The action of the Assembly in recommitting the Coney Island five-cent-fare bill to the Committee on Railroads was generally looked upon as an important victory for the Brooklyn Rapid Transit Company, and caused an advance of 2 per cent in the stock, to 40⅞.

Philadelphia

There was a comparatively small volume of business transacted in the local traction shares during the week, and prices generally displayed a declining tendency. Philadelphia Rapid Transit was again the active leader of the group, but the dealings were accompanied by a fall of nearly a point in the price. Opening at 15⅞, the stock declined further to 14⅞, and then advanced to 15¼. Philadelphia Traction, on light transactions, declined from 88 to 86, and Union Traction ran off from 49⅞ to 49. Consolidated Traction sold at 65½ and 65. Philadelphia Companies stocks also ruled lower, the common selling at 38¾; and the preferred at 38¾ @ 39. Frankfort & Southwark Passenger stock sold at 38, and sales of Thirteenth and Fifteenth Street stock were made at 26.

Baltimore

According to reports a large block of stock of the United Railways and Electric Company has been deposited under the new pooling plan, which runs until May 1, 1911; and deposits will be received up to February 29. Under the agreement made in 1905, it is said that about 219,000 shares out of a total of 300,000 shares were deposited. Trading in the United Railway issues was rather quiet during the week, and prices generally ruled fractionally lower. The 4 per cent bonds sold at 86 @ 86¼, a decline of about ⅞, while the refunding 5's lost about a point to 73½. The income bonds were steady with sales at 46¾ @ 46½ and the stock sold at 10½ @ 11. Washington City & Suburban 5's sold at 99½, and North Baltimore 5's brought 109½.

Other Traction Securities

Prices in the Boston market ruled considerably lower during the week, the feature being Boston Elevated, which sold as low as 125, as compared with 130, the high price of the preceding week. Massachusetts Electric broke from 10½ to 9, but subsequently recovered to 10, while the preferred ran off to 41½. West End sold at 82½ @ 83 and the preferred at 99 @ 98. The Chicago market was dull and featureless. Chicago Union Traction receipts brought 2¼. Metropolitan Elevated sold at 18, the preferred at 45, and South Side Elevated at 67.

Security Quotations

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

	Feb. 11.	Feb. 18.
American Railways	42	43
Boston Elevated	130	125
Brooklyn Rapid Transit.....	37⅞	38¾
Chicago City	150	160
Cleveland Electric	—	—
Consolidated Traction of New Jersey.....	65	64
Detroit United	35	33
Interborough-Metropolitan	7½	7¼
Interborough-Metropolitan (preferred)	18	18¼
International Traction (common).....	—	—
International Traction (preferred) 4s.....	—	—
Manhattan Railway	122	123
Massachusetts Elec. Co. (common).....	11	10
Massachusetts Elec. Co. (preferred).....	48	41
Metropolitan Elevated, Chicago (common).....	17	17
Metropolitan Elevated, Chicago (preferred).....	45½	45
Metropolitan Street	22	15
North American	43¾	43
Philadelphia Company (common).....	37	37½
Philadelphia Rapid Transit.....	15	15
Philadelphia Traction	88	86
Public Service Corporation certificates.....	—	58
Public Service Corporation, 5 per cent notes.....	—	—
South Side Elevated (Chicago).....	68	65
Twin City, Minneapolis (common).....	78½	80
Union Traction (Philadelphia).....	49	49

a. Asked.

Metals

In the iron and steel trade a general improvement over recently prevailing conditions is reported. Much interest is manifested in the meeting of the officials of the various steel companies which will be held in the near future, and at which it is expected the matter of prices will be decided upon. In the copper trade a further material decline in prices for all grades of refined metal has taken place. For the week lake copper shows a decline at 5/8c. to 12 1/2 @ 12 3/4c., while electrolytic rules about 1/2c. lower at 12 3/8 @ 12 5/8. Consumers are indifferent, and show no disposition to increase their purchases even at the lower level of prices.

NEW HAVEN COMPANY'S EARNINGS

The report of the New York, New Haven & Hartford Railroad Company for the quarter ending Dec. 31, 1907, shows gross earnings of \$14,130,614, an increase of \$103,305, as compared with the corresponding quarter of 1906. The operating expenses were \$10,234,864, an increase of \$1,257,863. The net earnings from operation were \$3,895,750, a decrease of \$1,154,558. Income from other sources than operation increased \$842,844. Interest, rentals and taxes increased \$882,630. The net income from all sources for the quarter this year was \$650,323.25, a decrease of \$1,194,344.60, as compared with the same quarter of 1906. The figures for 1907 are based on the classification adopted by the Interstate Commerce Commission July 1, 1907, which materially affects comparison with 1906, especially in the items "Income from other sources" and "Interest, Rentals, Taxes, Etc."

NEW FINANCIAL PLAN IN BALTIMORE

As the agreement for deposit of United Railway stock will expire Feb. 25, Alexander Brown, H. Crawford Black and F. A. Furst have been requested by the holders of a large amount of stock to act as trustees under a new agreement to continue in force until May, 1911. By that date it is expected that the recently adopted financial plan, coupled with the policy of the present management, will have established the value of the stock. An advertisement dated Feb. 12 says: The new agreement (which is open to all common stockholders) contains a provision similar to that in the original agreement, to wit: That the stock deposited cannot be sold without the consent of the holders of 75 per cent thereof, and then only upon terms that will secure the same return for all of the stock held by the trustees. Stockholders may become parties to the agreement by executing and delivering the same to the Fidelity Trust Company, of Baltimore, Md., and depositing their certificates, duly indorsed, with the said trust company on or before Feb. 29, 1908.

BRITISH STATISTICS

The Parliamentary report on tramways and street railways of the Board of Trade of the United Kingdom has just been published. It shows the condition on Dec. 31, 1906, for the private companies and on March 31, 1907, for the municipal railways. The properties were divided as follows:

	—Length in miles—		Number of undertakings.
	Double track.	Single track.	
Municipalities	1,066.62	504.29	179
Companies	388.91	434.47	139
The consolidated operating report shows:			
	1906-'07.	1905-'06.	
Gross receipts.....	£11,849,175	£10,643,178	
Working expenditure.....	7,363,762	6,835,763	
Net receipts.....	£4,485,413	£3,807,415	

The number of electric cars at the expiration of the fiscal year was 10,369; of non-electric cars, 1,377. The passengers carried during the year were 2,454,807,487, and the kw-hours output, 369,362,473.

TAX SUIT TEST IN OHIO

Attorney General Wade H. Ellis has filed suit in common pleas court in Franklin County, Ohio, against six so-called

public service corporations in an effort to recover what is known as the Willis tax for the past six years. The properties of these companies is all held under lease by other companies which do pay the Willis tax. The attorney general has selected six of what he believes to be typical cases and will test the law requiring such payments. The companies, on the other hand, state that they have refrained from paying this tax on advice of the best legal authority in the state.

The attorney general contends that where the leasing companies pay the excise tax required by the Cole law and the owning companies pay the general tax, the Willis tax may also be collected from them. The Cole law requires that certain corporations pay a tax of 1 per cent on gross receipts in addition to the general property tax, while the Willis law requires the payment of one-tenth of 1 per cent on the capital stock, but excepts those companies which have paid both the general tax and the Cole tax. He asserts that steam and interurban railway, street railway, gas and electric light companies which have leased their properties to holding companies are subject to the Willis tax and that the lessee must pay the Cole tax. It is said that several hundred corporations in the state are subject to suits on this ground if these stand the test. The Governor, Secretary of State and the Attorney General may remit penalties attached to these cases if they desire, so that the amounts required from each, if the suits are against them, may be much smaller than the aggregate for which the suits were brought. The companies sued and the amounts are as follows: Cincinnati Street Railway Company, \$339,780; Columbus Railway Company, \$218,280; Forest City Railway Company, Cleveland, \$36,135; Cleveland & Pittsburg Railway Company, \$317,344.68; Little Miami Railroad Company, \$208,853.25, and Baltimore & Ohio Southwestern Railroad Company, \$195,780.

INSPECTION OF THE HUDSON TUNNEL

The Hudson & Manhattan Railroad Company, building the tunnels under the Hudson River between New Jersey and New York, arranged for a special inspection of the upper tunnel Saturday, Feb. 15, by the newspaper men of New York and a few others as special guests. The trip was the second of its kind and afforded the newspaper men an excellent opportunity of seeing the work undertaken by the company.

W. G. McAdoo, president of the company, acted as host. He reviewed briefly the history of the movement, referring incidentally to some of the obstacles that had to be overcome. The start was made from the Fourteenth Street station of the road, about 4:30 p. m., and the party was carried to the terminal in Hoboken adjacent to the Delaware, Lackawanna & Western terminal. Here, as in most of the terminal stations, the company has loading and unloading platforms, thus separating the streams of traffic and accelerating passenger movement. Mr. McAdoo explained that some of the stations were as yet uncompleted, but that all the work that remained to be done was confined to the finishing touches.

The run through the tubes was made in leisurely fashion. E. M. Hedley, a brother of Frank Hedley, general manager of the Interborough Rapid Transit Company, of New York, was in charge of the train that conveyed the visitors. Mr. Hedley will act as superintendent for the company when the lines are placed in operation. Besides Mr. McAdoo as representatives of the company, there were present Walter G. Oakman, president; Charles M. Jacobs, chief engineer; J. V. Davies, deputy chief engineer; L. B. Stilwell, consulting electrical engineer; Hugh Hazleton, electrical engineer. There were also present Pliny Fisk, Wilbur G. Fisk and William M. Barnum, of Harvey Fisk & Company, through whom the company was financed.

The uptown branch at this time has been completed only as far as Nineteenth Street and Sixth Avenue, but will soon be finished to the terminal at Thirty-Third Street and Sixth Avenue. No small part of the undertaking was the building of a large terminal station and office building—the largest in the world, it is said—extending along Church Street, New York, from Cortlandt to Fulton Streets, a distance of two blocks, and extending back from Church Street a distance of several hundred feet.

The opening of the tunnels to the public on Feb. 25 will be fittingly celebrated by ceremonies, in which Governor Hughes, of New York, Governor Fort, of New Jersey, and others prominent in public life will take part.

AFFAIRS IN NEW YORK

The Board of Estimate held a hearing Friday on the proposed Broadway-Lexington Avenue subway, as approved by the Public Service Commission. The matter was postponed for two weeks. It is believed that the members of the board are unfriendly to the plan. In reply to a question from one of the members of the board, Commissioner Eustis stated that the commission has no power to compel the Interborough to third-track its East Side elevated lines.

Henry B. Seaman, chief engineer of the Public Service Commission, in a communication to the commission, makes the following recommendations in regard to improved service on the Brooklyn Rapid Transit:

1. All cars used for bridge service should have side doors.

2. The length of trains on the elevated should be increased to eight or ten cars.

3. The transfer station at Sands Street should be enlarged so as to permit the use of six-car bridge trains and ten-car elevated trains.

4. The railroad should increase its rolling stock by the addition of more commodious cars, with automatic signals to start the train.

Commenting upon the through service to Park Row, Mr. Seaman says that the capacity furnished by the service at a test made on Feb. 3 was not sufficient to do the work required. It would be impossible to carry the people by this arrangement who were accustomed to use the bridge before the Battery tunnel was opened. The cable car service has about 50 per cent greater capacity than the elevated railway service, provided each car is fully loaded. The estimated capacity of the six-car bridge service as tested on Jan. 25 was 64,800 passengers per hour, as compared with 30,000 passengers per hour on Feb. 3. The present system of through trains decreases the number of cars in service on the elevated lines during the rush hour. This is about 10 per cent of the total number of cars in service, or about 15 per cent of the carrying capacity.

To this statement by Mr. Seaman, Mr. Stevenson, Commissioner of Bridges, takes exception. He has replied as follows:

"The new method has done away entirely with the change at Brooklyn and the accompanying crowding on to the elevated trains at that point. The old method of operation had the crush at the Manhattan end, the Brooklyn end and the change of cars in Brooklyn, necessitating passengers changing platforms and stair climbing. This has all been done away with, except the crowding at the elevated car door, which has been transferred from Brooklyn to New York.

"There remains to be done the following work in connection with the operation of elevated trains across the Brooklyn Bridge before the maximum efficiency of this service can be obtained:

"1. The installation of signals across the Brooklyn Bridge which will provide for the proper spacing of trains, which is under contract.

"2. The decreasing of the open spaces between car platform and station platform to permit of the more rapid loading of passengers into the elevated cars, and also railings to more evenly distribute the crowd.

"3. The reconstruction of the yard at the Brooklyn end to permit of the more prompt and efficient handling of trains as they arrive from Brooklyn going onto the bridge and leaving the Brooklyn Bridge to their respective lines in Brooklyn.

"4. The installation of improved interlocking mechanism to provide for the more prompt operation of switches and signals."

Upon the recommendation of Chairman Willcox, the board directed its counsel to issue an order directing the Interborough to show why it should not equip all cars purchased in the future for use in the subway and all those now in use with side doors. At previous hearings the subject of side doors was referred to, and as a result B. J. Arnold was appointed to make an examination of conditions and report. He advised side doors as a principle, but the details as to number and location will not be considered until the company has been heard.

Assemblyman Beverley R. Robinson, of New York, on Feb. 17, introduced a bill in the Legislature which is intended to simplify the building of subways in New York City. It provides for indeterminate franchises, with a minimum period of twenty-five years, during which time the city shall not have the right to take over the franchise and property of the railroad corporation, and to extend from twenty to thirty-five years the period for which a franchise for the equipment, maintenance and operation of a subway constructed at city expense can be given. The indeterminate franchise provision permits the sale of a

franchise to maintain and operate a subway for a fixed period of not more than twenty-five years, and thereafter until the city at its option shall repay to the company the cost of construction and purchase the property owned and used by the company in connection with the subway. The terms of such purchase by the city must provide that no allowance shall be made to the company as payment for its franchise. When such a franchise is offered for sale bids may be asked for the construction and operation of the road, either in cash or in annual fixed payments, or in payment to the city of a proportion of the net income annually after deducting from the gross income operating expenses and interest on the cost of construction and equipment at a rate fixed in the bid. Bids may be called for on any or all of these bases at the same time, and the Public Service Commission is at liberty to accept any one of the bids which it believes to be for the best interests of the city. The conditions of the sale may provide for the creation, maintenance and custody of a sinking fund to provide for the retirement of bonds, and may go to the extent of providing the manner of investing and applying this fund, and the sum applied in this way for the retirement of the bonds shall be deducted from any amount which would be payable by the city on its taking over the subway after the period of twenty-five years or less during which such right of recapture would not exist.

Forty-four persons were killed on the railroads and street railroads in New York City last month, according to the figures given out Feb. 18 by the Public Service Commission. The figures for accidents were as follows:

Car collisions	170
Persons and vehicles struck by cars.....	934
Boarding	479
Alighting	416
Contact with electricity.....	34
Other accidents	1,888

Total

3,921

The following injuries to persons were recorded:

To passengers	1,444
To persons not passengers.....	570
To employees	486

Total

2,500

Another table gives these statistics:

Killed	44
Fractured skulls	15
Amputated limbs	6
Broken limbs	32
Other serious injuries.....	91

Total

188

The total number of accidents in December was 3,993 and total killed 51.

The commission ordered the Interborough Rapid Transit Company to show cause why side doors should not be provided for all cars at present in use and for all new cars.

The commission has authorized an issue of new securities, granting permission to the Coney Island & Brooklyn Railroad Company to issue bonds to the amount of \$30,000, the proceeds of which will be spent for new equipment.

NOTES FROM MEXICO

The Compañía Tranvia de Chihuahua has retained Carl A. Mellen, engineer of the Guadalajara electric tramways in a consulting capacity to look after the building of the line.

Luis H. R. von Ruecau, of Mexico City, is planning the construction of an electric railway from Cuale to the Pacific port of Las Peñas. He has a concession for taking water from the Ameca and Mascota rivers, and he proposes to generate sufficient electricity for mining and reduction purposes in the Cuale district, and for the operation of the projected electric railway.

NEW CAR AND TRUCK WORKS

Steps are being taken to organize a manufacturing company at Watertown, N. Y., to build street railway cars and trucks under patents issued to Edward A. Barber, superintendent of the Black River Traction Company, of Watertown. Three of these patents were granted Feb. 4, 1908, and are included in the usual list for the week, published elsewhere in this issue while some of the main features of the inventions were described in an article in the issue of this paper for Feb. 8.

RIVERBANK SUBWAY ROUTE IN BOSTON SETTLED

By a recent decision of the Boston Transit Commission it is settled that the outer end of the proposed Riverbank subway in that city shall be in the Charles River Embankment, now building, between Harvard Bridge and the Charlesgate, East, so called. This means that the subway will have the shortest length possible, under the act of authorization (Chapter 573, of 1907); that connection with existing surface tracks in outer Beacon Street and Commonwealth Avenue extension will be by tracks in plain view across the Back Bay Fens Park, instead of by subway under the Fens, as desired by many who wished to preserve the park unimpaired by a railway embankment or trestle; and that a possible system of avoiding grade crossings at the junction with existing tracks has been sacrificed for the sake of simpler and quicker settlement of the problem.

The decision is what the Boston Elevated Railway desired. If it had been otherwise the transit commission had practical assurance that the company would have taken advantage of several provisions in the act, under which it might have delayed construction of the new subway by disagreeing with the commission and thus throwing the case into the hands of the Railroad Commission as arbiters. As the matter now stands, the act requires that the subway shall be begun within one year from the completion of the Washington Street tunnel, or earlier, as the company and transit commission may agree.

This new subway is the result of popular agitation for a new route from the traffic center to the westward that should be free from street congestion. It will accommodate many Brookline, Newton, Brighton, Chestnut Hill Reservoir, Auburndale and Cambridge cars now running from Park Street subway loop out of town by a way of surface tracks in Boylston Street, where cars are now so numerous that the pace is very slow. The new subway must start from a point in or under Park Street subway station, proceed under Boston Common parallel to the Boston end of the proposed Cambridge subway to a point under Beacon Hill; then swing westerly, diagonally under various residential streets to the Charles River near Brimmer Street. Thence it is to lie in the new embankment about a block northward from Beacon Street to the point of emergence mentioned above. As the embankment is not yet filled, the subway can be constructed without much excavation, if desired, leaving the filling and finishing of the embankment and its park to be done afterward, thus saving expense.

Before the commission begins the work of construction it must execute with the Boston Elevated Railway Company, for the city, a contract allowing the company sole use of the new route, "for the running of its cars therein and for other purposes," for a period of twenty-five years, dating from the first use, annual rental to be 4½ per cent of the net cost of the subway, following the form of lease of the Washington Street tunnel. In case of disagreement over terms the Railroad Commission is called in to make the final decision.

TROLLEY SERVICE PARALYZED IN ATLANTA

Street car service in Atlanta and suburbs was completely suspended for about 36 hours beginning on the night of Sunday, Feb. 9, on account of a heavy ice and sleet storm, which demolished so many telegraph and telephone circuits in the city that the municipal authorities ordered the Georgia Railway & Electric Companies to shut off all current. Underground lines in the fire district of the city, however, were kept in operation, and by strenuous efforts the arc lamp service in the business center was maintained Monday night. Both the Western Union and Postal Telegraph Companies had large forces of extra men at work clearing up the debris, and the two telephone companies, together with the Railway & Electric Company, made every possible effort to restore order and get cars running by Tuesday noon. The street railway lines did not suffer individually from the storm to any extent, but, as before stated, were compelled to suspend operation, on account of the condition of telephone and telegraph wires. The Atlanta & Marietta single-phase railway was ordered stopped, and many business men were obliged to walk to their offices or patronize cabs and hacks at premium prices. The incident forcibly illustrated the dependence of a modern city upon all kinds of electric service and emphasized the need of both the separation of telephone and telegraph wires from power circuits, with a wider use of underground construction by telegraph and telephone companies.

UNION TERMINAL FOR STEAM AND ELECTRIC LINES IN SAN FRANCISCO

An interesting plan for a union terminal station for the accommodation of the various railroads entering San Francisco has been presented by John B. Rogers, chief engineer for the Ocean Shore Road, and contemplating a passenger station covering the city block bounded by Market, Eleventh, Twelfth and Mission Streets, with freight warehouses occupying three blocks in the rear and extending on both sides of the tracks to Harrison Street. Mr. Rogers claims for his plan the advantages of a location easily accessible from the present rights-of-way and tracks of the Southern Pacific, Western Pacific, Santa Fé and Ocean Shore Railroads, and central to business and passenger interests, as it would have a frontage on Market Street at the foot of Van Ness Avenue. In addition to the provisions for bringing all the passenger traffic to a common point on Market Street, at the foot of Van Ness Avenue, provisions are made for the handling of freight from the adjacent blocks, and fire-proof warehouses are suggested on either side of the tracks in the three blocks back of Mission Street, fronting on Eleventh and Twelfth Streets, six stories in height and having a combined frontage of six city blocks. From spur tracks in the rear of these six warehouses it would be possible to handle through freight in carload and trainload lots and to make economic divisions into carload and lesser amounts for Coast and suburban shipment without drayage charges and with a minimum of expense. For financing the project it is suggested that the four railroads to be benefited by the plan join in the purchase of bonds of the terminal company, and that the remainder of the bonds be taken by the larger shippers, who would lease room in the warehouses; by the property holders, who would secure an immediate revenue from their holdings to be incorporated in the plan, and by the general public, which would, it is claimed, find in the terminal company a sound investment of permanent and desirable quality.

NEW CARS FOR THE CHICAGO RAILWAYS COMPANY

The Board of Supervising Traction Engineers of Chicago has authorized the Chicago Railways Company to secure bids immediately on 400 double-truck pay-as-you-enter type of cars, to be built in accordance with specifications to be prepared by the chief engineer of the board. The following table shows the general dimensions to which the new cars must conform and also the dimensions of the latest pay-as-you-enter type cars of the Chicago City Railway:

	Chicago Railways. Proposed.		Chicago City Ry. Cars.
	Max.	Min.	
Width of center aisle.....	23"	25"
Length of cross seats.....	36"	36"
Height from top of rail to top of trolley board.....	11' 10"	11' 8"	11' 10"
Length over corner posts....	32' 5"	32' 0"	32' 5"
Length of platforms.....	8' 4½"	8' 4½"	7' 11"
Length over all.....	49' 2"	48' 9"	48' 3"
Width over all.....	8' 9"	9'
Diameter of wheels, steel....	34"	34"	34"
Diameter of wheels, cast iron	33"	33"	33"
Truck wheel base.....	4' 6"	4' 6"	4' 6"
Truck centers.....	20' 5"	20' 0"	20' 5"

The principal differences between the proposed cars and the cars of the Chicago City Railway are in the over-all width, which is 3 in. less, and in the length of platforms, which is 5½ in. greater. The general design of the cars must conform with the provisions of the new franchise which the company accepted on Feb. 1.

In authorizing the letter of contracts for these cars, the board expressed in the resolution that "its desire is not to inflict upon either of the railway companies unnecessary hardships, and its action is without prejudice to the double-truck cars of either company now in operation." The resolution further directed that the Chicago Railways Company be authorized to secure bids on cars not of the pay-as-you-enter type, conforming to the same general dimensions, and submit them to the board for consideration along with the bids on the pay-as-you-enter type. This was done at the request of the railway company, which is not certain that the pay-as-you enter type is best suited for all of its traffic.

THE CLEVELAND SITUATION

The Cleveland Electric Railway Company last week refused tenders of cash from the Forest City Railway Company for joint use of tracks on Superior Avenue from the Public Square to East Ninth Street and on East Ninth Street from Superior Avenue to Euclid Avenue. On Saturday cars of the low-fare companies were put into operation on these portions of the tracks any way, under an ordinance passed some time ago giving them authority for their use. This gives the new companies what they call four complete routes and enables them to loop the business section of the city without going over the "graveyard" loop, about which so much has been said.

Mayor Johnson and F. H. Goff did little work on the negotiations the latter part of last week, and Mr. Goff was present Monday, being unavoidably detained at home. Mayor Johnson discussed a report on fares from Professor Bemis and Secretary Davies replied briefly to what was said. He stated that the paper contains an interesting array of figures, but that he was not in position to go into the matter from the fact that he had not done any figuring himself. The data upon which Professor Bemis based his report were secured from the Cleveland Electric Railway Company, it was said. The Mayor said that he and Mr. Goff had practically agreed on the physical value of the property. Mr. Davies stated that he had not made up his mind that the two lines in Lakewood have no value as money earners, although the Mayor had announced his decision to that effect.

Discussions at the street railway meetings the past week were devoted largely to what are called outlying grants—that is, the lines or portions of lines outside of the city boundaries. Mayor Johnson has insisted that the outlying lines have been losing money for the company, while the shorter hauls inside the city have produced enough profit on operation to yield good dividends to the stockholders and at the same time make up for the losses he mentioned. From an array of figures furnished by Professor Bemis the Mayor assumed that the Detroit Street line outside of the city has been losing enough money to aggregate \$1,000,000 already and that it will continue to be a burden for years to come. Yet he says the line as a whole has made money for the company. Mr. Goff professed to be startled at the assertion that the Cleveland Electric had been a public benefactor to that extent and ventured that if this is true, the people of Cleveland will regret they did not accept the offer of seven tickets for a quarter.

In the course of the discussion the Mayor said he thought the people of Lakewood, west of the city, should pay 1.82 cents more than those within the city limits; that is, he would make the fare 3 cents inside and 4.82 outside the city boundaries. Secretary Davies told the Mayor that in 1894 the Detroit Street line was earning 16.6 per car mile, operating only to Belle Avenue, Lakewood. It improved very little to 1898, when the extension was made to Rocky River. In 1906 the earnings per car mile were 22.21 and the next year 21.46. On this line, at least, the figures from the books of the company show that the Mayor is wrong in his contention that the portions of the lines outside of the city have lost money for the company. The actual figures would seem much better than any estimate that may be made from counting the passengers in the middle of the winter and at a time of business depression.

Mayor Johnson suggested Thursday that the lines be bunched and an average length of franchise be secured. The earnings could then be estimated on this average. Secretary Davies has insisted that each line should be taken up separately. This the Mayor does not want because of the time that will be consumed in making the investigations.

A discussion as to the percentage of operating expenses took place Saturday. President Andrews contended that it should be 62½, while the Mayor wanted to make it 65. At the suggestion of Mr. Goff it was agreed to examine the books and see just what the expenses have been.

Granting that three years is the proper average length of the franchises of the Cleveland Electric lines and that 5½ be the rate on the physical property, the Mayor and Mr. Goff are \$225,000 apart on the interest. Mr. Goff, however, contends for 5¼ on both physical value and present worth. The Mayor has held out for 6 per cent on the latter. In the course of this discussion the Mayor stated that Wade Park is free territory and that if a settlement is not reached on the leasing plan the low-fare companies will have a competing road on the street within a year. Mr. Goff replied that he did not care to take

any idea of competition into the discussion of the subject, as he felt it an injustice to do so. He said that while the Cleveland Electric would lose some of its franchises, people would perhaps feel different in 1910 and grant other franchises.

Figures furnished by Secretary Henry J. Davies showed that the receipts per passenger on the Cleveland Electric had been 4.69 cents in 1905; 4.71 in 1906 and 4.28 in 1907. The operating expenses, including taxes, were 3.09 per passenger in 1906 and 2.27 in 1907. He stated that no new cars or other equipment had been purchased in the latter year, as the future needs were uncertain. It was brought out that the Mayor has planned several new lines to compete with the Cleveland Electric if a settlement is not reached.

THE FLOODS

The annual floods on the rivers and small streams in the Central States has been worse this year than for several years past. Especially is this true of the Pittsburg district, where the rising waters have disturbed both the steam roads and the electric railways to a considerable extent. All the lowlands of Greater Pittsburg were submerged on Feb. 15, the tracks of the Pittsburg & Western Railroad, the Bessemer & Lake Erie, Baltimore & Ohio and several other roads being under water at several points. On several of the electric railways service had to be entirely abandoned. Practically the same conditions prevail throughout parts of New York State. At Utica and Buffalo considerable damage has been done. A section of the Warren & Jamestown Electric Railway in the Conewango Valley was washed out and the highways along that line were reported to be under 3 ft. of water at some points. The lines in and about Cincinnati were all affected more or less, especially the suburban lines, several of which were compelled to suspend service until the water subsided.

THE TREND OF LEGISLATION IN OHIO

What was known as the Stockwell bill, a Johnson measure, providing that street railway grants may be renewed to another than the original company, was defeated in the House of Representatives at Columbus, Ohio, last week. Representative Bassett endeavored to amend the bill by taking everything out with the exception of power of the City Council to renew franchises in that way, but Mr. Stockwell objected and insisted that councils should also have the right to require that the new company purchase the old tracks and equipment at the cost of reproduction, less 20 per cent. The bill was buried by a vote to reconsider, but the author at once went to work on another that gives authority to grant franchises on streets that have been occupied either to the old or a new company.

Senator Howe has introduced another reform measure in the shape of a bill that will give city councils the authority to fix rates for street railways and telephone systems.

Senator Howe has also reintroduced his bill providing for a tax upon franchises of public utility corporations in a modified form. Interurban railway, telephone, telegraph and express companies now reached by the Nicholas law have been omitted from the list.

It is said that Carl Shuler will eliminate that portion of his public utility bill giving the franchise power into the hands of a state commission and will incorporate in its place a clause giving city councils power to inquire into the receipts and from them dictate the charges that shall be made for service. Mayor Johnson's idea of home rule is thus subserved, but the bill so changed will have lost its original importance. It will require uniform accounting and regulation of stock issues by the railroad commission, two things which neither the state nor local authorities can know much about. However, a number of public hearings will be had before the bill goes to vote.

BULLETIN ON WAGES

The secretary of the American Street & Interurban Railway Association has recently made a compilation of the wages paid to conductors and motormen by different street railway companies. These statistics have been tabulated and issued in bulletin form to member companies only. They comprise data from 327 companies, and give information as regards lay-over time, extra pay to trainmen for instructing new men, etc.

C. E. R. A. COMMITTEES FOR 1908

The Central Electric Railway Association has announced the following committees for 1908:

SUBJECT COMMITTEE.

H. A. Nicholl, chairman, general manager, I. U. T., Anderson, Ind.

E. C. Spring, general superintendent, D., C. & P., West Milton, Ohio.

F. W. Coen, general manager Lake Shore Electric, Norwalk, Ohio.

J. C. Rothery, general manager East Liverpool Traction & Light, East Liverpool, Ohio.

A. A. Anderson, general manager Indianapolis, Columbus & Southern, Columbus, Ind.

INSURANCE COMMITTEE.

H. N. Staats, chairman, vice-president American Railway Insurance Company, Cleveland, Ohio.

H. J. Davies, secretary, Cleveland Electric Railway Company, Cleveland, Ohio.

H. P. Clegg, president Dayton & Troy Electric Railway Company, Dayton, Ohio.

FINANCE COMMITTEE.

C. N. Wilcoxon, chairman, G. M. Cleve., S. West. & Col. Railway Company, Cleveland, Ohio.

George Whysall, G. M. Col., Del. & Marion, Marion, Ohio.

W. G. Irwin, vice-president Indianapolis, Col. & Southern, Columbus, Ind.

F. D. Norviel, G. P. & F. A., I. U. T., Anderson, Ind.

H. E. Vordemark, auditor Ft. Wayne & Wabash Valley, Ft. Wayne, Ind.

STANDARDIZATION COMMITTEE.

R. C. Taylor, chairman, superintendent motive power, I. U. T., Anderson, Ind.

W. S. Townsend, master mechanic East Liverpool Traction & Lt., East Liverpool, Ind.

F. Heekler, superintendent motive power and cars, Lake Shore Electric, Fremont, Ohio.

M. Baxter, master mechanic Western Ohio Railway Company, Lima, Ohio.

W. A. Gibbs, division manager Ohio Electric Railway Company, Newark, Ohio.

L. Clark, master mechanic Indianapolis Traction Ter. Company, Indianapolis, Ind.

PUBLICITY COMMITTEE.

George Davis, chairman, *Electric Traction Weekly*, Cleveland, Ohio.

Cale Gough, *STREET RAILWAY JOURNAL*, Chicago.

L. E. Gould, *Electric Railway Review*, Chicago.

E. B. Grimes, Ohmer Fare Register Company, Dayton, Ohio.

TRANSPORTATION COMMITTEE.

F. J. J. Sloat, chairman, division manager Ohio Electric Railway Company, Dayton, Ohio.

F. T. Hepburn, Lima & Toledo Traction Company, Lima, Ohio.

Irwin Fullerton, auditor Detroit United Railway, Detroit, Mich.

Charles G. Lohman, superintendent C., S. B. & Northern Indiana Railway, South Bend, Ind.

J. W. Brown, general manager West Penn. Railways Company, Connellsville, Pa.

VIGILANCE COMMITTEE.

A. A. Anderson, chairman, Columbus, Ind.

C. D. Emmons, Ft. Wayne, Ind.

T. J. Ferneding, Dayton, Ohio.

F. A. Davis, Scioto Valley Traction Company, Columbus, Ohio.

G. W. Parker, Detroit United Railway, Detroit, Mich.

F. J. Green, Springfield, Ohio.

SUPPLY COMMITTEE.

J. F. Ohmer, chairman, Ohmer Fare Register Company, Dayton, Ohio.

S. D. Hutchins, representing Westinghouse Traction Brake Company, Columbus, Ohio.

L. J. Drake, Jr., Galena Signal Oil Company, Indianapolis, Ind.

W. H. Bloss, Ohio Brass Company, Indianapolis, Ind.

F. H. Strieby, General Electric Company, Cincinnati, Ohio.

ENGLISH SUSPENSION

Dispatches from London this week announce the suspension of the firm of Bruce, Peebles & Company. Among the current liabilities of the firm reported are those for the building of the great dock at Shanghai and a street railway system at Athens. The firm also lately contracted to construct a street railway system at Moscow, the amount involved being \$10,000,000.

INSTRUCTIONS TO EMPLOYEES OF CHICAGO RAILWAYS COMPANY

John M. Roach, president of the Chicago Railways Company, has sent to all the employees of the company a circular letter enjoining upon them great care in the operation of the cars and instructing them to present a neat appearance while on duty, and avoid accidents. Conductors are told that they are expected especially not to give the bell signals too quickly, to watch for passengers at transfer points and exercise politeness and good judgment. Motormen are advised to look out for vehicles of all kinds, even when in the hands of careless or incompetent drivers, to watch persons, especially small children playing in or crossing the street in front of the cars, to avoid collisions at intersecting street corners, protect passengers who get on or off the cars at the front platform, avoid flattening wheels by the improper use of air-brakes, and in general to "do better railroading." Station employees are expected to clean and disinfect all cars thoroughly, to make repairs promptly and to keep the rolling stock in the best possible condition.

The letter is printed in the form of a pamphlet of vest-pocket size and is addressed to each employee by name.

ANOTHER CHICAGO ELEVATED LOOP REPORT—THE LENGTHENING OF STATIONS SUGGESTED

The committee on local transportation of the Chicago City Council has retained George Weston, the city's representative on the Board of Supervising Traction Engineers, to prepare a report on the elevated loop problem. At a public hearing on this question held on Feb. 6 the representatives of the four elevated roads using the loop suggested no other plans for relief of the present congestion except lengthening the station platforms. This move was vigorously opposed by property owners, and the committee on local transportation decided to go over again all of the ground covered in B. J. Arnold's two reports made a few years ago. Mr. Weston will consider through routing, transfers, stub terminals and special loop trains as means of providing immediate relief. No ordinance will be drawn up until his report and recommendations are considered by the committee. It is said that all of the elevated franchises are being examined closely to find some means of compelling the roads to comply with such regulations as may be incorporated in the new ordinance.

NEW YORK UTILITIES BOARD UPHELD BY COURT OF APPEALS

In its decision in the case of the Saratoga Gas, Electric Light & Power Company, announced Feb. 18, the Court of Appeals upholds the right of the Legislature to delegate to a commission the power to fix maximum rates. In this case the old State Commission of Gas and Electricity made an order fixing a lower rate for gas and electricity to consumers in Saratoga. An appeal was taken to the Appellate Division, which sustained the order of the commission. The Court of Appeals reverses the order upon the failure of the law to give the lighting company the right to appeal to the commission for a readjustment of rates at the end of three years. The opinion in the case was written by Chief Judge Cullen. He says:

"No opportunity or right is given to the corporation to apply for a new adjustment of rates," Judge Cullen says. "It seems to us that this is a real case violating the inhibition of the Fourteenth Amendment to the Federal Constitution. 'No State shall deny to any person within its jurisdiction the equal protection of its laws.' That the statute on its face denies one party of the right accorded to the other party is conceded."

STREET RAILWAY PATENTS

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

UNITED STATES PATENTS, ISSUED FEB. 4, 1908.

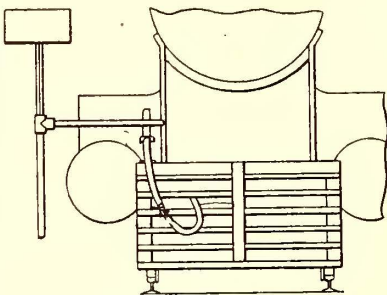
877,953. Trolley; Jean E. Saucier, Montreal, Canada. App. filed Oct. 6, 1905. The harp carries in addition to the usual trolley wheel a spring-impelled arm in which is mounted a convex roller designed to engage the trolley wire behind the trolley wheel to thereby steady the wire.

877,959. Fluid Pressure Brake System; George M. Spencer, St. Louis, Mo. App. filed Aug. 3, 1907. One object of this invention is to provide means for utilizing a portion of the air or other fluid for actuating the brake cylinder so as to not only save the power represented by the compression of such air, but also to enable the pump to be started under light load, thus preventing injury both to the pump and the motor for driving the same.

878,062. Trolley Brush; George Heineman, San Francisco, Cal. App. filed Sept. 13, 1907. Provides an overhead trolley brush mounted on and extending substantially the length of the car, the brush being designed to sweep across exposed contact places arranged above the roadbed and depending at regular intervals from an overhead feed or supply cable.

878,106. Electrical Signaling Apparatus; Benjamin F. Wooding, Denver, Colo. App. filed Feb. 23, 1906. Comprises contacts carried by the train and adapted to engage the conductors of a block system, which conductors may be supported on poles or placed on the ground.

878,138. Alternating Current Signaling Apparatus for Electric Railways; John S. Holliday, Wilkinsburg, Pa. App. filed June 3, 1907. This system is adapted for use where single-phase alternating current is used for propulsion. Is designed to avoid the influence of the propulsion currents on the signals.



PATENT NO. 878,263

878,139. Alternating Current Signaling Apparatus for Electric Railways; John S. Holliday, Wilkinsburg, Pa. App. filed June 28, 1907. Relates to modifications of the above.

878,247. Overhead Electric Contact; Thomas W. Small, Cleveland, Ohio. App. filed Dec. 5, 1904. On one side of the trolley harp a contact stud or boss is provided which is adapted to be engaged by a plate depending from a trolley hanger to establish a circuit for the operation of an indicator within the car.

878,249. Electric Apparatus for Railway Signaling; Henry W. Spang, New York, N. Y. App. filed Jan. 12, 1903. Relates to means for preventing damage to the signal system by induced electricity during thunderstorms.

878,263. Portable Automatic Stop Mechanism for Cars; Paul Winsor, Weston, Mass. App. filed Aug. 21, 1907. A portable device capable of being applied to either end of a car and operatively connected with the air-brake system so that the device when engaged by one of a series of actuating devices located along the tracks will operate the air-brake system to set the brakes and stop the car.

878,381. Car Mover; Viktor Gusztav, Vienna, Austria-Hungary. App. filed Dec. 5, 1906. Designed in such a manner that the hand lever may be swung laterally in order that the person using the car mover may stand either between or outside of the track.

878,409. Car Replacer; Henry E. Matthews and Walter P. Matthews, Salida, Colo. App. filed May 28, 1907. An inside replacer having guide arms and a shoe projecting over the rail, said shoe having a longitudinal guide groove therein aligning with the inner side of the rail and adapted to pass an undisturbed wheel rolling on the rail.

878,468. Air-Brake; William G. Pattee, Minneapolis, Minn. App. filed March 11, 1907. The object of this invention is to provide means in a Westinghouse air-brake system whereby the auxiliary reservoirs may be recharged while the brakes are set.

878,168. Pleasure-Giving Machine; Leon W. Whipple, Lowell, Mass. App. filed May 10, 1907. Comprises a number of automobiles run in a continuous circle fastened one to the other beneath the floor, on which they run.

878,179. Street-Car Motor Mounting; Edward A. Barber, Watertown, N. Y. App. filed July 18, 1907. Consists in the combination with a car of a transverse rod rigidly secured thereto and extending transversely thereof and a motor, one end of which is rigidly secured to the rod while its other end is mounted on an axle of the truck. (Further particulars of this invention and the two following are contained in an article by A. H. Lefevre on page 200 of the STREET RAILWAY JOURNAL for Feb. 8.)

878,180. Car; Edward A. Barber, Watertown, N. Y. App. filed July 18, 1907. In order to obviate the rocking movement of single-truck cars, the car body has no immediate connections with the truck in the vicinity of any of the four wheels.

878,181.—Single-Truck Car; Edward A. Barber, Watertown, N. Y. App. filed July 18, 1907. The object of this invention is to adapt air-brakes to single-truck street railway cars without employing a multiplicity of levers, flucruums, draw rods, etc.

878,198. Car Rack; John B. Foley, New Haven, Conn. App. filed July 31, 1907. The rack is made up of sections, any one of which may be readily removed or longitudinally adjusted.

878,202. Rail Chair and Fastener; John A. Gossard, South Solon, Ohio. App. filed April 30, 1907. The rails have the adjoining ends of their webs and base flanges cut away to form a transverse opening, into which a supporting block is inserted. Integral with the block are oppositely extending holding plates disposed to bear upon opposite faces of the webs and a rail chair disposed to bind the plates against the heads and webs of the rails.

PERSONAL MENTION

MR. GEORGE S. RANKIN has been chosen general manager of the Yakima Valley Transportation Company, and will assume his duties at once.

MR. J. McMILLAN, general manager of the Pacific Electric Railway Company, of Los Angeles, Cal., is spending a few weeks in Arizona and Mexico, looking after company interests.

MR. BLAKE A. MAPLEDORUM, chief engineer of the Co-operative Construction Company, which is building the Chicago-New York Electric Air Line, has resigned, to take effect April 1.

MR. JOHN B. PARSONS, president of the Philadelphia Rapid Transit Company, has sailed for Naples for a short vacation to be spent on the Continent. He was accompanied by Mr. Peter A. B. Widener and Mr. Harry Elkins Widener.

MR. A. E. PARK, who has been general manager and head of the promotion department of the Des Moines, Winterset & Creston Electric Railway Company since its inception, has resigned. Mr. E. B. Steere has been appointed to succeed him.

MR. GUSTAVUS BRIGGER has resigned his position as superintendent of the Twin City Rapid Transit Company. Mr. Brigger's resignation was due to ill health. Mr. P. W. Gerhart has temporarily assumed the duties performed by Mr. Brigger.

MR. JOHN Z. MURPHY, chief engineer of the Chicago Railways Company, has been appointed as its representative on the Board of Supervising Traction Engineers. Mr. Murphy has been acting for the company since the consolidation without formal appointment.

MR. GEORGE FIELDER, who for the past few months has been general manager of the Chatham, Wallaceburg & Lake Erie Electric Railway, of Chatham, Ont., has resigned his position, and Mr. D. A. Gordon, M.P., of Wallaceburg, has been appointed to the position.

MR. FRANK M'COY, formerly Pittsburg representative of the St. Louis Car Company, of St. Louis, Mo., has severed his connection with that company and has accepted the position of general manager of the Allegheny Valley Street Railway Company and the Allegheny Valley Light Company.

MR. C. E. PALMER, of New York, has been appointed superintendent of railways and placed in charge of the entire system of the Eastern Pennsylvania Railways Company, between Pottsville and Mauch Chunk, with headquarters at Pottsville. Mr. Joseph C. Bell, of Pottsville, was also made superintendent of the Tamaqua & Lansford Division.

MR. G. BRIGGER, superintendent of the Minneapolis lines of the Twin City Rapid Transit Company, has resigned, and Mr. P. W. Gebhardt, who has been acting as assistant to General Manager Hield, of the company, is acting as superintendent. Mr. Brigger was superintendent of the Minneapolis lines for twelve years.

MR. J. P. CLARK was recently appointed assistant to President M. W. Mills, of the Michigan United Railways Company, with full authority to act on all matters which come to the president. Mr. J. M. Bramlette still remains with the company as general manager, having full charge of the operation of the road, reporting to the president or assistant.

MR. F. E. REIDHEAD, manager of the Columbus Railroad Company, of Columbus, Ga., has been appointed general manager of the Paducah Traction Company, of Paducah, Ky., and Mr. John S. Bleecker, manager and purchasing agent of the Paducah Company, has been appointed manager of the Columbus Company. Both properties are managed by Stone & Webster, of Boston.

MR. HENRY C. DALTON, who was for several years superintendent of the Louisville & Southern Indiana Traction Company, has been appointed general manager of the Boise City & Interurban Railroad Company, with headquarters at Boise City, Idaho. Mr. Dalton will leave for that place in a few days to assume the duties of his new position. He will have the management of nine miles of city lines and 34 miles of interurban railway. Mr. George Goodbub, Jr., who has been employed with Mr. Dalton in the construction of several of the interurban lines of Southern Indiana, will accompany him West and will spend several months in Boise City and its vicinity.

MR. J. S. McWHIRTER has just been appointed superintendent of equipment of the Third Avenue Railway Company, of New York, with headquarters at Sixty-fifth Street and Third Avenue. Mr. McWhirter comes from the Mahoning & Shenango Railway & Light Company, of New Castle, Pa., and Youngstown, Ohio, where, as a member of the staff of Sanderson & Porter, he was superintendent of shops and equipment for fourteen months. Previous to his connection at Youngstown Mr. McWhirter was for a year in the equipment department of the Long Island Railroad Company, and was for four years in the shops of the Interborough Rapid Transit Company, of New York.

MR. C. A. SMITH, who on Feb. 1 was appointed superintendent of roadways of the Georgia Railway & Electric Company, of Atlanta, Ga., has been connected with electric railway construction work since he was graduated from Boston Tech. in '99. Mr. Smith came to Atlanta in the fall of '99 as assistant engineer on the Atlanta Rapid Transit Company's construction, and later was superintendent of construction and assistant engineer in charge of construction work in Birmingham and Memphis. He returned to Atlanta Jan. 1, 1906, and was connected with this company as engineer in the roadway department until his appointment, as before stated, as superintendent of roadways on Feb. 1.

MR. F. E. LOW, for the past year superintendent of the St. Paul lines of the Twin City Rapid Transit Company, has resigned, and will be succeeded by Mr. J. S. Pevear, who has been connected with the General Electric Company. Mr. Low came to the Twin City Rapid Transit Company from the Pullman Car Company, with which he had been connected for a number of years as general agent at Minneapolis. He was chief clerk to the general manager of the Twin City Company for a year before being assigned to the management of the St. Paul lines. Mr. Low was very active during the building of the Selby tunnel in St. Paul last year, which was described in the STREET RAILWAY JOURNAL, and because of the strain of this work and that incident to removal of the downtown stations, and the dearth of men that was experienced in the northwest, his health suffered severely, and for this reason he decided to retire.

PROFESSOR C. F. HARDING has been appointed head of the School of Electrical engineering of Purdue University at Lafayette, Ind. Professor Harding is a graduate of Worcester Polytechnic and has had a broad practical training as an engineering teacher. His special training has been along the line of high-tension railway work, and he was electrical engineer for the first railway of that character in New England. He has been

engineer for the D. & W. Fuse Company, of Providence, R. I., publication manager for the Fort Wayne Electric Company, engineering expert for Stone & Webster, of Boston, and associate professor of electrical engineering at Cornell. Throughout his varied experience Professor Harding has kept steadily in mind the preparation for teaching as his life work and he comes to Purdue equipped in an unusual degree for the handling of the theoretical and practical problems of electrical engineering. He expects to assume the duties of his position about March 1.

MR. S. W. HUFF, general manager of the Virginia Passenger & Power Company, of Richmond, Va., has been elected president of the Coney Island & Brooklyn Railroad Company, succeeding Mr. John L. Heins, whose resignation was announced in the last issue of the



S. W. HUFF

STREET RAILWAY JOURNAL. Mr. Huff is well known in railroad circles in the North and West, as well as in the South. A Virginian by birth, he was graduated from the electrical engineering course at Cornell University and entered the electrical railway field where it was practically in its infancy. Mr. Huff's first experience, it is said, was in the shops of the Union Railway Company of Richmond, at the time that Mr. Sprague turned over his work to the local company. Subsequently Mr. Huff became general manager of the Raleigh Street Railway Company, of Raleigh, N. C. He has been associated in various capacities with the Baxter Electric Motor & Manufacturing Company, of Baltimore; United Railways & Electric Company, of Baltimore; the United Railroads of San Francisco and the Virginia Passenger & Power Company. As president of the Coney Island & Brooklyn Railroad Company, Mr. Huff will have charge of a property with some 50 miles of track, reaching all the principal points of Brooklyn and doing a large business to Coney Island in the summer. The company is now expending over \$1,000,000 in new power plants and substations and will have a number of new modern cars which will soon be put in operation. It also expects shortly to shift and reconstruct its tracks on Coney Island Avenue, so that this important thoroughfare, which is building up as a business street, can be properly paved. Under Mr. Huff's management it is expected that the popularity which this system has always possessed will be continued and extended.

MR. RICHARD HAPGOOD, superintendent of tracks of the Boston Elevated Railway Company, has completed fifty years of service in the street railway business in Boston, continuous except for a brief interruption on account of illness. Mr. Hapgood went to work for the Union Railway Company as a stableman in the winter of 1858. This was only a couple of years after the opening of that company's line between Boston and Cambridge, the beginning of the present system of rapid transit in Boston, and the oldest street-car line in continuous operation in New England. Mr. Hapgood served in turn as driver, conductor, starter, assistant superintendent and superintendent of the Cambridge company. His appointment to the last position was made in 1872, and he remained as superintendent up to 1885, when, for reasons of health, he resigned and went west. He was succeeded in his position by Major-General William A. Bancroft, president of the Elevated Company, who at that time was a young lawyer. Mr. Hapgood did not remain long away from Boston, returning after about a year and a half to become roadmaster of the Consolidated Street Railway Company. A year later he was appointed superintendent of the South Boston Railway Company, and upon the merging of that road with the West End he remained in the service as superintendent of the South Boston division. A short time afterward he was elected to the superintendency of the Cambridge division, succeeding General Bancroft, who became roadmaster of the West End Company. In 1892 Mr. Hapgood was chosen roadmaster of the West End Company. Under the later designation of superintendent of tracks he has continued in this position through all the more recent developments under the management of the Boston Elevated Company.

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 sub-stations.
4. Car houses and repair shops.
5. Parks and amusement attractions.

1†BIRMINGHAM, ALA.—The Birmingham Railway, Light & Power Company has petitioned the City Council for an extension of one year's time on account of the financial stringency, on uncompleted portions of its lines as follows: Avenue C from Twentieth Street to Twenty-second Street; Twenty-third Street from Avenue C to Avenue F; Eighteenth Street from Avenue B to Avenue H; Avenue H from Eighteenth Street to Fifteenth Street; Thirteenth Avenue, north, from Twelfth Street to Seventeenth Street; Eleventh Avenue, north, from Nineteenth Street to Sixteenth Street; Sixteenth Street north from Eleventh to Fourteenth Avenue.

†LOS ANGELES, CAL.—The City Council has taken the preliminary steps towards selling an electric railway franchise on South Park Avenue from Thirtieth Street to Slauson Avenue. The Los Angeles Railway Company formerly owned a franchise over this route, but because of some dereliction it was declared forfeited, although street cars are still running over the line under special agreement with the city. So valuable is the franchise that the forfeiture was fought without success in the Supreme Court of California.

2†PETALUMA, CAL.—The Petaluma & Santa Rosa Railway Company expects to place contracts during the next four weeks for ten new box cars and five new flat cars.

oREDLANDS, CAL.—The Redlands Central Railway Company has begun operating its cars in Redlands. Although the line is operating only from the city limits on the east to the city limits on the west, it is believed that the railway will be ultimately extended to Riverside. John H. Fisher, of Redlands, is vice-president and general manager of the company.

oGreeley, COL.—The County Commissioners have granted E. M. Reaser, of the Greeley & Denver Interurban Railway Company an extension from Feb. 10 to April 1 on his franchise for an electric railway between Greeley and Denver. All rights of way have been secured, but more time was needed for filing maps. Nearly \$23,000 has been spent for rights of way and surveys, and Mr. Reaser says he has ample financial backing and will begin construction April 1.

oQUITMAN, GA.—The Quitman, Thomasville & Valdosta Electric Street Railway & Power Company was granted a franchise and the exclusive rights of the principal streets of Quitman at a recent meeting of the Council. A. C. McLeod is president of the company.

5†BOISE, IDA.—It has been announced that President W. E. Pierce of the Boise & Interurban Railway Company has purchased twenty-two acres of land on the line and adjoining the Pierce park on the east, on the south side of the road. It is said that the company is planning to use this site for an amusement park.

1†CANTON, ILL.—The Illinois Central Electric Railway has just placed an order for two cars with the Danville Car Company, of Danville, Ill. The company has also placed an order with the Ohio Brass Company, of Mansfield, Ohio, for six miles of overhead material. It is expected to have the six miles of road in running order by April 1, connecting Canton, Ill., with St. David, Ill. In addition, it is said that the railway company will build an extension to Norris, Ill., a distance of about five miles.

†CARMEL, ILL.—Capitalists from Evansville, Cynthia, Mount Carmel, Lancaster and Olney, interested in the building of an electric railway from Evansville to Olney, Ill., met at Grayville and decided to incorporate the Evansville, Mount Carmel & Olney Interurban Company under the laws of Indiana. Aden Knopp, of Olney, is president, and G. W. Courter, Mount Carmel, was appointed secretary. The following directors were elected: C. J. Seibert, E. O. Lockyear, Jacob Laubscher, Evans-

ville; E. B. Bixley, Thomas Newell, Cynthia; J. O. Smith, J. F. Seibert, Lancaster; Aden Knopp, J. F. Hyatt, F. N. Boyer, Olney.

2-3-4-5†CHICAGO, ILL.—We are officially informed that the Chicago & Southern Traction Company will erect a car house and shop, also a sub-station. The company also expects to purchase the following equipment: Fourteen G. E. No. 80 motors, seven No. 21 Brill trucks, two express cars and one sprinkler. In addition, it is announced that the company will purchase a park.

oCHICAGO, ILL.—President A. C. Miller, of the Chicago-New York Electric Air Line, has announced that the Western terminus of the road will be at Gary, Ind., and not Chicago. Track laying is in progress between Laporte, Ind., and Westville, 12 miles, and it is planned to sublet the contracts for completing the road from Westville to Gary, 15 miles, as soon as funds can be raised.

1†CHICAGO, ILL.—The Chicago City Railway Company has placed an order with the Lorain Steel Company for 8,000 tons of steel rails.

oQUINCY, ILL.—It is stated that directors of the St. Louis, Terre Haute & Quincy Traction Company are negotiating for the purchase of two short interurban lines running from Roodhouse to Virden and from Virden to Taylorville. The company has secured the right of way of three-fourths of the distance, 142 miles, between Quincy and Taylorville.

oCLINTON, IND.—The Wabash Valley R. R. Company will be incorporated in a few weeks, according to a report to the STREET RAILWAY JOURNAL, for the purpose of building a railway to connect the following cities: Clinton, Newport, Hillsdale, Cayuga, Perrysville, Ind., and Danville, Ill. It is the intention to operate gasoline motors. Construction work, it is stated, will probably be started in the spring. The officers of the company are the following: D. C. Johnson, Clinton, president; W. S. Lewis, Clinton, vice-president; B. S. Aikman, Newport, secretary, and H. B. Davis, Newport, treasurer.

oGARY, IND.—Construction work on the Gary & Western Traction Company's line has been suspended. Only three weeks remain to complete the line, as provided in the local street car franchise. It is understood that the U. S. Steel Company will take up the work and complete it, having obtained a controlling interest in the company.

oVERSAILLES, IND.—V. R. Coon and other promoters of Louisville are proposing to construct an electric railway from Greensburg to Madison via Osgood, Napoleon and Versailles. The route is the same as that selected for a branch road proposed by the Indianapolis & Cincinnati Traction Company two years ago. If this road is built it will give direct connection between Indianapolis and Madison and the Ohio River.

1†SIOUX CITY, IOWA.—The Sioux City Traction Company, it is announced, will relay about four miles of track in the near future.

1†WICHITA, KANS.—The Wichita Railroad & Light Company expects to place contracts during the next ten weeks for the building of three miles of double track.

2-3-4†BOWLING GREEN, KY.—The Bowling Green Railway Company is building a power station and it is announced that a car house will be erected at the location of the new power station. Manager H. D. Fitch states that the company expects to purchase two new 20-ft. cars.

oCOVINGTON, LA.—It is said that work on the electric line of the St. Tammany & New Orleans Railway & Ferry Company, which is to connect Covington with New Orleans, is progressing rapidly, under the direction of Preston Herndon. About five miles of right of way has been cut out, and about three miles of roadbed has been completed. All the material for the bridges has been gotten out, and a large part of it has been delivered on the right of way.

oSHREVEPORT, LA.—The franchise committee of the City Council has recommended that the proposition of John Lorenz, of Jackson, Miss., to construct a street railway line be rejected because the applicant refuses to agree to certain provisions of the ordinance which he thought too severe.

*PORTLAND, MAINE.—The Hancock & Lake Linden Traction & Power Company has been organized at Portland for the purpose of constructing, owning and operating railways of all kinds, with \$800,000 capital stock. The officers are: President, James E. Manter, of Portland; treasurer, Clarence E. Eaton, of Portland.

2†WAREHAM, MASS.—It is announced that the New Bedford & Onset Street Railway Company, placed with J. M. Jones' Sons, several days ago, a contract for an electric express car. Geo. P. Dole is superintendent and purchasing agent.

*HOUGHTON, MICH.—It is said that James T. Healy, of Houghton, will soon apply to the City Council for a franchise for the South Range Street Railway Company, which proposes to construct and operate an electric railway from Houghton to South Range. C. C. Douglass and C. D. Hanchette are understood to be interested in the enterprise with Mr. Healy.